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INDUSTRY EXPLORATIONS

SINGAPORE CHEMICALS

2013

Economy - Regional Role - Jurong 2.0 - Human Resources and the Environment - The Service Sector

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Dear readers,

There is a good reason why American statesman Henry Kissinger sought out Prime Minister Lee Kuan Yew's counsel on China as he engineered one of the greatest power realignments in diplomatic history: Singapore can offer the world a unique perspective, one that cannot be copied or imitated. Singapore has set itself apart as a nexus of East and West. Four decades after Nixon's visit to China, Singaporeans still have an unrivaled understanding of how to see the West from the East's perspective and vice-versa due to the country's colonial past, mix of cultures and languages and position as a business and transit hub for the world. As economic linkages and, in some cases, political-economic rivalries grow; an understanding of others' perspectives is crucial to succeed in the contemporary global economy.

Nowhere does this perspective have a more pervasive presence than in Singapore's world-class public sector, often regarded as the most efficient, well-trained and uncorrupt bureaucracy in the world. An innate understanding of different business cultures reverberates through the ranks of Singapore's Economic Development Board. As most of our readers in Singapore know well, the EDB is an invaluable institution that is instrumental in facilitating Singapore's distinction from other countries. Many countries are talented at selling their country as a business friendly destination through attractive buzzwords and policies, yet the work of the EDB ensures that government pledges to the business community are backed up by action. Although this may sound easy, the inability of policymakers to follow through on commitments is the single largest challenge that we hear from our interviewees in reports worldwide. The existence of such a knowledgeable and communicative organization not only made our job easier for this report, but certainly makes constructing a multibillion-dollar petrochemical plant easier as well!

In this regard, we would like to thank Euguene Leong, director of energy and chemicals, and his entire team at the EDB for their help and insight with our project. In the age where politics all too often comes before good policymaking, it is truly remarkable to see an organization with such a long-term clarity of vision. Initiatives such as Jurong Island v2.0 would not be possible without such a committed and talented institution. As other Southeast Asian countries seek to imitate Singapore's success, the EDB is key to Singapore remaining several steps ahead.

In an increasingly competitive Asian economic environment, the description of Singapore as the Lion City is all too fitting. In the wild, the lioness is constantly seeking out new opportunities that will nurture, grow, and strengthen her pride. In much the same way, Singapore's government and businesses are always searching for new opportunities to grow the country's business reputation. This ability to envision long-term benefits for the growth of the country has enabled Singapore's remarkable unparalleled economic rise over the past half century and will allow it to continue to succeed in the future. This central theme presents itself in the following pages through dozens of interviews, extensive articles and expert analysis on Singapore's chemical sector.

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Courtesy of EDB

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Vanessa Acuna Chapela and Andrew Mason
Edited by Barnaby Fletcher
Graphic Design by Gonzalo Da Cunha
A Global Business Reports Publication
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The Modern City State:

An Introduction to Singapore and its Chemical Industry

"Jurong Island has been at the heart of the chemicals industry in Singapore and will continue to be. That being said, it is no longer the only part of the story. Going forward, the growth of specialty chemicals is the future. Jurong will always be important, but the impact of the chemical industry on Singapore is greater than just the island itself."

- Dr. Keith Carpenter, Executive Director,
Institute of Chemical and Engineering Sciences (ICES)

Source: Shutterstock

An Introduction to Singapore

A brief overview of the country and economy

During Singapore's half century of independence, the city state has grown from an underdeveloped and largely impoverished former outpost of the British Empire to an ultra-modern metropolis that today ranks as the globe's third largest oil refining center, the third busiest port in terms of cargo tonnage, the seventh wealthiest country in the world in terms of GDP per capita, and is a leading global financial center.

Singapore's rapid economic rise has caused other countries around the world to emulate its hybrid of neo-liberal economic policy and staunch decision-making. Yet none have managed to achieve quite the same accelerated third-world-to-first transformation. Yet at its core, the principle found by former president Lee Kyan Yew and carried on by his ruling People's Action Party (PAP) is quite simple: the unapologetic prioritization of progress.

The departure of the visionary Lee Kuan Yew from Singapore's cabinet in 2011, however, seemed to symbolically mark a slight clouding of the country's clarity of vision. While the PAP still dominates parliament, holding 81 of the 87 seats, unprecedented losses in the 2011 election and a by-election loss earlier this year has forced the party to give weight to social concerns as well as economic factors.

This is a necessary step. However, there is a sense in which the PAP has become a victim of its own success. The almost unrestricted ability of companies to import both skilled and unskilled labor has always been one of the country's major attractions, yet resentment towards immigrants from Singapore's population has led the PAP to approve new restrictions on migrant labor. Space constraints in a country of just 274.2 square miles, high expected salaries and environmental concerns all raise costs for chemical manufacturers and are becoming even more pressing at a time when Singapore's regional peers are being increasingly viable places to do business.

Singapore's firm commitment to progress and foreign investment has not necessarily wavered, but must now compete with other concerns. Popular opinion does not always equate to sound economic policy and the rise of alternative investment destinations in the region is largely outside of the government's control.

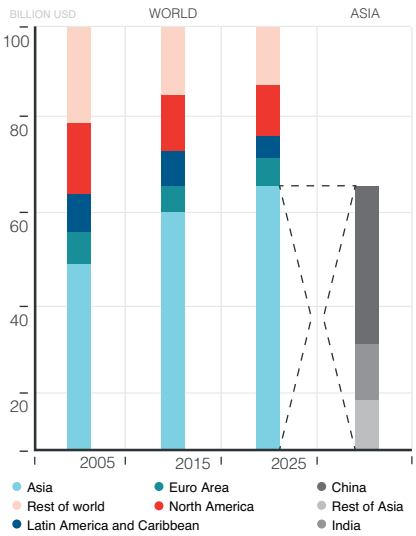
While still host to one of the world's most favourable business environments (Singapore is consistently top of the World Bank's 'Ease of Doing Business' ranking and achieved this honour again in 2013), Singapore's neighbours are emerging as increasingly viable alternatives for major investments. Hong Kong is ranked second and Malaysia and Thailand have both squeezed their way into the top twenty of the ranking, meanwhile, regional giant Indonesia offers a huge and appetising domestic market, a cheap young labour force and ample land – all of which Singapore lacks. Is Singapore getting prematurely old and suffering the same debilitations as Europe? Certainly the Global Financial Crisis has not helped.

In this report, GBR interviews a wide range of the leaders of Singapore's chemical industry and the islands principle investors who share their views on why they continue to choose Singapore as a center for business and investments and their hopes and concerns for the future. It will be seen that unlike the despondency often associated with Europe, Singapore's business men are confident in their ability to overcome and even benefit from the challenges that they currently face and that the small state will continue to play a vital role at the very centre of the world's most exciting trading area.

The country's chemical industry illustrates the Singaporean story perfectly. Punching way above its weight, boasting world class facilities of the world's largest petrochemical companies, Singapore has for a long time been the undisputed champion of the South East Asian arena. New hubs in neighbouring countries are now however looking for a shot at the title. The power and the skills of Singapore are being put to the test. •

Asia's share of world growth

Source: Conference Board (2012), IMF (2012c), Maddison (2010) and Treasury projections



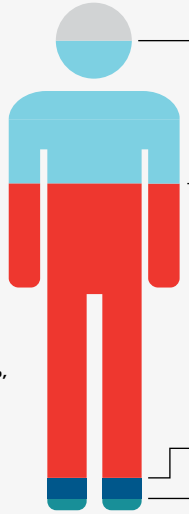
Singapore at a Glance

Source: CIA World Factbook

Population: 5,460,302 (July 2013 est.)
Capital: Singapore
Head of Government: President Toni Tan keng Yam
GDP (official exchange rate): $276.5 billion (2012 est.)
Growth Rate: 1.3% (2012 est)
GDP per Capita: $61,400 (2012 est)
Economic Sector Breakdown: agriculture: 0%, industry: 26.8%, services: 73.2% (2012 est)
Exports: $435.8 billion (2012): machinery and equipment (including electronics and telecommunications), pharmaceuticals and other chemicals, refined petroleum products
Imports: $374.9 billion (2012): machinery and equipment, mineral fuels, chemicals, foodstuffs, consumer goods
Major Trade Partners: Malaysia, China, Indonesia, USA, Japan, South Korea,

Domestic Population

Source: CIA World Factbook, Various



Literacy Rate (2007)
92.5%

Labor Force
3.618 million

Youth Unemployment Rate
6.7%

Unemployment Rate (2012)
1.9%

Population
5,460,302 (July 2013 est.)

Ethnic groups
Chinese 76.8%, Malay 13.9%, Indian 7.9%, Other 1.4%

ASEAN GDP Growth Rates (%)

Source: IMF

	2012	2012-2016
Indonesia	6.1	14.5
Cambodia	6.2	10.3
Laos	8.4	9.3
Vietnam	5.6	8.9
Malaysia	4.4	8.1
Myanmar	6.0	7.4
Philippines	4.2	7.1
Thailand	5.5	7.0
Singapore	2.7	4.5
Brunei Darussalem	3.2	0.4

INTERVIEW WITH

Eugene Leong

DIRECTOR OF ENERGY & CHEMICALS
SINGAPORE ECONOMIC DEVELOPMENT BOARD

Can you introduce the Singapore Economic Development Board and its role within the industry?

The Singapore Economic Development Board (EDB) is one of the government's economic agencies. Its primary objectives are to grow the economy of Singapore by stimulating investment, and to create jobs for Singaporeans.

Singapore's current mandate to the international community is "home for business". Can you explain this directive and how it is being fulfilled?

Home for Business is one prong of Singapore's "Host to Home" strategy. The EDB sees Singapore as a critical node within the development of the greater Asian economy, from India to China. As markets in Asia become increasingly important for companies around the world, we see Singapore as a Home for Business; a place from which companies can orchestrate their activities within the region, both in terms of strategic planning and execution.

Furthermore, the idea of 'Home' extends not only to the operations of multinationals, but to their management of talent and innovation as well - the other two prongs of our Host to Home strategy. As a Home for Talent, Singapore becomes the place from which companies access, develop and deploy Asia-ready talent to lead their companies' growth in Asia. As a Home for Innovation, the EDB engages innovators within companies to develop and test new products and services in Asia, for Asia. Today, there are already many examples of how companies are using Singapore as a Home for Business, Innovation and Talent.

What role does the chemical industry play in Singapore and the EDB's overall strategy for growth?

Today, Singapore pursues an integrated strategy of refining and chemical production to serve companies in the downstream petrochemical and specialty chemical industries. These industries account for close to one third of the overall manufacturing sector. Just as importantly, the industries create high-value jobs in Singapore for Singaporeans.

A healthy number of global chemical leaders have made Singapore their home. Singapore houses the world's chemical heavyweights, all in one location, often working in collaboration with one another on Jurong Island. We believe strongly in creating a favorable environment which facilitates integration within the chemical industry.

What elements of your macroeconomic model for the chemical industry in Singapore are most attractive to multinational players?

Our highly developed upstream cracking capabilities and their links to downstream specialty chemical plants gives us an advantage in attracting investments. The recent mega-cracker expansions of ExxonMobil and Shell, as well as related downstream projects mean more opportunities for chemicals companies. We have seen a slate of new investments in high-value downstream derivative and specialty chemical manufacturing. Some of the projects announced last year include Lanxess' nd-PBR and butyl rubber plants, Sumitomo, Asahi Kasei, and Zeon Chemicals' S-SBR synthetic rubber projects, as well as Chevron Oronite and Infinium's lubricants and oil additives expansions. This is in line with our strategy to promote downstream investments into specialty chemicals.

Beyond manufacturing, we have also put in a great deal of effort to build an environment conducive to R&D. A number of specialty chemicals companies have set up facilities focused on innovation and applications development. For example, Evonik set up an applications lab, for its TEGO resins and coatings additives line.

What is the horizon for the EDB and Singapore's chemical industry over the next few years?

The outlook for Singapore's chemicals industry is positive. Driven by the burgeoning Asian markets, regional demand for petrochemicals is also growing strongly. Singapore has the right ingredients to continue to be an attractive investment location for companies, as can be seen by the recent projects announced.

That said, we believe continuous improvement and upgrading is necessary. One of the foundations of our chemical industry that we continue to strengthen is our refining capability. Upgrading the complexity of our refineries will enhance the competitiveness of our crackers and the rest of the industry. Secondly, we are constantly looking for new ways to extract more from the existing base, such as moving into higher value-added derivatives and specialty chemicals. Lastly, the EDB will continue to work with the industry players on Jurong Island, to ensure its competitiveness and sustainability as a chemical hub.

Asia's growth continues to excite the global chemical community, and Singapore can play a major role in supporting their operations as a home for business, innovation, and talent. •

Chemicals in Singapore

A modern hub in an island nation

Courtesy of Emerson Process Management

It all began when the global leaders in global petrochemicals identified Singapore as a destination for large scale refining and processing. Shell first invested in an oil refinery just before the islands independence, in 1961. Already by the 1970's, Singapore had become the world's third largest refining centre and home to an important regional chemical hub.

The island's location in the middle of the Malacca Straights, the world's second busiest shipping lane which connects Asia with the West, make the country a perfect shipping point for export and re-export. New crackers that Shell and ExxonMobil completed in 2011, demonstrate that this strategic advantage remains true today. Beyond simple geography, Singapore offers the technically complex and often regulation heavy chemical industry a well-educated population, strong intellectual property protection and a clear, incorruptible bureaucratic process. "Today, Singapore pursues an integrated strategy of refining and chemical production to serve companies in the downstream petrochemical and specialty chemical industries. These industries are major contributors to our manufacturing sector, accounting for close to one third of the overall manufacturing sector," explains Eugene Leong, Director of Energy and Chemicals for the Singapore Economic Development Board (EDB).

The EDB itself is a good example of precisely what makes Singapore so special. This integrated strategy of the chemical industry is the result of careful, decades long planning by the government that has successfully attracted investment in the sector and created an array of supporting industries and the EDB plays a crucial role as a facilitator. At the heart of this planning since the 1980s, has been the development of a world-class chemicals manufacturing center of Jurong Island. "From oil majors to petrochemicals, Singapore houses the world's chemical heavyweights, all in one location, often working in collaboration with one another on Jurong Island, or within Singapore. We believe strongly in creating a favorable environment, which facilitates integration within the chemical industry. What Jurong Island is today, was only made possible by a concerted effort by the Singaporean government, in close collaboration with industry," says Leong.

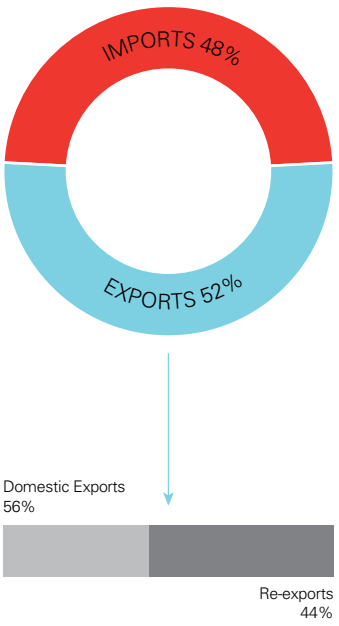
With new initiatives such as Jurong Island version 2.0 (JIv2.0) and a raft of record-breaking new investments, Singapore's chemical industry appears to be progressing along much the same impressive trend as it always has done. After investment in the sector fell flat in the immediate aftermath of the financial crisis, the EDB has launched initiatives to revamp the industry through a focus on high value downstream and specialty chemicals production, further streamlining efficiencies and promoting sustainability. This strategy seeks to exploit Singapore's competitive advantages vis-à-vis potential competition in the region in order to attract and retain foreign investment. Several recent developments show the strategy is achieving its desired effect, yet, as Singapore knows well, there is always plenty of work to be done.

Singapore is sitting higher up the value chain than ever before and, in order to compete with the lower cost producers that literally surround the island, everything must be about excellence. This applies not merely to the final product and the service provided, but to the manner in which this is achieved. Higher costs means that processes must be seamlessly efficient, they must be clean and sustainable, they must be safer, and the financial, political and legislative environments must be stable and supportive.

Singapore has succeeded in building just such a reputation for excellence and stability and can trade on it. The rise of its neighbours will thus prove an opportunity rather than a threat as multinationals continue to flock to Singapore to benefit from these growth markets using Singapore as a base from which to do so. •

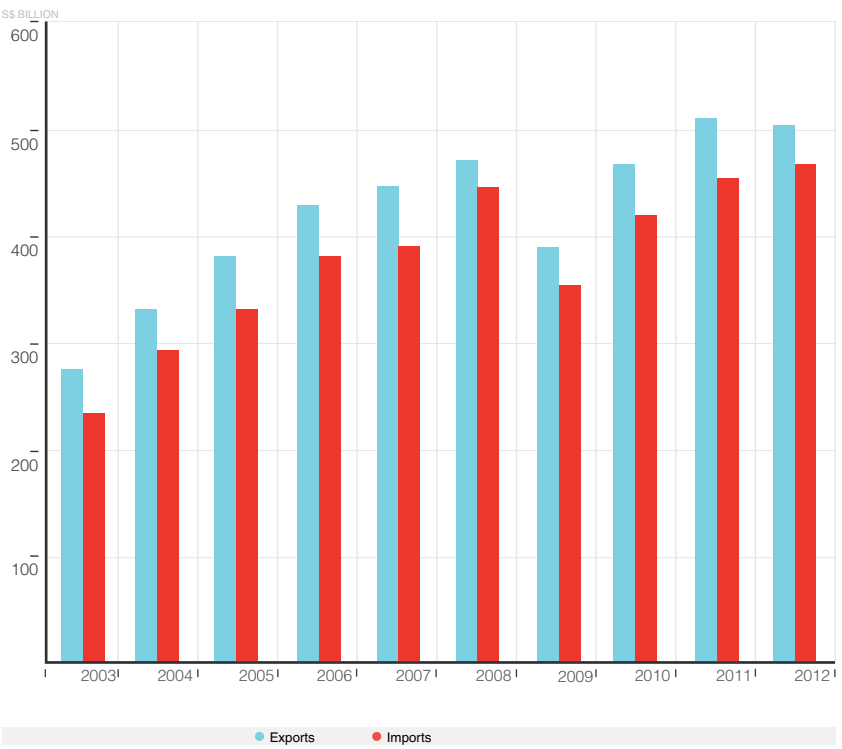
Composition of Singapore's Merchandise Trade (2012)

Source: Department of Statistics Singapore



Singapore's Merchandise Exports and Imports (2003 - 2012)

Source: Department of Statistics Singapore



INTERVIEW WITH

Chiew Nguang Yong

CHAIRMAN
SCIC

What is the mandate of the Singapore Chemical Industry Council (SCIC) and some of the association's major milestones?

The SCIC is the body representing the chemical and petrochemical industries in Singapore; it voices the interests of this incredibly diverse manufacturing sector. The SCIC's membership extends from multinationals such as ExxonMobil, Shell, Sumitomo, Dow Chemical and Dupont to smaller regional and local SMEs. This diversity grants the SCIC and its members the capability to leverage both the experience of global MNCs and the perspective of smaller players in order to promote higher standards for health, safety and the environment. In terms of growing the business of their members, the main assets of SCIC are its regional and international connections; SCIC and Responsible Care members are a part of a credible network of regional and multinational companies with a certain degree of shared interests and goals.

Over the last few years, the SCIC has become a preferred platform for addressing the industry from the perspective of local regulatory bodies and government, an achievement it is pleased with; the SCIC's relationship with regulators is extensively collaborative.

Can you outline the SCIC's current initiatives and activities within the chemical sector?

The SCIC is self-funded and therefore we are able to work independently on behalf of the industry. Currently, the SCIC enjoys a small full-time team to support its activities; this is in addition to its volunteer committees comprising professionals from local companies across the value-chain and the international community. A good example of a current SCIC initiative is the Global Harmonized System (GHS); in this forum, the utilization of international chemical standards for Singapore and the region is discussed. A varied team from the industry has been gathered by SCIC to set up a training program and impart their experience to the chemical community; the GHS educates SCIC members on what is required in order to meet international levels of compliance in chemicals.

The Responsible Care program is the flagship program of the SCIC; this program ensures that companies acknowledge a direct link between their own achievements and the protection of the local community and its health, safety and environmental standards. Responsible Care is also a means through which SCIC Responsible Care members can signal their commitment to the community and heighten the confidence in this industry.

Furthermore, the SCIC has a Regulatory Affairs Committee (RAC) as a means to improve government-industry dialogue; this is especially useful when the regulatory framework is being reviewed. For example, the National Environmental Agency (NEA) is currently working with our SCIC's RAC on several pertinent issues such as flaring.

What are some of the main challenges to Singapore's chemical industry as perceived by SCIC and its members?

The most discussed issue is the cost of energy in Singapore. Since last year, the SCIC has begun engaging the JTC with regards to the infrastructure on Jurong Island in order to address the issue of security of supply to energy, logistics capabilities, and other potential future challenges. Moreover, new limitations on foreign talent and labour costs are also causing concerns to MNCs.

For SMEs in the chemical industry in particular, there are several additional challenges. Understanding and compliance to the HSE standards is an area that SMEs often lack the hardware, experience and manpower to maintain the same standards as efficiently as a MNC. In addition, the chemical industry is highly capital-intensive and it is sometimes difficult for a SME to access the necessary financing, technology or talent as they strive to remain competitive. In this area, it is encouraging that Singapore's Ministry of Trade and Industry (MTI) is very proactive and offers many incentives for SMEs operating in this market.

Despite the challenges, Singapore continues to be a major hub for investment in chemicals; what makes this market ideal for the chemical industry?

Singapore is fortunate to have a critical numbers of competitive advantages. Jurong Island, for example, was arduously reclaimed for the sole purpose of building a downstream petrochemical hub characterized by high levels of integration. The presence of major MNCs has managed to attract investment from their global downstream customers and add-value to the industry as a whole. Outside of Jurong Island, the other main advantage of Singapore is the element of stability: the economic, political, and regulatory environments are all very transparent and predictable. Lastly, the growth of markets in the region such as China make Singapore an ideal place to do business; a chemical company in Singapore is well positioned for growth. Indeed, Singapore's model is being replicated throughout the region. •

INTERVIEW WITH

Matthew (Matt) J. Aguiar

MANAGING DIRECTOR
EXXONMOBIL ASIA PACIFIC PTE LTD.

At the time of the initial commissioning of ExxonMobil's new cracker in December 2012, you commented that this expansion "demonstrates our [ExxonMobil's] continued confidence in Singapore". What advantages does Singapore provide that gives you this confidence?

To understand Singapore's importance to ExxonMobil it is necessary to look back on our past, as the company is celebrating its 120th anniversary in Singapore this year. We began as a kerosene trading company in 1893 and both Exxon and Mobil built refineries in Singapore at the early days of independence in the 1960s. Our manufacturing capability has grown with the country. Our chemical complex began with aromatics in the early 1990s and we developed some small specialty businesses at this time as well.

We made the decision in the early 1990s that Singapore would serve as the Asia- Pacific hub for the company as we thought it was the country that offered the best strategic advantages in the region. It was very aligned with the fundamentals we have as a company: a business-friendly climate, pro-business tax structure, transparent laws and regulations, and a strong relationship with the government. On top of all this, we saw the government's commitment to building the infrastructure on Jurong Island which is remarkable and visionary, and a true model for developing a petrochemical industry around the world.

When we originally built petrochemicals production on Jurong Island in the 1990s it was done to integrate with our existing refinery. We were able to replicate what ExxonMobil has successfully done around the world to build a complex integrated with our refinery, with full feedstock advantage, and build the largest world-scale facilities in industry with our latest technology. The current expansion (Singapore petrochemical expansion) came as a way to build on this existing base and advantages. We built it to expand capacity of existing products but also add new products, including a significant number of specialty products, again applying our latest technology. When ExxonMobil makes an investment, it is on a 20- to 30-year time horizon.

Many of our interviewees have cited high energy costs as their main concern in Singapore. Is this a concern for ExxonMobil, given your expansion included a new 220MW cogeneration plant?

I would agree that energy costs are a challenge, and we are working very cooperatively with the Singapore government on some of the long-term solutions. For example, as part of the ongoing consultations on the LNG procurement framework for Singapore, we have been engaging closely with the Government to support efforts to develop the next LNG procurement framework. It is worth noting that when you look at the long term history in our business, we have seen times when different parts of the world or different feedstocks or energy costs are advantaged over others. ExxonMobil has a large, diverse global footprint where we are well represented in all regions as well as feedstock types (gas or liquids) that provides good diversity where each configuration performs well in different scenarios. This global footprint is a competitive advantage and also allows us to take a long-term view.

In Singapore, our 220MW cogeneration plant adds to 140 MW of capacity we already have at the complex. We are working with the government long-term on improving energy flexibility as the future of gas evolves.

Increasing specialty chemicals production is at the center of the Jurong Island v2.0 initiative. How does your new expansion fit into the government's vision?

A significant amount of our capacity is now premium products as our expansion includes two polyethylene plants, a polypropylene plant, a metallocene elastomers unit, an oxo-alcohol unit and an aromatics expansion. Our strategy is to have a competitive commodity platform while also offering a number of specialty products where the value added is higher and are the products are less cyclical.

What do you see as the priorities for ExxonMobil Asia Pacific in the coming years?

Our first priority is to have our new cracker demonstrate all the capabilities and technologies we have invested in it. We see our Singapore complex as a platform for future growth; we are interested in additional investments here, including specialty products to serve the high demand in Asia. •

Singapore Hosts Titanic Investments in Specialty Chemicals

When seasoned executives fly into Singapore, they see more during their approach to Changi International Airport than a stunning view of the Asian entrepôt; they garner a sense of the overall business environment: when the harbor is congested with ocean barges and container ships, markets are not healthy; those vessels need to be moving products instead of idling. Today, the traffic is nearly bumper-to-bumper in the straits of Malacca, for Singapore's exports levels have been slow to recover when compared to those of its sister ports in Asia. In December of 2012, Singapore's exports hit a nadir lower than any experienced in the past 14 months as its currency climbed higher relative to the dollar, its manpower became more expensive in relative terms, and output from its manufacturing sector continued to slow down.

To a large extent, however, these represent the maturing pangs of a country that consistently must bear the burdens of being 'first' in many industries throughout Asia; there are certain segments of Singapore's economy that continue to gather momentum in the worst of conditions, tasked with building a future from a modest endowment of materiel and an environment that must cater to outside investment. Indeed, despite record drops in exports, the Lion City-state still hosts record levels of capital expenditure; for 2012, Singapore managed to accumulate $13 billion in Fixed Asset Investments (FAI), up by $2 billion from 2011 and poised to increase again for 2013. The Singapore Economic Development Board (EDB), the statutory board for the Ministry of Trade and Industry, is the leading agency charged with attracting investment into the country. The chemical and petrochemical industries have been a traditional focus of the EDB since 1984 when, in a joint venture with Sumitomo, they brought the country's first ethylene cracker online in what is now Jurong Island. Since the EDB has been at the helm, well over 30% of Singapore's manufacturing activities have become oriented towards chemicals. Singapore's strategy for developing the sector is based on three types of stability: economic, political, and infrastructural. It is the ability of Singapore to sustain a low-risk environment and the confidence generated therefrom that, for example, brought Lanxess' largest international FAI to date—a €400 million butyl rubber plant—to the country despite the beggarly investment climate of 2009.

Singapore's neighbours have been quick to emulate its success, however: China is now the undisputed leader in terms of manufacturing output, and today there are a growing number of alternative petrochemical hubs throughout the ASEAN and APAC regions in countries that do not suffer the same restrictive land, labor, and thus re-export limitations as tiny Singapore. The country has been forced to change tac in courting new companies for its flagship industry on a regular basis; currently Singapore is filling its sails with new potential in the area of specialty chemicals. Products such as synthetic rubber, feed additives, and coatings are low-volume, high-value chemicals that not only compliment Singapore's unique endowments, but also a rising demand across several target markets; in Asia alone, the specialty chemicals industry is expected to reach an overall value of $360 billion by 2015.

When the EDB plots a course for growth, the world's leading chemical players are sure to follow. To be sure, the crowning achievement of Singapore's infrastructural offering to the chemical community, the artificial manufacturing zone known as Jurong Island, was a herculean project that finished a full 20 years ahead of schedule. The EDB's latest initiatives, dubbed Jurong Island 2.0, have reinvigorated Singapore's chemical segment. Lanxess is crystallizing its commitment to Singapore by developing a €200 million Nd-PBR facility, the company's second largest investment and at 140,000 tpa the world's largest polybutadiene rubber plant. Evonik Industries, a multinational specialty chemicals manufacturer, utilized the groundbreaking at its $500 million methionine complex to herald the coming of a new polymer-12 facility to the delight of the Minister for Trade and Industry. Moreover, Evonik has earmarked Singapore for a further $500 million in capital expenditure; 50% of the company's entire footprint in Asia will be housed on Jurong Island alone. Mitsui Asia Pacific, a longtime player in Singapore, is also set to begin construction on a 300,000 tpa polyolefin facility with a price tag of $250 million, bringing Mitsui's cumulative FAI in Singapore to well over $1 billion. Not to be outdone, the feedstock and petrochemical manufacturers are also expanding their already vast portfolios: Chevron Oronite is enhancing its offering for additives; Royal Dutch Shell has confirmed a 100,000 tpa increase to its polyols capabilities in addition to a $3 billion expansion of its ethylene cracker; ExxonMobil set the pace for 2013 by recently announcing the largest expansion project in company history which will augment output levels at its ethylene steam cracker by over 2,600,000 tpa of product. Singapore's chemical industry is certainly at high tide.

Before Singapore can take such staggering activity for granted, the government will have to prove to more reluctant entrants that it can offset the country's inherent disadvantages in the long-term: expensive land, labor, and utilities costs. Although these are perennial issues, they are becoming more acute: manpower is becoming increasingly politicized as Singapore's ruling parting is losing unprecedented ground on issues such as immigration, and energy and feedstock prices continue to rise throughout the region. Furthermore, recent innovations in hydraulic fracturing and the resultant natural gas glut in North America are tempting many producers to re-shore operations that rely on gas as both a feedstock and energy source. Nevertheless, chemical manufacturers not prudent enough to enter Asia by way of Singapore dream of places like Jurong Island and government agencies as attentive and exacting as the EDB; the trite strategy of an undervalued currency and cheap labor, a characteristic of many countries in the region, must appear as a ship sailing without ballast in comparison to the consistency of Singapore's economic planning. In this context, a persistent decline in Singapore's exports from traditional levels, mostly in electronic and non-oil products, is less worrisome given the value additions currently in development. Perhaps professionals should also take notice of activity on Jurong Island the next time they touch down in Singapore. •

A Lion Amongst Tigers:

Singapore's Chemical Industry in a Regional Context

"A decade ago, expanding Katoen Natie outside Europe was considered complimentary to our Europe operations. Now it is a necessity. Our growth is outside of Europe as the market consolidates as a result of the crisis. The United States, Latin America, Singapore and Thailand represent a new wave of focus for us. In Singapore and Thailand we have more than doubled our operations in the last three years."

– Koen Cardon, CEO,
Katoen Natie Singapore

Courtesy of ExxonMobile

The Neighbourhood

Crowding or Complementing?

Over the last two years, the two countries adjacent to Singapore have sought to attract world-scale investment in the petrochemicals sector, as Singapore's neighbours are eager to imitate the Lion City's success. Although still in their early stages, investment plans in Johor Malaysia, which is directly linked to Singapore via causeways, and Indonesia could provide an alternative option for investment as Southeast Asian markets show promising growth potential.

Gina C. Fyffe, executive director of Integra Petrochemicals envisages these nascent developments as having the potential to create a complementary arrangement in the region: "We see Southeast Asia as a very interesting place for the next 10 years. There is talk about new crackers in Indonesia; Petronas's RAPID project is gearing up to be built just across the causeway; Singapore is still developing with the Jurong Island v2.0 project and has the new LNG caverns. There will be a petrochemical triangle in Southeast Asia."

In Johor, the Pengerang Integrated Petroleum Complex is looking to attract 170 billion ringgit ($55.84 billion) of capital by the time it commences initial operations in 2017. As of writing, the final investment decision has yet to be made on the project, but high pedigree companies have shown interest. Anchoring the development will be a 300,000 bpd, $19.4 billion refinery of state-owned heavyweight Petronas. This world-scale complex, dubbed the Refinery and Petrochemical Integrated Development (RAPID), intends to supply feedstock to downstream chemical manufacturers. In January 2013, Qatar's sovereign wealth fund, Qatar Holdings, announced it intends to invest $5 billion in the petrochemicals complex over the next several years as part of a $10 billion investment in Malaysia's economy. Additionally, Evonik has signed a letter of intent with Petronas to become involved in the complex.

Indonesia, the largest economy in ASEAN, has also sought to boost the profile of its import-dependent petrochemical industry. In December 2012, Indonesia's interior ministry announced incentives to attract investment for several new petrochemical centers with a view of reversing the sector's adverse impact on the country's current account. South Korea's Honam Petrochemicals has indicated an interest in investing $5 billion in a petrochemical complex.

Singapore's immediate neighbourhood could become the hotbed of Southeast Asian chemicals growth as competition from new production centers in the area could serve as the catalyst for an evolutionary change in the regional trade network. Gina C. Fyffe sees the "petrochemical triangle" as having implications that influence trade patterns: "It is difficult to see yet exactly how the product flows will work and the petrochemical triangle will all fit together since the different plant announcements are just beginning to become public… With Singapore's crackers and downstream industries, products will be moving back and forward between the countries. Some of Singapore's exports will go to Indonesia, while some of its imports might come in from Malaysia. It will be a wonderful opportunity for transportation companies and shipping."

This idea parallels the realities of the early 1990s when the synergies between the three countries were discussed as the Asian Growth Triangle. During this time, Singapore was able to leverage its position as a center of specialization and expertise in areas such as electronics. Low value, labor-intensive production was located in cheaper destinations like Malaysia and Indonesia, while higher value processes such as R&D, final assembly, and distribution occurred in Singapore. Therefore, although there is a degree of competition involved in the creation of such a petrochemical triangle, Singapore stands to gain as it can serve as the top echelon of such a structure, dominating high-value production while all three members compete for commodity production. "If you take these three countries [Malaysia, Indonesia, and Singapore], one element of the three is very established in terms of its market reputation [Singapore]. Then you have two others with geopolitical, financial, and infrastructure issues… Fundamentally these are three different markets and I do not see there being a more integrated, level production-base amongst these countries in the near future. Singapore will continue to lead and flourish as these new markets look to increase their production capacity," comments Mark Tinkler, commercial director of Fortrec.

Much like in the 1990's Singapore's leadership role is most apparent in the development of its high-value production, which puts the country's industry in an advantageous position to meet future demand. As Dr. Dai Yu, CEO of Jurong Aromatics Corporation comments, "the demand for specialty chemicals is bound to increase as living standards rise across Asia."

This observation is in stark contrast with the comparative development of the Asian Growth Triangle in the 1990s. Two decades ago, high value goods made in Southeast Asia were viewed principally as exports to Western markets. Today, market dynamics are shifting. Goods, including chemicals, are increasingly produced in Asia for Asian consumers. This means goods are staying closer to their production base as Southeast Asian countries become more affluent. "[A] growing middle class in Indonesia, the Philippines and Vietnam is driving greater movements of goods within ASEAN" comments Henning Malmgren, chief commercial officer of DAMCO Asia Pacific.

Neighbouring Indonesia, the fourth largest country in the world by population, provides a particularly exciting growth opportunity for companies operating in the region. According to a March 2013 report from the Boston Consulting Group, the size of the Indonesian middle class is projected to double to 141 million people by 2020. Although Indonesia is actively looking to expand its chemical manufacturing capacities, keeping up with the skyrocketing emerging middle class will be nearly impossible. "Indonesia is the largest market and over the last few years it has proven to be a stable environment with a huge domestic consumption base with a growing middle class - Indonesia has really been the star of Asian markets. Yet, in terms of production capability the chemical industry in Indonesia is still very basic." says Irwanto Tjota, chief operating officer of Singapore-based distributor Planet Asia.

As the region grows Singapore will have a key role regardless if the ambitious developments in Malaysia and Indonesia happen as scheduled (Petronas recently announced a delay to the RAPID project.) The execution of these grand plans is beyond Singapore's control. What the city-state can control is further defining its regional role, building on its strengths, and innovatively tackling its challenges. Although its neighbours may begin to catch up in capabilities, the regional market is sure to create plenty of room for growth. Recent projections from IHS expect ASEAN's nominal gross domestic product to more than double by 2020 from $2 trillion to $4.7 trillion. As the Asian middle class continues to swell, the regional demand for chemicals will continue at a high growth rate.

Although there is room for chemical production hubs to complement one another, the creation of a petrochemical triangle puts more pressure on Singapore to decisively address potential investment impediments if it wants to retain its undisputed position as the chemical hub of Southeast Asia. With the development of Jurong Island version 2.0 (JIv2.0), Singapore is distinguishing itself from its neighbours by reaffirming itself as the destination for integrated efficiencies, ease of doing business, and advanced capabilities. Nevertheless, Singapore's drawbacks, namely high operating costs, space limitations, and an expensive, tightening labor pool, are becoming more apparent as its neighbours become viable alternative investment destinations. The Lion City has overcome challenges against conventional wisdom before and is vigorously engaged in tackling the present challenges.

Chemical Production Predicted Growth (2012-2020)

Source: American Chemistry Council

COUNTRY	CHANGE, 2012 -2020
North America	25%
United States	25%
Canada	27%
Mexico	28%
Latin America	33%
Brazil	35%
Other	31%
Western Europe	24%
Emerging Europe	35%
Africa & Middle East	40%
Asia Pacific	46%
Japan	22%
China	66%
India	59%
Australia	23%
Korea	35%
Singapore	35%
Other	44%

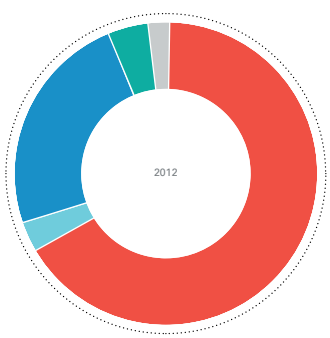
Average and Minimum Manufacturing Wages in ASEAN

Source: PwC

COUNTRY	AVERAGE WAGE (USD/MONTH)	MINIMUM WAGE (USD/MONTH)
Cambodia	101	43
Indonesia	182	132
Laos	45	64
Malaysia	666	N/A
Myanmar	N/A	17
Philippines	212	181
Singapore	1 639	N/A
Thailand	263	79
Vietnam	107	49

Imports and Local Production in Asia Pacific

Source: BASF, IHS Global Outlook



Other local producers	67%
Formosa Chemicals	3%
Imports	24%
Sinopec / PetroChina	4%
Mitsubishi Chemicals	2%

INTERVIEW WITH

Dato Andrew Ng

MANAGING DIRECTOR AND CEO
CHEMSTATIONASIA

Could you introduce Dovechem, as well as ChemStationAsia, the new company that you are transitioning into?

We are a global company with a presence in seven countries. We operate in four divisions: distribution, manufacturing, logistics, and storage terminals. The distribution business is our largest division – it contributes almost 80% of our $500 million turnover.

How has ChemStationAsia's operational strategy changed to respond to these new players in the market that come from a multinational distribution culture?

This is an open market and anyone can be in this industry as it has multi layers of sub-industries. However, I must say that this industry is mature and is increasingly challenging in view of product & service differentiation and cost advantage.

What are the advantages of being a Singaporean based company?

Singapore has first class infrastructure and a very efficient container port. Of course, we pay for it with some increased costs. We have kept our headquarters in Singapore because the government has been very supportive.

Jurong Island is another big focus. Jurong is quite a unique chemical hub because of its complete integration. Even the transfer of the raw material feedstock goes from pipeline to pipeline. A company like us, however, can pick up some of the smaller volume. I also see a lot of opportunities on Jurong that are beyond the scope of just our distribution business.

ChemstationAsia has plenty of assets outside of Singapore – are you moving away from the country? What factors have contributed to this shift?

I must clarify here. CSA since the day it started business has never owned sizeable assets in Singapore. It has always operated in other countries. Even when our Logistics Division was listed on SGX, its assets were in China – Shanghai and Shenzhen. Secondly, our products are raw materials to our customers and as such the bulk of our customers are not in Singapore. It was always in other countries as Singapore's economic direction is not in manufacturing but rather services. Therefore, it is good to set our HQ in Singapore as Singapore provides great infrastructures to facilitate an effective and efficient control.

Our level of commitment to this country has not changed. We are proud of the fact that our volume has not been significantly reduced over the past few years. Exports are strong, but the domestic market is shrinking – our customers are shifting production to other countries due to increased costs and the small size of the local market.

It is also noted that the local Singaporean labor market is also notoriously difficult to navigate. Workers generally do not want jobs that involve the "Three D's": difficult, dirty, and dangerous. Even at a very low level, finding the right people is extremely important to our business.

Some companies have expressed a desire to create a regional association of distributors who feel that the current channels of communication are ineffective. Do you share this sentiment?

Well, the commodity chemical industry is very fragmented and has a low entry barrier. The sizes of existing players vary greatly. It is therefore not an easy task to form an association for commodity chemicals distributors. If some companies have interest in forming a regional association, I would rather ask them to spend the time developing a commodity chemical exchange instead.

You have said that your goal is to transform the company from a trading company into a service company. What are your tangible targets and goals in this process?

2020 will be a very important year. We plan to have a presence in ten or more countries and to generate a turnover in excess of US$1 billion.

Our team is the most important part. This country has an aging problem. All of the very qualified and experienced people are retiring. Now I am searching for talent. I encourage our more experienced employees to stay on to mentor and train our younger employees so that we can develop internal talent and experience.

We may go public again with our Distribution Division, but I still say that this is the people's company – it is not just a family business. If the family gives the people more opportunities to contribute ideas to this platform, the entire company will benefit.

Right now the whole world is experiencing a difficult time in the chemicals market. We are writing a new book and I believe the key to a new success story lies in successfully redefining the role of the chemical distributor. These are very motivating and very exciting times. •

CHEMSTATIONASIA

Redefining the Role of Chemical Distributor in South East Asia

Established 53 years ago, ChemStationAsia is one of the largest privately held chemical stockists in the region and a premier formaldehyde resins producer in Malaysia and Vietnam. The ChemStationAsia manufacturing division constantly upgrades its technical capabilities to meet customers' requirements and expectations. Our own storage tanks, managed fleet of vehicles as well as various logistics services form a complete supply chain in the chemical industry.

Dato' Andrew, Group Managing Director and CEO of ChemStationAsia Group commented "We want to redefine the chemical distribution model through expansion and development of customised solutions. By working in close partnership with our stakeholders and guided by our core values 'Caring, Sincere and Ambitious', we will not compromise to deliver our best in all main areas of our busines. ChemStationAsia is a 'people first company' whereby our passion and commitment will drive us further into a future where fruits of our success are enjoyed by everyone."

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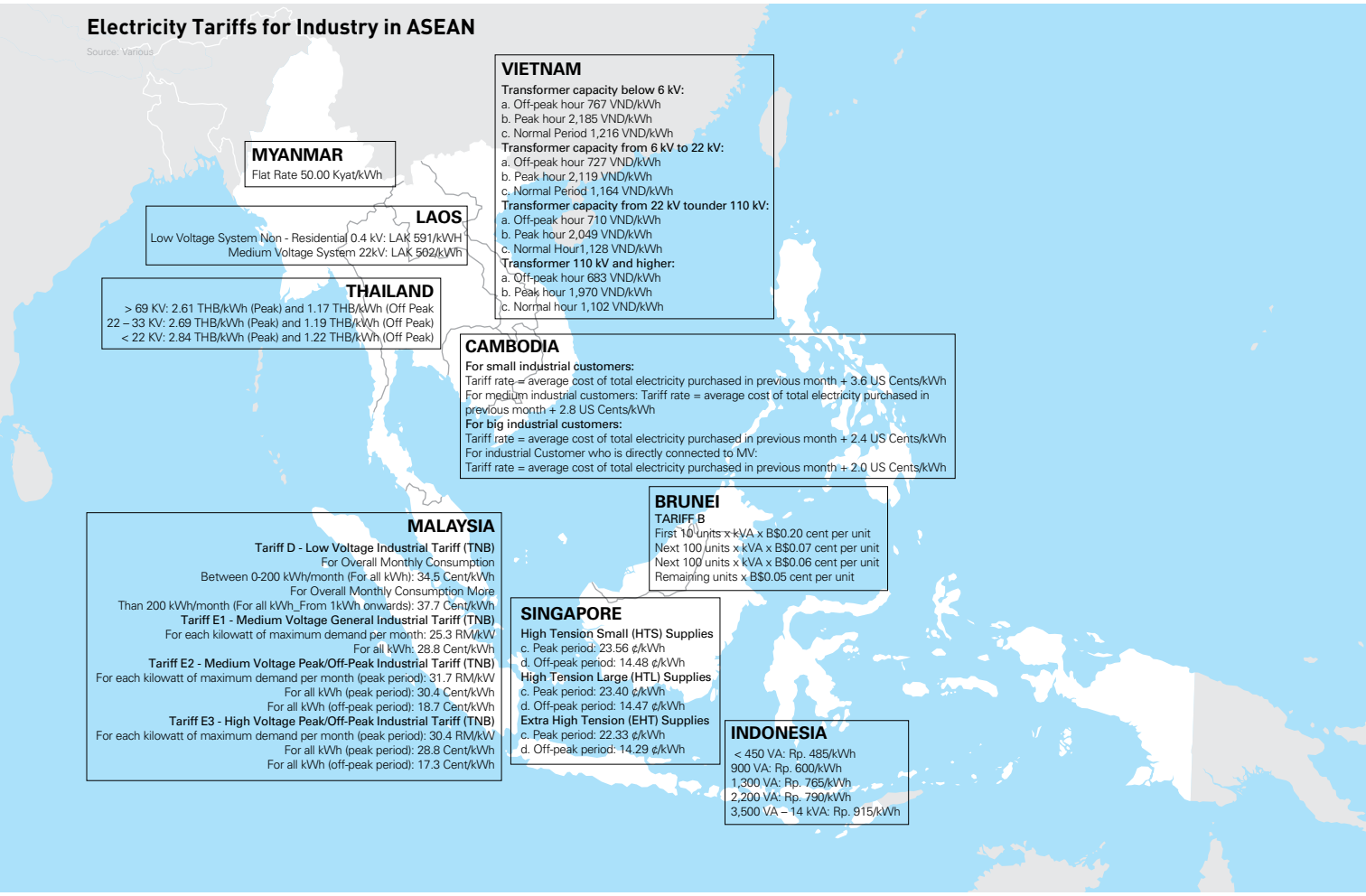
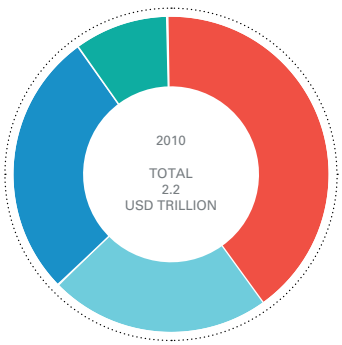
Electricity Tariffs for Industry in ASEAN

Source: Various

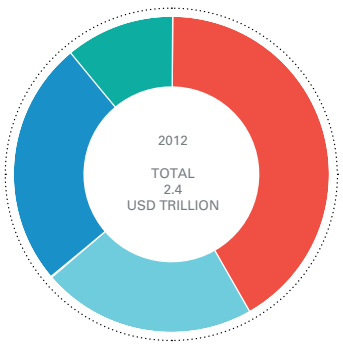


Chemical Production by Region (Excluding Pharmaceuticals)

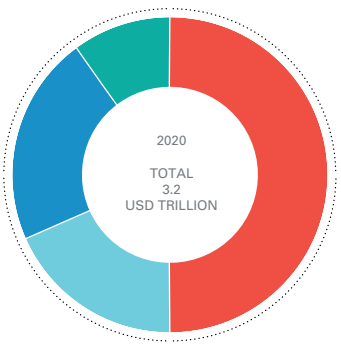
Source: BASF



Asia Pacific	40%
North America	23%
Europe	27%
Rest of World	10%



Asia Pacific	42%
North America	22%
Europe	25%
Rest of World	11%



Asia Pacific	50%
North America	19%
Europe	21%
Rest of World	10%

INTERVIEW WITH

Guy Bessent

MANAGING DIRECTOR
SASOL CHEMICALS PACIFIC

You have stated Asia will comprise 35% of chemical demand by 2020. How does Singapore play into Sasol's growth strategy?

Most of our volumes today go to north Asia – Japan, Korea and China. With GDP growth projections, we expect this to continue, although India is rising fast albeit from a low base. Singapore, however, still wins on ease of doing business; the only viable competitor is Hong Kong. For some companies it would make sense, but I would at this stage argue against putting Asian headquarters in China, for various reasons: people, tax, risk of change to policies, and the risk of becoming too China-centric. I like Singapore because, in addition to its legal framework and transparency, the country gives me a broader scope of the region – it is too small a place to fixate us. Hong Kong's closeness to China can influence strategy; Singapore's neutrality gives it an advantage. I, myself, became too focused on China after spending a decade there. When I moved here I suddenly noticed neighbouring Indonesia with its 240 million people, plus Vietnam, Myanmar, and India.

Many Asian markets lack the infrastructure for ISOtanks. How do you adapt your business model to deal with local factors like this?

Singapore is one of our three global shipping hubs, so for bulk shipments there are no problems. Storage occasionally becomes tight, but the EBD is smart enough to notice problems and tries to anticipate problems before they occur by planning ahead and addressing the supply situation. The surrounding countries, with their different degrees of maturity, have questionable infrastructure: there are few issues in Malaysia and Thailand, while Vietnam and Myanmar are toward the bottom of the scale. From a business perspective the main problems in Southeast Asia relate to credit risk, safety and compliance. We generally employ partners to sell our products in these countries. We are fully compliant and this is not a matter of washing our hands of the problems; our partners are experts in the locale and know how to manage individual countries. Rather than using multinational distributors as we would in Europe, here we have tended to partner with local companies.

You are also in charge of wax operations. Can you give us an overview of this business in the region?

Sasol Wax also works predominantly with distributors in this region. However, as the product is more of a specialty product, it is handled slightly differently. We focus more on application and the technical side of the product than we do with solvents, where volumes and efficient supply chains count and the scope for product application is fairly limited. Wax presents us with a good opportunity, simply because of the Asia-Pacific dynamics: a large population with growing disposable income and changing buying habits. We have no wax production in Southeast Asia, due to feedstock price differentials, which does mean we are negatively impacted by import duties, except in Singapore and Malaysia.

What is your vision for the future of your Asia-Pacific operation?

Sasol Wax is currently undergoing a billion dollar expansion in South Africa; much of the new capacity will reach Asia, where the demand is strong. Globally, we are one of only two producers of high grade Fischer-Tropsch wax product, for which consumption may grow by double the GDP rate per year in the Asia-Pacific region. Our other products will be capacity-constrained until new capacity is built. This is a bit of a problem in a high-growth region, so we are focusing on margins rather than volumes. As publicly announced, Sasol is divesting its Iranian polymers facilities, so polymer volumes coming into Asia will decrease. However Sasol is currently in the FEED stage for a world-scale ethane cracker in Louisiana in the U.S. Once this comes on stream, we will be able to supply polymers to the Asian market. We hope there will be a reduction in the " anti-foreigner" sentiment in Singapore, and support the approach of the government to balance open migration with the sentiment of the local Singaporean population. Sasol Chemicals Pacific expects to keep growing on the back of the Singapore Government's proactive policies, but we are admittedly concerned at the regulations regarding quotas on foreign talent. Fortunately we currently face few problems on the availability of talent and have fairly low staff turnover. •

INTERVIEW WITH

Mark Tinkler

COMMERCIAL DIRECTOR
FORTREC

Fortrec has a diverse service offering ranging from trading to plant optimization. Could you provide a brief overview of Fortrec for our readers?

First and foremost Fortrec is a home-grown Singaporean company. We have been in the business for 12 years now and have 11 offices worldwide. We are expanding around our hub of Singapore with our offices being predominantly in Asia , but we also have offices in Europe and South Africa. We are primarily a trading company, but our approach is a bit different as our philosophy centers around partners, not products. Our philosophy centers around the idea that when we bring together the various skills and expertise from two different companies both sides will inevitably become stronger and benefit. When you have this understanding, the product is almost secondary to this relationship.

What are some of the advantages of being located in Singapore? How would you characterize the local trading environment in the Singaporean market?

The advantages of being in Singapore come through various schemes and support from the government through tax incentives and government bodies like International Enterprise Singapore (IES). IES provides resources through trade delegations etc. to promote Singaporean companies in over twenty countries abroad. For Fortrec we could wait for business to come to us because Singapore is such a hub, but what we look at, with the support of IES, is sustaining our growth through creating business abroad. Whether this sustainability is achieved through trading, supply and distribution, acquiring assets or finance, it is essential for the company's future to have a global basis.

Competition is a natural part of the business and Singapore thrives on this making it the number one destination for commodity trading. Many reasons make Singapore attractive; from tax incentives to strong intellectual property rights to an aggressive banking sector made up of both Asian and Western banks. The aggressive nature of the banking sector is not just limited to the Western banks either; many of the Asian banks have increased their service offerings for trade financing.

As Singapore's neighbours Malaysia and Indonesia are looking to become more engaged in chemical manufacturing, what are the implications for Singapore?

If you take these three countries [Malaysia, Indonesia, and Singapore], one element of the three is very established in terms of its market reputation [Singapore]. Then you have two others with geopolitical, financial, and infrastructure issues. Indonesia is a challenge in terms of distribution across the Islands with its population of 250 million and huge demand for imports of gasoline and other fuels. From a trader's point of view, we would not like to see every market on the same level because we are looking to take advantage of differences in logistics, risks and infrastructure. Fundamentally these are three different markets and I do not see there being a more integrated, level production-base amongst these countries in the near future. Singapore will continue to lead and flourish as these new markets look to increase their production capacity.

From your perspective as a trader, how does the availability of shale gas in the United States impact Asian markets?

There are going to be pros and cons [to shale gas in the United States] and we will still have to see how things develop. Many of the Midwest producers in the United States are gearing themselves towards China. China is projected

to meet only 50% of its demand through domestic production by 2020, so there is still a huge supply base present in China that the US can service. Yet, over the next five to 10 years, China is looking towards coal to olefins production to become more self-sufficient in this area and there are also significant reserves of shale gas within China, although as yet, it is not clear how practical or cost effective it will be to exploit those reserves. Another issue is that, in Asia, butadiene demand is very big; the growing market for rubber in car tires is fueling this demand but shale derived ethane is not a good producer of butadiene (C4) compared to traditional naphtha based feedstock. As such Asian refineries may shift more towards higher value butadiene, whereas the refineries in the United States are going to be focused on other polymers derived from gas ethane [to potentially export to Asia]. In addition, looking at this as specialists in aromatics, we do not see such an impact from shale gas as it not a viable alternative to Naphtha based feedstocks.

Could you provide a brief overview of your venture in China?

Fortrec has a joint-venture with a local partner, Hualun, at an aromatic solvents plant in Jiangsu, China. The capacity at the plant is currently 425,000 mt/y and services the domestic market. However, we have a goal for the plant to export product as well. A top priority for us is finding the heavy aromatic feedstock for this plant. As plants upgrade their production technology the available feedstock we need reduces in volume. We are looking to become more involved in other sustainable, long-term, asset-based projects to compensate for this reduction.

Besides optimizing your plant in China, what do you see as your key priorities for Fortrec over the next three to five years?

We want to continue our trading activities, but we recognize that needs to involve some more asset-based projects abroad in order to trade around and sustain our business. We are a homegrown company, but we also have a global approach to the business with a specific focus on the southern hemisphere. We are building a storage facility in Malaysia for petrochemical distribution into the region, which may have some opportunities to synergize with the Singaporean market. In Vietnam, we are working with a refinery that produces an aromatic rich, high-grade reformate product. Our column, next to their plant, will extract the aromatics for use in our own solvent production facility in China. In Sri Lanka, we are building a storage facility based on infrastructure left from British installments used in World War II. Sri Lanka is an interesting opportunity given its unique geographic location as a crossover between Asia, Africa, and the Middle East. From a cost optimization point of view, we believe Sri Lanka is the ideal location to bring bulk products from the Middle East and break them up into smaller parcels for distribution in Southeast Asia such as Vietnam and Bangladesh. We are also looking into other projects in places such as Saudi Arabia and Madagascar. •

INTERVIEW WITH

Gina C. Fyffe

EXECUTIVE DIRECTOR
INTEGRA PETROCHEMICALS PTE. LTD

How has Integra transitioned from a European-based to a Singaporean-based company?

When Integra was founded in 1989 it was a European based company, but we were never confined to one region. Integra opened its first US office around 1990, having set up operations in Bejing and Seoul just before that. However, many of our core beliefs – staff retention and ongoing training and staff welfare, as well as local philanthropy – have remained quite Eurocentric.

15 or 20 years ago the product flow in the Southeast Asian market became much more active and interesting, from a trading point of view, with crackers built in Thailand and Singapore, petrochemical developments in Malaysia and imports of petrochemical gases in the Philippines following one after the other. South East Asia as a region became too big to be managed from Europe or China and Korea. A regional hub in Singapore represented the opportunity for further growth in Southeast Asia – you have to be here to feel it and engage with the clients every day in their own time zones. At the same time we were working toward a more efficient way of managing our business, and liked the idea of a global hub where we could centralize all paperwork, financing and accounting and general back office operations, leaving the other offices free to concentrate on operations and marketing. We decided therefore to move everything to Singapore.

It has been a great success for us and we now see other companies doing the same thing.

Asia represents approximately 40% of your sales. How has it grown in importance, and how do you envisage this changing in future?

Integra has been both a local and global company for a very long time; and it somehow seems right that we decided to choose a globally focused city like Singapore as our headquarters.

We see Southeast Asia as a very interesting place for the next 10 years. There is talk about new crackers in Indonesia; Petronas's RAPID project is gearing up to be built just across the causeway; Singapore is still developing with the the Jurong 2.0 project and has the new LNG caverns. There will be a petrochemical triangle in Southeast Asia. Integra is ideally situated here to benefit from it and share that knowledge and expertise with customers in other parts of the world.

What do you regard as Singapore's role in this petrochemical triangle, and what are its implications for the future?

It is difficult to see yet exactly how the product flows will work and the petrochemical triangle will all fit together since the different plant announcements are just beginning to come out to the public. The RAPID project and the Indonesian developments are both in their very early stages. Singapore, however, has its LNG terminal and storage, and a great facility for trade and taking opportunities. It also has an good people skill sets and a very proactive and easy to access support from the government bodies. People have been attracted across the border to work in Singapore, and now there is the possibility they will be re-exported to head up and join the new projects. There will be a transfer of knowledge and increases in regional employment opportunities and trade. With Singapore's crackers and downstream industries, product will be moving back and forward between the countries. Some of Singapore's exports will go to Indonesia, while some of its imports might come in from Malaysia. It will be wonderful opportunity for transportation companies and shipping.

Nothing as exciting as this petrochemical triangle has been seen since the Korean developments 20-plus years ago. Eventually countries like Vietnam and the Philippines will enter the

game. It will be interesting to see what Thailand does – it has an enormous amount of experience, and I expect to see it partnering with Malaysia or Indonesia and moving outside of its borders into the surrounding countries, and perhaps moving toward more specialties as well as refining and bulk petrochemicals. Korea, Japan and Taiwan are very focused on the north today, but I expect them to move south too. The Koreans are very creative and inventive, so it will be interesting to see how they take advantage of developments, having already purchased some plants in the triangle

With the shale gas developments in the US, could supply chains become more localized, and what are the consequences for Asia?

The US has a once-in-a-50-or-100-year energy opportunity – it is really exciting. If the government and population are willing, the country should be able to reindustrialize. Some contracts have already been signed for US propane, and these are just the tip of the iceberg. Shale gas is going to be a game-changer in many different ways, although no-one understands exactly how it will influence product flows. It will make the USA a raw material exporter as well as a much more competitive region for plastics and related product production. Logistics is the biggest concern. The US is not known for having the best logistical network in or out, but it is now considering new pipelines, terminals and facilities.

Integra prioritizes long term partnerships over short term opportunities. How are you positioning your business in Southeast Asia?

Integra has an interesting skill set and is present in all the world's petrochemical regions. We are looking now and building partnerships with some small, private European and Middle Eastern firms interested in Asia. People have been too quick to write Europe off, but to survive its businesses must look to markets in the rest of the world; if so, Integra can be a long term partner for some, either through joint ventures, long term contract or acquisitions. We are looking more and more into the logistics and supply hub part of our business, because we are fascinated by shipping and how it pulls all the trading and marketing opportunities together and we already do a lot of that type of business and see a big potential to do more.

What would you like to accomplish for Integra in the next three to five years?

I would like to see us develop further in the Middle East and India and increase our presence in the US and Canada. We are looking at strengthening our supply chain facility. •

Enhancing Singapore's Regional Identity

Enhancing Singapore's Regional Identity

In the post independence era, Singapore has successfully leveraged its geographic position and crystallized its position as a center of global trade. However, as supply chains constantly evolve and new opportunities emerge, Singapore must continue leveraging its position in order to drive economic growth. In 2010 the city-state was dealt a symbolic blow as Shanghai eclipsed Singapore as the world's busiest port by cargo tonnage. Nevertheless, Singapore remains the world's busiest port in terms of transshipments. As Southeast Asia experiences rapid economic growth and increased affluence, Singapore will be an integral nerve center for global and local distribution, trading and logistics companies exploiting these markets.

As a founding member of the 10-nation Association of Southeast Asian Nations (ASEAN), Singapore has been a supporter of increased regional integration. In 2007, the member nations created a blueprint to form the ASEAN Economic Community, AEC, with the goal of creating a regional free trade area by 2015. The Asian Free Trade Area (AFTA) will definitely be a boon to the logistics and distribution companies in the region that already are seeing increased regional activity as economies continue to grow at some of the fastest paces in the world.

Fritz Graf von der Schulenburg, executive vice chairman of Jebsen & Jessen, sees the relative scale of Southeast Asia's growth as an immense opportunity as economic integration occurs: "With a population of over 600 million people and sustained regional GDP growth of five to seven percent per year, ASEAN is on the way to becoming the largest integrated market in the world. We have an intra-trade volume within Asia of $2.9 trillion, which is larger than the total exports in the European Union today."

Although some countries, such as the Philippines, have warned they may not be ready for AFTA by 2015, the plan appears to be moving ahead near schedule. The formation of AFTA will help increase pan-Asian trade as countries such as China, India, New Zealand, Japan, South Korea and Australia have all expressed interest in signing FTAs with the association. "I am not sure if ASEAN will be fully integrated by the 2015 deadline, yet the targets are established and the road map is set, which gives me confidence we are moving in the right direction," says Graff.

Gina Fyffe of Integra envisages this coordination as an unparalleled basis for new linkages between the chemical industries of Asian nations. It is still too early to see whether or not these linkages come to full fruition, yet the potential is certainly apparent and the opportunities for logistics, distribution, and trading firms are vast: "Nothing as exciting as this petrochemical triangle has been seen since the Korean developments 20 plus years ago. Eventually countries like Vietnam and the Philippines will enter the game. It will be interesting to see what Thailand does – it has an enormous amount of experience, and I expect to see it partnering with Malaysia or Indonesia and moving outside of its borders into the surrounding countries, and perhaps moving toward more specialties as well as refining and bulk petrochemicals. Korea, Japan and Taiwan are very focused on the north today, but I expect them to move south too. The Koreans are very creative and inventive, so it will be interesting to see how they take advantage of developments, having already purchased some plants in the triangle."

In this light, Jebsen and Jessen, a Singapore-an-based diversified business group, has set ambitious targets for growth. In 2010, the group launched its Double in Five Strategy to double its net profits before taxes in five years. As part of this strategy, the company has grown its chemicals distribution business both through organic means and acquisitions. "I believe such a strategy can only be accomplished in Asia, given the current economic climates in other markets such as Europe," comments Fitz Graf von der Schulenburg.

German-based global distribution heavyweight Brenntag was largely absent during the early 2000s as Asia became a focal point for the global chemicals industry. Since 2008 the company has changed tack and aggressively expanded in Asia Pacific. After its acquisition of Rhodia, the company made its presence felt through acquiring the Danish East Asiatic Company in 2010. Currently, Brenntag has 44 logistics sites in the Asia Pacific region and recently completed a new regional operations hub in Singapore as a new base of operations. Despite only being present in Asia for five years, the company achieved €750 million ($975 million) in turnover in Asia Pacific last year. "We are experiencing healthy growth throughout the region, and we are currently in the process of integrating and consolidating our new networks," explains Henri Nejade, president and CEO of Brenntag Asia Pacific.

In the wake of the company's IPO in 2010, Brenntag sees expanding its already impressive footprint in Asia as key to the company's continued success globally. "For the future, we are actively seeking full product lines for distribution to our existing customers in the region. Part of our strategy since becoming public is to expand our geographical presence. This approach involves matching the appropriate supply to better suit emerging markets, whose needs are quite distinct from one another," says Nejade.

As Asian markets continue to show sustained economic growth, companies will use Singapore as a strategic base. Henning Malm-

gren, chief commercial officer of DAMCO Asia Pacific, believes Singapore's role as an executive hub will not be compromised even as production capacity grows in other markets: "Southeast Asia is the region in which DAMCO sees great potential for our clients; a growing middle class in Indonesia, the Philippines and Vietnam is driving greater movements of goods within ASEAN. In the context of chemicals, production may be moving to China, but decision-making power for the region remains in Singapore."

DAMCO, a subsidiary of shipping giant AP Moller-MAERSK, sees its Singapore-based control towers as a key for the company's operations in Southeast Asia. These control towers centralize information and allow customers to control shipments and specific goods. "A supply chain should not be a necessary evil in doing business, but a strategic weapon that our clients can use to beat the competition and improve their service offering to the end-customer," says Malmgren.

Along the same lines, Dato Andrew Ng, managing director and CEO of ChemstationAsia (formerly known as Dovechem) believes Singapore's reputation is becoming increasingly based on its decision-making capabilities and less so on its production capacity: "Singapore's economic direction is not in manufacturing but rather services. Therefore, it is good to set our headquarters in Singapore as Singapore provides great infrastructures to facilitate an effective and efficient control. Our level of commitment to this country has not changed. Exports are strong, but the domestic market is shrinking – our customers are shifting production to other countries due to increased costs and the small size of the local market."

Singapore has not grown into a world-class logistics, distribution, and trading hub through geographic default. Like most aspects that give the country high rankings in business environment surveys, Singapore's infrastructure and import/export regulations are second to none. In May 2013, Singapore's port won "Best Seaport in Asia" at the Asian Freight and Supply Chain Awards (AFSCA) for an unprecedented 25th time whilst Changi International Airport was named the best airport in the world by World Airport Awards. Richard Strollo, managing director for South Asia at BDP International remarks: "The Singapore government is always looking at ways to improve the infrastructure and transportation network, be it airports, roadways or ports."

The arrival of Singapore's export-focused chemicals industry over the last three decades has lead to a shifting distribution landscape within the domestic market. Nicholas Lim, managing director of locally-based Unilite explains the shift in the industry since his company's founding 35 years ago: "Singapore was what I would consider a small, more traditional chemicals manufacturing market that one would expect to find in a developing country. At this time the government was encouraging smaller industrial developments with a concentration on sectors such as paints, coatings and inks. However, over the last decade the government has focused on making Singapore a petrochemicals hub for high value products. Due to cost increases as the country developed, especially in land costs, the smaller manufacturing companies are being phased out. Thus trading companies who had begun supplying to more traditional industries have had to evolve accordingly to the market in terms of

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INTERVIEW WITH

Nicholas Lim

MANAGING DIRECTOR
UNILITE CHEMICALS

Could you provide us with a brief introduction to Unilite Chemicals?

Unilite is a Singapore-based distribution company that has been on the local market for 35 years. Founded by my father, we are a family company. We mainly represent mid-sized, overseas principals, primarily from the United States and Japan through our three divisions: food, industrial, and water. We considered Unilite a semi-specialty chemicals distributor to niche markets that fall between bulk commodity chemicals and more technically oriented specialty chemicals. Given our market, our customers demand high quality goods and a certain degree of expertise in product knowledge compared to a commodity distributor.

As a locally based company, approximately 60% of our turnover remains in the Singaporean market, with 40% of our turnover coming from exports. We are a smaller, nimble company compared to many of the multinationals in the industry. In distribution, this is very critical because we can make decisions on prices quickly and have more leeway in setting price than a large distributor whose prices are set by corporate headquarters.

Some of the manufacturers we have seen have made it an objective to integrate their distribution networks as a way to cut costs. Do you think this a broader trend in the industry and what are its implications?

This is a trend that is more prevalent amongst larger players, such as the petrochemical giants on Jurong Island. These companies do not necessarily want to create their own logistics and distribution departments in house, rather they are looking to consolidate and streamline their networks. This means they want to outsource to fewer distributors and logistics companies. Thus, there is demand for distributors and logistics companies to source and transport a larger array of products.

For Unilite, we are primarily working with manufacturers, who do not find an economy of scale to outsource their logistics. Many prefer the flexibility that Unilite can provide over storage, sourcing and distribution.

Singapore is a major hub for multinational chemicals companies, however what do you see as the role of SMEs in Singapore and what is the key for Unilite to compete as a SME?

When Unilite entered the market 35 years ago, Singapore was what I would consider a small, more traditional chemicals manufacturing market that one would expect to find in a developing country. At this time the government was encouraging smaller industrial developments with a concentration on sectors such as paints, coatings, and inks. However, over the last decade the government has focused on making Singapore a petrochemicals hub for high value products. Due to cost increases as the country developed, especially in land costs, the smaller manufacturing companies are being phased out. Thus trading companies who had begun supplying to more traditional industries have had to evolve accordingly to the market in terms of their product offerings. Thus, the ability to adapt and look for new products or new principals has become part of our ethos as a company because we have had to evolve with the nature of the industry in Singapore. Over the last 35 years I can say that our product mix has changed quite a lot.

What are some of your near term objectives?

We have a warehouse and office in Malaysia, which we see as the key to our growth potential. The planned high-speed rail link between Singapore and Malaysia makes it an attractive market. Singapore is getting expensive as a manufacturing base. If Singapore and Malaysia can integrate into a common market, then we may see a restructuring of manufacturing bases along this [rail] corridor. The huge industries may still locate in the major cities, but the auxiliary services may be located outside. We have to be ready when this happens.

Unfortunately we see a continued decrease in traditional chemicals manufacturing activity here in Singapore, thus we have to continue to look at new industries or manufacturers in order to fuel any domestic growth. Many of our local competitors have had to exit the market because they were unable to adapt quickly enough to the changing environment. We are looking to find avenues for diversification and we have to channel our profits towards new businesses or a manufacturing partnership in order to stay competitive. As some of our larger competitors have become more integrated, we are looking at them to find new ways to improve our capabilities while retaining the small, nimble nature of the company. •

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their product offerings."

Unilite has established an office in Malaysia in order to take advantage of increased synergies between the two countries. "The planned high-speed rail link between Singapore and Malaysia makes it an attractive market. Singapore is getting expensive as a manufacturing base. If Singapore and Malaysia can integrate into a common market, then we may see a restructuring of manufacturing bases along this [rail] corridor. The huge industries may still be located in the major cities but the auxiliary services may be located outside. We have to be ready when this happens," says Unilte's managing director Nicholas Lim.

Singapore's EPCs and distributors are generally in agreement that business is picking up in Singapore compared to a couple of years ago, yet the degree of excitement in the local market varies. For many local companies, regional growth prospects for the medium term are best beyond Singapore's shores. "Quite frankly, many big industrial projects in Singapore are now coming to an end, and companies are expanding more in other countries. Business in Singapore looks very tough: any new projects will face high costs, and new entrants into the industry may not realize quite how competitive it has become" says Alvin Leong, managing director of W H Marathon.

Robert Dompeling of PEC echoes Leong's sentiment on investment in Singapore and its impact on the construction sector: "I think capital will shift from Singapore to Malaysia and Indonesia. The multinationals will continue to invest here [Singapore] in downstream and specialty chemicals, but not refineries. Singapore is a small country and you have to wonder how much more land can be made available for this industry."

Singaporean-based companies are well positioned to take advantage of this growth abroad. As multinational operators expand in new markets, they will look for companies they are familiar with and with whom they have built relationships. Singaporean service providers have evolved to the standards multinational companies demand over decades of experience.

Credit not only belongs to multinational corporations, but also to the Singaporean government. During his storied tenure as prime minister, Lee Kwan Yew successfully created a bureaucratic culture that is both incorruptible and highly competent. This ensures corners are not cut and the highest regulatory standards are met in a timely fashion. According to Transparency International's Corruption Perception Index 2012, Singapore ranks as the fifth least corrupt country in the world. Only two other countries in ASEAN, Brunei (46th) and Malaysia (51st), rank in the top 100. As Singaporean companies expand regionally, they have the obligation to export their high standards to markets where corruption and poor regulatory regimes remain prevalent issues. Wilson K. L. Tan, chairman and CEO of locally based distributor Planet Asia, believes that the image Singaporean companies have developed has helped his company secure business abroad and is an utmost principle that Singapore must diligently maintain: "Brought up in an environment of a progressive and ethical management style of our government, Singaporean companies like Planet Asia take a no nonsense approach to rules and regulation both at home and abroad. In this day and age people use the term integrity in a vey loose manner, but integrity is becoming a

"We have seen in Europe, North America and South America a consolidation of the chemicals distribution industry. This is being driven by the regulatory requirements and, to a lesser extent, consolidation in chemicals manufacturing. The cost to adhere to regulatory demands are not small and are going to become more difficult as programs like REACH are used as a global model. We believe this trend will be a game-changer in Asia, as rising regulatory costs will cause consolidation here as well. With that said, Connell Brothers is well positioned to manage these regulatory changes given our financial strength and experience in North America."

- E. Scott Graddy, Vice President, Connell Bros.

"A decade ago, expanding Katoen Natie outside Europe was considered complimentary to our Europe operations. Now it is a necessity. Our growth is outside of Europe as the market consolidates as a result of the crisis. The United States, Latin America, Singapore and Thailand represent a new wave of focus for us. In Singapore and Thailand we have more than doubled our operations in the last three years."

- Koen Cardon, CEO, Katoen Natie Singapore

"We are orienting ourselves towards Asia everyday. We started small in Singapore and have expanded our network. Today, Asia represents about 30% of Eurotainer's global business... Singapore is an important part of our business as approximately 1/3 of our Asia business comes out of Singapore representing approximately 2000 tanks."

- Claus Ringgaard, General Manager Asia Pacific, Eurotainer Asia

"The gas shipping industry in Asia will grow on the VLGC (very large gas carrier) side because of the developments of shale gas exports in the United States. Shipping LNG from the United States and from multimillion mt exports from the Middle East will result in an increased reliance on larger ships being used. Furthermore, 15 years ago there were only two deepwater ports in China, now large ships can go virtually anywhere in Asia. The 10,000 DWT to 12,000 DWT ships used to dominate the Middle East to Southeast Asia route and the 10,000 DWT ships went from Southeast Asia to northern Asia, now you have the 20,000 DWT ships doing these routes. The volume, size and quality of ships have all increased. We have also seen more ship owners across the shipping value chain from Japan, Korea, Australia, and India come to Singapore due to a targeted, favorable tax regime."

- Mark Mirosevic-Sorgo, Managing Director, Braemar Quincannon Singapore

very rare commodity. People tend to want to take shortcuts to get ahead, but Singaporean companies have been successful in upholding their integrity abroad. For this reason, we notice that many countries do accord recognition of the Singapore branding and reputation for reliability and professionalism, making it much easier for us to close deals."

Tiong Woon, a "local boy" specializing in heavy lift operations is one such company that has symbiotically developed its standards over the last 35 years with the help and assistance of multinationals and is now developing its market both at home and abroad. "The impetus behind this decision [to expand the company's offering in 2005] really speaks to how Singapore has developed its worldwide brand. For example, when Tiong Woon began its operations, safety regimes were almost non-existent until the Ministry of Manpower and the multinational refining companies really took steps to rapidly improve the safety culture," says Michael Ang, chief operating officer of Tiong Woon.

For Tiong Woon, multinational companies not only brought standards with them, but also brought new business strategies. Michael Ang credits emulating these companies as the key to Tiong Woon's growth from a crane rental company to a fully integrated heavy lift specialist with revenues over S$150 million ($120 million). "During the same time as multinational companies invested and brought new standards with them, we looked at what the multinational crane companies were doing and saw them winning some additional businesses through lead engineering. As a result, we moved into the engineering field as well in order to integrate ourselves with what our customers need and add value to our company," says Ang.

The other component Singaporean companies can export to countries with expanding petrochemical industries is their know-how. Although, attracting and retaining lower skilled or less experienced talent is a challenge in Singapore, EPCs have a dearth of experienced workers that are extremely valuable, especially in markets abroad where there is an acute shortage of expertise. "Singapore's vastly experienced skilled labor pool – especially at top and middle management levels – definitely gives companies here an advantage when entering the neighbouring markets," says Alvin Leong, managing director of W H Marathon.

For multinational companies, Singapore's expertise and business environment offers the strongest base in Asia. Eugene Leong of the EDB comments: "As markets in Asia become increasingly important for companies around the world, we see Singapore as a Home for Business, a place from which companies can orchestrate their activities within the region, both in terms of strategic planning and execution."

When compared to Hong Kong or Shanghai, many executives prefer having a regional headquarters or complementary base of operations in Singapore to being solely based in China. Many believe APAC headquarters based in China tend to become too Sino-focused and fail to recognize the region's vast diversity and potential. As China's rapid, double-digit GDP growth appears to have cooled off, ASEAN markets are viewed as increasingly important growth markets by corporate boards. Thus, those companies that have taken a less China-centric approach stand to gain.

South Africa's Sasol is an example of that has taken the approach of basing its Asia Pacific operations out of Singapore; despite the fact northern Asian countries (Japan, China, and Korea) are their largest markets in the region. Guy Bessant, managing director of Sasol Chemicals Pacific, explains: "Singapore… still wins on ease of doing business; the only viable competitor is Hong Kong. For some companies it would make sense, but I would at this stage argue against putting Asian headquarters in China, for various reasons: people, tax, risk of change to policies, and the risk of becoming too China-centric. I like Singapore because, in addition to its legal framework and transparency, the country gives me a broader scope of the region – it is too small a place to fixate us. Hong Kong's closeness to China can influence strategy; Singapore's neutrality gives it an advantage.

Sumitomo, one of Singapore's largest players, sees Singapore's small size as an advantage because there is little worry of balancing the needs of domestic and foreign markets. "Singapore is such a small country that we can focus almost solely on using it as a base for supplying external markets, so it serves as a convenient hub from where we can serve anywhere in Asia," according to Hiroki Sakasai, former managing director of Sumitomo's Head Corporate Branch, SEA & Pacific.

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INTERVIEW WITH

Henning Malmgren & Götz von Dresky

HM: CHIEF COMMERCIAL OFFICER;
GD: HEAD OF CHEMICAL LOGISTICS
DAMCO ASIA PACIFIC

Can you briefly introduce DAMCO to our readers?

HM: DAMCO is an independent company within the AP Moller – Maersk Group, which includes other major energy, logistics and shipping subsidiaries such as Maersk Tankers, Maersk Oil, Maersk Drilling, Maersk Supply Services, Maersk Line and APM Terminals. We are engaged in logistics services and supply chain management; and chemicals are one of our focused verticals where we are actively growing our business. DAMCO's traditional vertical markets are in the retail, fashion, consumer goods, mining, industrial, technology and lifestyle industries. Today, DAMCO is all about emerging markets; of our 10,000 employees, over 70% of them are employed in an emerging market. However, DAMCO recently acquired PacNet to expand its footprint in Australia, where we consider ourselves as one of the market leaders in terms of providing chemical logistics solutions.

What role does DAMCO's Singapore office play in its overall operations, and what are the benefits of doing business here?

GD: As our customers are in need of end-to-end solutions, they need to have a nerve centre for their operations and supply chains. Singapore is very well suited to the function of managing complex regional supply chains. For example, Singapore has a strong and diverse workforce with many language skills.

In terms of logistics, what are some of the new trends currently taking place in Singapore and South East Asia's chemical industry?

HM: Increasingly, chemical companies are looking for solutions not only to their basic transportation needs, but also in managing their overall supply-chains; they are beginning to see supply-chains as supply-chains. Companies are re-thinking the ways in which they operate to find more efficient ways to bring their products to market and thus grow their business. It is this area in which DAMCO has made the most inroads into the sector.

GD: To cite an example, DAMCO recently concluded a contract with a global manufacturer whose supply chain in the region was seriously fragmented from India to Japan, with no centralized control. The solution we nowadays provide for this customer is a control tower from which they are managing every shipment that originates in Asia to the rest of the world, with our local offices lending support in every step to this end-to-end process.

HM: DAMCO's control towers enable our clients to isolate, pinpoint, track and control specific goods and shipments in a timely and precise manner; it is the one place where a company can find all the information it needs to manage and optimize its supply-chain. DAMCO believes that a supply chain should not be a necessary evil in doing business, but a strategic weapon that our clients can use to beat the competition and improve their service offering to the end-customer.

Companies increasingly focus on price when managing their logistics: where can the added value of supply chain management (SCM) solutions trump the lowest bidder?

HM: Where DAMCO and our SCM solutions have an advantage versus a cheaper local logistics provider is in our ability to cater to multinationals. For example, local logistics companies do not sufficiently emphasize the importance of Health, Safety, and Environmental (HSSE) protections in their services. For MNCs with shareholders and a public image to maintain, HSSE compliance is very important. DAMCO spends the appropriate amount of time obtaining certifications, training, licensing and adhering to safety measures. As a part of AP Moller – Maersk Group, and with our experience with REACH in Europe and regulatory frameworks elsewhere, HSSE considerations are nothing new for DAMCO: we come from a company that specializes in safety and we formalize our knowledge and experience into our solutions.

Can you share DAMCO's objectives for its operations in Singapore and South East Asia?

HM: DAMCO's focus is pinpoint-sharp; we do not scatter our shots over a wide area. Based on our experience and unique skillset, we are targeting new clients in chemicals and other industries that we feel would have the most to gain from a new partnership; large MNCs with a global reach. We are identifying companies who have made a conscious decision to change how they handle their supply chains for the better. In furnishing our solutions, DAMCO wants to be a part of the strategic decision-making process of our clients in the chemicals industry; this is a solid basis for fruitful long-term business relationships. •

Courtesy of Eco Special Waste Manahhement

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Huntsman is one such multinational that sees Singapore as a key component of its regional strategy moving forward. "Five years ago the best opportunities were in China and India, and we have now penetrated these countries to a great extent. Huntsman Performance Products has given a lower priority to ASEAN up to now due to available resources, but some of the countries in it have faster growth than China and India, so the division is looking very seriously at the ASEAN region now." comments Albert Decelis vice-president APAC at Huntsman Performance Products.

Huntsman has been manufacturing its JEFFAMINE polyetheramines product line in Singpaore since 2007 and is considering an additional $70 million investment on its Jurong Island site. "Huntsman has only used about two of the ten hectares of land it has access to at Jurong [Island]; our next expansion will take us to about five, so we need to think seriously about what to do with the rest. We have not developed them yet because of market volatility, but the global economy is now starting to pick up," comments Decelis.

Multinationals see Singapore as not only a manufacturing and distribution hub, but also a strong base for their research and development efforts. British specialty chemical manufacturer Croda has made its R&D efforts a "key focus" for its regional headquarters in Singapore according to managing director Arthur Knox: "Innovation is one of Croda's key goals in Asia and Singapore is one of our key hubs for innovation in the world. Our goal is to provide innovative ingredients developed, manufactured and tested in Asia to meet our customer's needs in Asia."

Along the same lines, Dow's Singapore-based R&D efforts are largely focused around delivering solutions for the ASEAN market. "Southeast Asia needs different solutions [than China], and our model works well because Singapore is so well connected to these markets – even up and coming countries like Myanmar and Cambodia can easily be served from here. Cleaning in China, for example, is not the same as cleaning in Indonesia; climate and habits are different. Similarly, varying levels of humidity affect the durability of paints and coatings," explains Suiniaty Basirun, country manager for Singapore at Dow Chemical Pacific.

Tailoring solutions for specific markets and climactic conditions is a key component to achieve valuable market share and brand-reputation with an emerging consumer class in ASEAN countries. Reaching these new consumers will take tailoring solutions as well, Asian consumers are particularly discerning of the brands they choose. •

INTERVIEW WITH

Henri Nejade

PRESIDENT & CEO
BRENNTAG ASIA PACIFIC PTE LTD

Can you provide a brief introduction to Brenntag Asia Pacific since its acquisition of its first distribution network from Rhodia Singapore in 2008?

Brenntag officially opened its doors in Asia in October of 2008 via the acquisition of Rhodia distribution network in South East Asia. At that time, Rhodia's business was 150 people strong and had a distribution sales €35 million per year. By 2010, Brenntag completed a further acquisition of the East Asiatic Company (EAC), a Danish distributor that was approximately eight times larger than Brenntag Asia Pacific at that time. Most recently, Brenntag acquired the Chinese company Zhong Yung and International Sales & Marketing (ISM)'s specialty chemicals group in Australia. After only four years, Brenntag now has total staff strength of 1,500 people, with over 600 staff devoted primarily to sales and marketing and a turnover of nearly €700 million in 2012 in Asia Pacific (APAC). Brenntag's expansion is not only being achieved by M&A, but also by organic means: we are experiencing healthy growth throughout the region, and we are currently in the process of integrating and consolidating our new networks.

As a distributor, how can one leverage the advantages of Singapore to facilitate one's business in APAC?

Singapore offers stability, a large logistics hub, a major financial center, a favorable business environment; and Singapore is a longstanding home for many of our chemical customers. As far as Brenntag is concerned, we are members of the SCIC, the Singaporean association that represents the chemical industry and oversees the Responsible Care program. If we were to be in want of anything, it would simply be a distribution-oriented regional association to pool our collective capabilities, much like the National Association of Chemical Distributors in the US.

For a supplier looking to enter new markets with a preferred partner, what does Brenntag's service offering consist of in Asia in contrast to its traditional network?

Typically, conducting distribution in emerging markets involves a mixture of agencies, traders, distributors and others. Brenntag's approach for Asia is to serve both the supplier and customer concomitantly. First and foremost, Brenntag is one of the leading investors in building health, safety, and environmental (HSE) compliance in terms of distribution; we are huge proponents of the responsible care program, for example. This is not a surprise, in as much as Brenntag leads the industry in HSE capacity throughout the globe.

For suppliers in Asia, Brenntag develops existing channels or makes new inroads for clients looking to enter or expand within the region. In Asia Pacific, Brenntag serves different business units such as food, cleaning, coatings, home and personal care, pharmaceutical, water treatment, industrial and specialty chemicals. Our regional marketing team develops product lines on behalf of our principals, and our local sales teams provide direct connections to customers. Furthermore, Brenntag is also engaged in packaging and technical support through our 19 applications laboratories; these facilities add value for customers of modest size who do not have screening or testing capabilities in the region.

Can you outline Brenntag's network and supply chain capabilities in the Asia Pacific?

In Asia Pacific, Brenntag has more than 50 sites in 14 countries in order to meet the demand of our 11,000 customers. Depending on the country, Brenntag may own assets in the supply chain outright, or outsource them: in Thailand, for example, we own trucks and other logistical assets, whereas Australia's infrastructure is well developed, so it is more efficient to outsource those links in the supply chain. In Singapore, we completed our logistical hub, called Regional Operations Hub (ROH), in June 2012.

Brenntag was certainly the first global distributor operating in Asia when we spoke with you in 2010, but given the massive levels of investment and growth in Singapore and the region, can you still claim to be the only one?

Brenntag can absolutely still claim to be the only global distributor operating in Asia. Some European specialty chemicals distributors are looking to invest in Asia Pacific, yet they are much smaller than Brenntag Group and have a limited presence outside of their traditional markets. They are developing their capabilities in Asia, but they are nonetheless not active in North America, Brenntag remains history's first global chemical distributor and the fastest growing player in Asia Pacific.

Since we last spoke with Brenntag in 2010, the company has undergone a successful IPO; how has the Brenntag group's strategy evolved both regionally and globally since becoming public?

Our initial offering in March 2010 was valued at €50 a share, and as of April 2013 our stock had reached around €125 on the FWB. Brenntag Asia Pacific has contributed to this success story via our tremendous growth from 2008 to 2012. Choosing Singapore as our headquarters for Asia Pacific enabled Brenntag to become the first global chemicals distributor in the world. For the future, we are actively seeking full product lines for distribution to our existing customers in the region. Part of our strategy since becoming public is to expand our geographical presence. This approach involves matching the appropriate supply to better suit emerging markets, whose needs are quite distinct from one another. •

INTERVIEW WITH

Wilson Tan, Irwanto Tjota & Martin Mulia Tan

WT: CEO
IT: COO
MMT: FINANCE DIRECTOR
PLANET ASIA

WT

IT

MMT

Could you please provide us with a brief introduction to Planet Asia? How did some of the company's early struggles contribute to its success today?

WT: After working for US-based Monsanto Chemicals for 15 years, I established Planet Asia in 1995. Prior to leaving Monsanto, I had served as the company's country manager for Singapore for about five years having responsibility for the full spectrum of Monsanto's industrial chemicals and polymers business in Singapore. With my background, I continued distributing chemicals and polymers at Planet Asia that were not in direct competition with my former employer. Shortly after setting up Planet Asia, the Asian financial crisis exploded, bringing financial turmoil to the company and it almost went belly up. One of the key lessons learnt from the early years of struggle is that I have come to realize most aggressive businessmen like me, tend to see the bright side of new business opportunities without fully investigating the pitfalls and risks involved and being overly optimistic; consequently learning through the hard way of picking up the pieces of failed ventures. Unfortunately being a small start-up, we did have the resources to undertake costly market research and tended to go with the gut feel and intuition.

Fortunately I was able to leverage on my old contacts to get the business running. To be frank, whatever success achieved was not through any strategic planning; it was more about finding gaps in the market and taking advantage of niche opportunities when money was on the table. After struggling for almost four years, Planet Asia achieved a dramatic turnaround in June 1999. From then on sales revenue grew at a CAGR of over 20% over the past 13 years. Two years ago, a decision was made to reinforce the company's top management to prepare for a new phase of growth. Chief Operating Officer Irwanto Tjota and Finance Director Martin Mulia Tan were brought on board to help re-define the direction and future of the company. For the last two years we have been on the constant lookout for suitable acquisitions and possible joint ventures with other key players in the specialty chemicals industry and building on the existing distribution business model.

When you say you are on the lookout for a suitable partner or acquisition what qualities are you looking for?

MMT: The fastest way to grow is through acquisition of companies. A smart acquisition will change the profitability of the company we acquire, but we also have to be aware that we may undergo negative cash flow in the first year of an acquisition as we re-structure the company. We are therefore looking to either partner or acquire a specialty chemicals company in Asia. The companies which we hope to acquire are niche players instead of companies engaged in commodities trading. As for partnership arrangements, we are currently in talks to enter into a joint venture with an American company that supplies specialty polymers for the auto parts industry in North America but are keen to enter Asia.

WT: Now that Planet Asia have established a significant presence across Asia, with either direct offices or partnership arrangements in most of the key countries in Asia, I feel that we make an excellent potential partner for any US or European conglomerate wishing to have a rapid access into Asia. Besides this, we pride ourselves for the manner in which we conduct our business. We firmly believe that integrity, honesty, transparency, trust, trust-worthiness and mutual respect between partners are essential elements for a successful partnership. For this reason we are always open to collaborating with global companies who share these same values.

As Planet Asia is looking to expand, which market in ASEAN do you see as having the best potential?

IT: In Southeast Asia, Indonesia is the largest market and over the last few years it has proven to be a stable environment with a huge domestic consumption base with a growing middle class - Indonesia has really been the star of Asian markets. Yet, in terms of production capability the chemical industry in Indonesia is still very basic. We therefore see a huge upside for growth. Under the present political leadership we have also noticed increased regulatory transparency in this country, which is good for us. As a specialty distributor, we need to capitalize on these growth opportunities available, which is why we are in the process of establishing a direct office in Indonesia.

WT: Indonesia is not an easy market, even for Singaporeans. Having Irwanto, an Indonesian, as part of our team has given me enormous insights into how the market works and the unique business environment there.

How is Singapore a springboard into other ASEAN markets?

WT: Singapore has long been seen in Southeast Asia as the most progressive and developed country. These markets look to Singapore for leadership. Brought up in an environment of a progressive and ethical management style of our government, Singaporean companies like Planet Asia take a no nonsense approach to rules and regulation both at home and abroad. In this day and age people use the term integrity in a vey loose manner, but integrity is becoming a very rare commodity. People tend to want to take shortcuts to get ahead, but Singaporean companies have been successful in upholding their integrity abroad. For this reason, we notice that many countries do accord recognition of the Singapore branding and reputation for reliability and professionalism, making it much easier for us to close deals.

Singapore conjures the image of a market dominated by foreign multinational corporations, MBCs. What do you see as the role of small and medium enterprises in Singapore?

IT: The SMEs form the largest collective contribution to the Singaporean economy in terms of net value, employment, and innovation. The government has been really strong in supporting SMEs, whether they are local or from abroad. Also SMEs like Planet Asia have the ability to adapt quicker and be more flexible than MNCs. At Planet Asia, all of our managers have backgrounds in MNCs, so we have learned the principles of these companies and can now adapt it to our company.

WT: One of the problems for SMEs in Singapore is structural unemployment as the government tries to bring in higher value investments to the economy. The unfortunate aspect of this is that the government will often see the investment from a big-name multinational as value added and this comes at the expense of SMEs. In some cases the government has provided such large incentives for multinationals that they are paying almost no taxes, while SMEs pay taxes and contribute substantially to the local economy.

Singapore is often mentioned as in competition with Hong Kong as the financial center of Asia. What do you see as some of the strengths of the banking sector here and how can it support Singaporean-based businesses?

MMT: Hong Kong is the financial center of China, but in Singapore the focus is China plus [other Asian countries.] For example, Indonesia is a huge market for Singapore's financial institutions and many have entities in Indonesia. The bankers in Singapore support the growth of the companies here, often we have visits from banks that we do not have a relationship with because they want to help small and medium companies.

When we return to interview Planet Asia in three to five years time what will you hope to accomplish?

WT: Planet Asia is seriously looking to more growth either through partnerships or direct investments or acquisition of companies. These ventures will strengthen our foothold in areas in which we have started to build to be a global player. In the next three to five years, we are exploring to invest or acquire two to three small to medium size manufacturing facilities in the region. We have been growing by over 20% per annum over the past 13 years; there is no turning back for us and we want to accelerate this growth. Our company has always practiced profit sharing amongst all of our employees so any growth in profit directly benefits everyone that works for Planet Asia as well as the charitable causes we support. We believe such practices have the effect of motivating staff to buy into our future plans and work hard to realize this goal. •

INTERVIEW WITH

Fritz Graf von der Schulenburg

EXECUTIVE VICE CHAIRMAN
JEBSEN & JESSEN

The chemicals unit is one of eight business units of the Jebsen & Jessen Group of Companies. Could you provide a brief overview of the role chemicals plays in the Jebsen and Jessen?

The Jebsen & Jessen group dates back to 1895 as a trading company based in Hong Kong. That company, known as Jebsen & Co., still trades luxury goods and chemicals in China. In 1963, Jebsen & Jessen South East Asia was started, developing independently and differently from the sister company in China. Today we are a conglomerate of industrial, distribution, and engineering companies. As a group, we have a presence in nine of the 10 ASEAN countries with 4,000 people working across eight different business units.

The chemicals business has been part of the Group since our founding in 1963 with a main focus on distribution and value added services of specialty chemicals such as coatings and resins, plastics and rubber, and performance chemicals. Also, we supply nutritional ingredients to the food, feed, and pharmaceuticals industry. Over the years the chemicals sector of the company has grown and we now have 250 people working in this sector serving over 4000 customers. Our company is positioned to serve the ASEAN market with our main suppliers and partners being Evonik, Kronos, Kroma Floor, Orion Engineering, Solvay, and Huntsman.

Jebsen & Jessen embarked on the Double-in-Five strategy. What role is the chemicals unit playing in achieving this goal?

When I joined the executive board of the company in 2010, we decided to launch this Double-in-Five strategy with the goal of doubling the company's net profits before tax in five years and today we are on track to achieving this goal. I believe such a strategy can only be accomplished in Asia, given the current economic climates in other markets such as Europe such a strategy would be impossible. In terms of sales, the chemicals business is the largest business unit of Jebsen & Jessen (SEA) and has an important factor in the Double-in-Five strategy. As part of Double-in-Five we acquired a chemical distribution company in Thailand which was the daughter company of the German company Helm. This intensified our focus on food ingredient chemicals and we are investing in value added services in order to create a one-stop solution for our strategic partners throughout the ASEAN region.

From a regional perspective, what do you see as the potential of the ASEAN market and what do you see as Singapore's role in the region?

With a population of over 600 million people and sustained regional GDP growth of five to seven percent per year, ASEAN is on the way to becoming the largest integrated market in the world. We have an intra-trade volume within Asia of $2.9 trillion, which is larger than the total exports in the European Union today. I am not sure if ASEAN will be fully integrated by the 2015 deadline, yet the targets are established and the road map is set, which gives me confidence we are moving in the right direction.

How would you characterize the distribution market and what differentiates Jebsen & Jessen from some of its regional competitors?

Jebsen & Jessen (SEA) differentiates itself because we are at home in the ASEAN region. Our head office is not in Europe or the United States; it is here in Singapore. We are comfortable and familiar with our markets and relationships with our customers and suppliers built up over decades. Our decades of experience and expertise make us a leader in the specialty chemicals market.

What are the key strategic priorities over the next three to five years for your chemicals division?

We have invested over the last few years and are ready to make further investments. We see growth potential in our nutritional ingredients sector as we see potential in food, feed, and pharmaceuticals. We are looking to expand into the agrochemicals sector as we see potential. Additionally, we are working to optimize our regional supply chain to serve our partners and customers better. For our chemicals business unit, Double-in-Five is the low limit, we believe there is enough potential for this business unit of ours to do more than double. •

INTERVIEW WITH

Suiniaty Basirun

COUNTRY MANAGER FOR SINGAPORE
DOW CHEMICAL PACIFIC

Could you provide an overview of Dow Chemical and its history in Singapore?

Dow Chemical entered Singapore in 1976. Our marketing, sales, financial, logistics and supply chains offices here serve markets throughout the Asia-Pacific region, specifically in South East Asia (SEA). Singapore also boasts a regional application technical center, Dow Singapore Development Centre (DSDC), representing most of Dow Chemical's key business sectors. It complements our high-tech Shanghai Development Center; we don't do basic research here, but customize solutions to meet the needs defined by our customers' cost-performance targets; understanding these is the key to our success. For some segments, like plastics, the center even has pilot-scale equipment to run trials. In 2012, Dow effectively consolidated all nine of the businesses at DSDC under one center, greatly strengthening our team, and its ability to leverage technology.

Singapore is taking initiatives to move itself up the value chain. Are these affecting Dow Chemical in any way?

We agree with the direction in which the EDB and Ministry of Manpower (MOM) want to move Singapore. Their moves for reducing the number of work permits and employment passes are designed to improve productivity.

What impact has the Rohm and Haas acquisition had on Dow Chemical in Singapore?

Dow in Singapore now has a more market-facing and differentiated portfolio, and an additional technical center covering businesses such as coatings, electronic materials, consumer and industrial solutions, and microbial control. This is in addition to the Jurong Island site, which has worked hard to improve its efficiencies; quite necessary given the expense of operating in Singapore. Dow aims to move up the value chain where it has competitive advantages. Our work in the plant is aligned to this strategy.

Who are your typical customers, end users and development partners?

Dow has the expertise and experience working in various regions with different brand owners, both international and local. We remain focused on creating solutions for our customers. We believe it is vital to understand customer needs, and customize solutions with our innovations, technologies and products to meet the market needs. With the growth of middle-income groups across Southeast Asia, it is crucial that our solutions are specifically tailored to meet the growing demands and needs of the various countries.

You are on the board of directors at the SCIC. What is your role there, and how do your activities reflect Dow Chemical's initiatives?

I joined the board of Singapore Chemical Industry Council (SCIC) in October 2012. It is a very well-run organization which advocates a number of issues and collaborates with Standards, Productivity and Innovation for Growth (SPRING) Singapore on standards and specifications. The SCIC understands the chemical industry's concerns and presents them in a united voice to the relevant parties; hot topics include MOM's labor policy and tariff harmonization. Our members include multinationals as well as SMEs. As a key player in the chemical industry, it is imperative that Dow remains close to the issues and concerns of the country. Through my representation of Dow at SCIC, it reiterates our responsibility and firm commitment to the industry.

What is your vision for the future of the company?

The Asia-Pacific region accounted for 18% of Dow's global sales in 2012. Our goal is to continue to expand regionally. We will continue to focus on high-end growth markets, and those in most need of solutions, such as water. Sustainability is part of what Dow does, but we need to understand what it really means for countries in this region at different stages of development.

Singapore's economy does not top the regional scales in terms of size, but has demonstrated strength in talent, thought leadership and experience. Singapore continues to be an important part of Dow's strategy. •

Jurong 2.0:
Singapore Keeps Ahead of the Competition

"Singapore represents an important link in the regional Chemical industry. Richland is continuously looking for ways to enhance its offering to customers utilizing Singapore for exports and inbound supplying industry here. The industry is definitely reflecting growth as investments in Jurong and Tuas come on line and this is great to see… The Singapore government has been instrumental in assisting us into this market and has been engaged in our expansion. We see a strong future for chemical logistics being centered here in Singapore."

- Colin Peter Moran, Group Logistics Director, Richland Logistics

Courtesy of CRODA

The Development of JIv2.0

The next generation

When looking to discover "what works" in Singapore, look no further than Jurong Island as a textbook case study of the Lion City leveraging its seemingly limited comparative advantages. In late 2010, the government announced a plan for Jurong Island version 2.0 (JIv2.0) as the latest push for Singapore's for development in the chemicals sector. When viewed within five decades of context, JIv2.0, which emphasizes further integration of auxiliary services, diversification of feedstocks and a focus on developing specialty chemicals manufacturing, is just the latest element of a seemingly natural progression of the government's strategy for the industry.

In the post-World War II era, Singapore's position in the logistics network of world petroleum markets became ingrained as a key pillar that Singapore could leverage growth off of through refining and related industries. In 1961, Shell established the Bukom refinery, setting off a wave of investment in the country from players like Esso, Singapore Refining Company, Sumitomo, and Mobil as the Singaporean government designated the petrochemical sector as a key segment for industrial growth. Today, Singapore's position is heightened as a staggering one third of global oil shipped by sea passes through the Malacca Strait in order to reach energy hungry markets throughout Asia.

In the 1990s, the government, through the JTC Corporation, began reclaiming additional land and installing infrastructure to establish what is today Jurong Island. Presently home to nearly 100 petroleum, petrochemical, and specialty chemicals manufacturers, as well as a diverse array of auxiliary service companies supporting the island's industries, Jurong has certainly earned its title as a chemicals hub.

Matthew (Matt) J. Aguiar, chairman and managing director of ExxonMobil Asia Pacific comments "[Singapore is] a true model for developing a petrochemical industry around the world" in part due to "remarkable and visionary" actions from the government to develop Jurong Island.

In recent years, multibillion-dollar mega-investments from majors Exxon and Shell, further bolstered the country's position as a petrochemicals hub by helping bring the country's ethylene cracking capacity to approximately 4 million tpa, approximately 3% of world capacity [138 million tpa]. While this is already an impressive figure for a country that contributes just 0.3% to gross world product, the EDB aims for cracking capacity to reach 6 million to 8 million tpa over the coming decades.

Although Singapore has impressively grown its ethylene cracking capacity, new refining capacity coming online at both the source of hydrocarbon production in the Middle East and in China has the potential to cut out one of Singapore's traditional roles. "One of the foundations of our chemical industry that we continue to strengthen is our refining capability. Upgrading the complexity of our refineries will enhance the competitiveness of our crackers and the rest of the industry. Secondly, we are constantly looking for new ways to extract more from the existing base, such as moving into higher value-added derivatives and specialty chemicals. Lastly, the EDB will continue to work with the industry players on Jurong Island, to ensure its competitiveness and sustainability as a chemical hub," says Leong.

The EDB sees new investments, both from the private sector and the government, and feedstock flexibility as crucial if Singapore is to enhance its chemical manufacturing capability and retain its prestigious status on the world stage. In May 2013 BG Group delivered its first shipment to a new LNG terminal built and owned by the Energy Market Authority (EMA). The EMA's Singapore LNG (SLNG) terminal has initial capacity of 3 million tpa supplied initially through an exclusive contract with BG. However, the government is looking to expand capacity and open the terminal up to new players as gas markets become more globalized. "The Singaporean government is very forward-looking in building the new LNG terminal. The government has visions for this to expand in several steps starting," says Matt Aguiar of ExxonMobil.

Initially, the LNG will primarily serve Singapore's gas dependent power generators, as all of Singapore's major generators have arranged distribution through SLNG to augment their existing piped natural gas contracts from Indonesia and Malaysia. Yet, as plans for the terminal's expansion are being formed, the EDB sees LNG as a significant feedstock source for Singapore's petrochemical industry. "Feedstock diversification enhances Jurong Island's competitiveness in several ways. One is obviously by providing flexibility - diversification gives companies the option to use different feedstock at different times, depending on which feedstock is the most economical. Feedstock markets tend to be cyclical, but not on the same cycle, so if you can tap into LPG at one time and naptha at another time, it helps ensure cost competitiveness. These options also introduce robustness into the system - if operators have this flexibility with feedstock, it makes the system stronger," explains Eugene Leong of the EDB.

Enhancing feedstock options though LNG is one of the five core areas of JIv2.0. As part of the initiative, the EDB is reviewing energy, logistics and transportation, feedstock options, environment and water in order to enhance operational efficiencies and improve the hub's environmental sustainability. Addressing these five core areas will empower Singapore to overcome some of the key challenges it faces. Industry-government frameworks such as JIv2.0 tend to be ambitious in announcement and short on long-term action, yet an examination of the

chemicals industry proves that government, operators, and auxiliary service providers are collaborating to turn policy into action.

Many of the core tenets of JIv2.0 are already ingrained at the heart of Nalco Champion's [an Ecolab company] service offering according to Deric Bryant, general manager Eastern Hemisphere Downstream: "Of the five objectives for Jurong [Island] v2.0, three are energy, water and environmental related. We will continue to be at the core of helping our clients solve these problems. Whether it is an oil and gas major or a food and beverage company, we help them in a very integrated way to make their operations more efficient and with an improved environmental footprint."

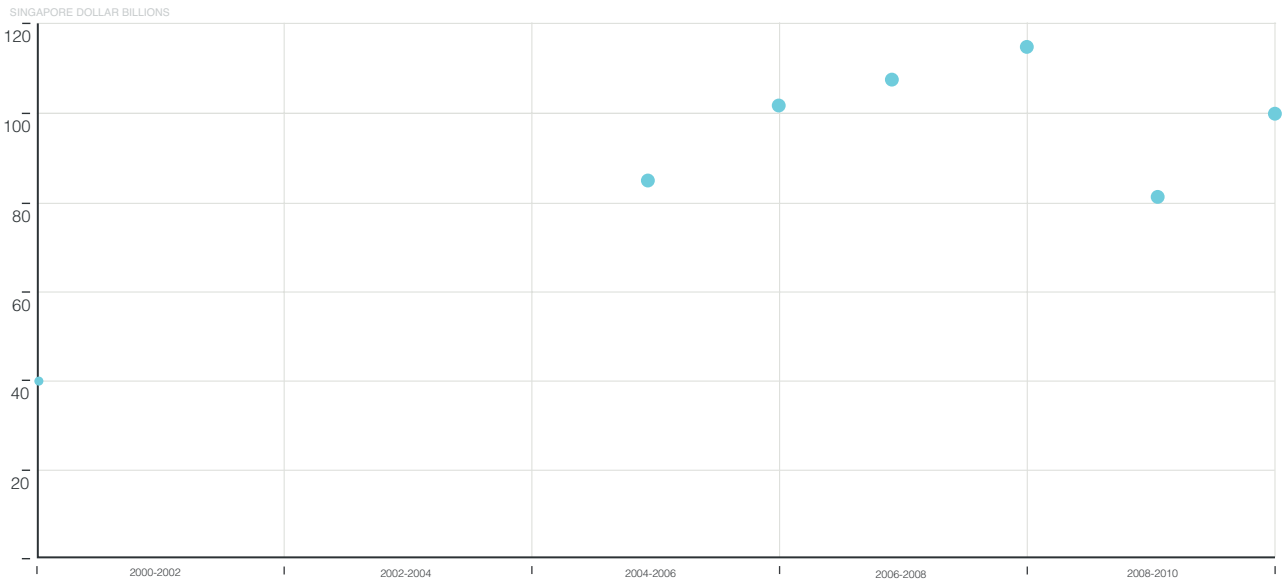
The company has recently bolstered its energy services offering through its acquisition of Houston-based upstream and midstream specialty chemicals provider Champion Technologies. Bryant sees the ever-expanding Ecolab Group as well positioned to meet Asia's future petrochemical demands: "Our recent acquisition of Champion Technologies [in April 2013] makes our energy services unit 27% of Ecolab's global revenue further enhancing energy's role as a core piece of Ecolab's strategy."

Part of this growth strategy is to increase the emphasis on downstream services in locales such as Singapore. "We will continue to grow and expand not only in places where oil and gas is produced, but also where oil and gas and petrochemicals are consumed," says Bryant.

Like many leaders in the industry, Peter Meinshausen, Evonik's president South East Asia, Australia and New Zealand, gives the EDB high marks for its clear vision for the industry in the face of Singapore's constraints: "Initiatives like Jurong Island v2.0 with further integrated utility and feedstock grids will augment Evonik's service offerings greatly. Ultimately, such initiatives will serve to differentiate Singapore from other chemical hubs in Asia." •

Singapore Chemical Sales

Source: AIChE



Number of Chemical Manufactures

Source: Department of Statistics Singapore

2005	264
2006	262
2007	259
2008	269
2009	283
2010	276

Chemical Manufacturing Output (in million USD)

Source: Department of Statistics Singapore

2005	31,100.9
2006	33,746.2
2007	33,455.3
2008	26,221.1
2009	36,221.0
2010	40,404.9
2011	42,155.2

Value Add by Chemical Manufacturers (in million USD)

Source: Department of Statistics Singapore

2005	3 945.3
2006	5 095.5
2007	2 141.0
2008	3 524.8
2009	4 759.4
2010	5 037.5
2011	4.116.6

Selected Companies Operating on Jurong Island

Source: EDB

COUNTRY	
United States	Air Products, Ceanese, Chemical Specialties, Chevron (JV partner in SRC), Chevron Oronite, Chevron Philips, DuPont™, Eastman Chemical, ExxonMobil, Huntsman, Invista, Rohm&Haas, Tate&Lyle
Europe	Akzo Nobel, BASF(JV partner in Ellba), Ciba, Coim, Croda, Faci, Infeneum, Katoen Natie, Linde, Lucite, Oiltnaking, Perstorp, RohMax Evonik, Shell, SOXAL, StoltNielson, Vopak
Japan	Asahi Kasei, Dainippon Ink&Chemicals, Denka, Mitsui Chemicals, Mitsubishi Gas (JV partner in Polyxlenol), Kuraray Asia Pacific Pte. Ltd, Simutomo Chemical, Sumitomo Seika, Teijin, Toagosei, Stella Chemifa, Unimatec
Total companies	<100

INTERVIEW WITH

Peter Meinshausen

PRESIDENT OF SOUTH EAST ASIA, AUSTRALIA, AND NEW ZEALAND
EVONIK

Can you please provide an introduction to Evonik in Singapore?

Evonik is a creative industrial group from Germany and a world leader in specialty chemicals. Active in South East Asia, Australia & New Zealand (SEAANZ) since the 1920s, we established our first legal entity in 1969. Today, Singapore is home to Evonik's regional headquarter utilizing Singapore's excellent geographical position to run our operations in SEAANZ.

In Singapore, Evonik's manufacturing activities center on Evonik Oil Additives, a leading global supplier of high performance VISCOPLEX® lubricant additives and VISCOBASE® synthetic base fluids for use in automotive and industrial lubricants. In 2011, Evonik opened its first Asian R&D center for coating additives in Singapore developing custom tailored solutions for environmental friendly coating systems and solvent borne coatings.

Core activities in the region include among others feed additives, lubricant additives, coating additives, care and household specialties, hydrogen peroxide, precipitated and fumed silica, acrylic resins, performance and specialty monomers, molding compounds, and high performance polymers.

In terms of governance, Evonik in SEAANZ reports to Dr. Dahai Yu, Member of the Executive Board of Evonik responsible for Asia.

How is Evonik's asset portfolio expanding in terms of Singapore?

Since 2009, we have been expanding our asset portfolio in Singapore and Singapore continues to play a vital role in Evonik's considerations for the future.

Regarding our manufacturing capacities, Evonik is building a new manufacturing complex for the amino acid DL-methionine, an indispensable amino acid for healthy and sustainable animal nutrition, on Jurong Island. The manufacturing complex will come on stream in 2014 and will have an annual capacity of 150,000 metric tons of DL-methionine. This investment will complement Evonik's global positioning in this market as we will be represented in all the key market regions. In addition, Evonik has announced a decision to build a polyiamid 12 plant on Jurong Island.

Looking beyond manufacturing, Singapore also caters to Evonik's innovation operations to strengthen our innovative capabilities further. In addition to our R&D center for coating additives we are in the process of establishing a technical service center for polyurethane products and an analytical lab to support our amino acid business.

For us, these are additional steps emphasizing the global character of Evonik. We strive to accompany the growth of our key customers in Asia through local production, local R&D and local services.

How has Singapore's Economic Development Board (EDB) served the interests of Evonik and the country's chemical sector?

When it comes to putting assets on the ground or to support R&D activities, the involvement of the EDB is essential: EDB opens doors and facilitates networking across the chemical industry. Singapore has created a safe environment for investments with regards to various aspects including IP protection, corruption prevention, transparency, environmental, safety and health requirements. Also, EDB is very proactive in increasing the educational level and skill set of Singapore's workforce. Lately, EDB not only supports bringing investments into Singapore, EDB now emphasizes activities that add value to the chemical industry and Singapore as a whole.

However, the chemical industry is facing an increasing impact of energy and utilities costs as well as more difficulties in finding the right staff. Evonik is confident in the ability of the EDB to manage these increasingly complex issues hoping that these will not blur Singapore's competitive environment. Nevertheless, Singapore remains an attractive location for expanding or creating new investments, despite costs related challenges.

How has Singapore's new infrastructural investments served to add value to Evonik's business in the region?

Singapore's excellent infrastructure strongly benefits the chemical industry. Initiatives like Jurong Island v2.0 with further integrated utility and feedstock grids will augment Evonik's service offerings greatly. Ultimately, such initiatives will serve to differentiate Singapore from other chemical hubs in Asia.

What is Evonik's vision for Asia for the future?

Asia is already playing and will continue to play an important role for Evonik. Already accounting for 20% of our sales, Evonik is seeking to increase its sales in Asia to €4 billion as well as its employees. With this, Evonik will also increase turnover generated from manufacturing in Asia. We will continue to expand our asset footprint by investing in production sites and innovation facilities across Asia to better accommodate the requirements of Asian markets and our Asian customers. •

INTERVIEW WITH

Deric Bryant

GENERAL MANAGER - EASTERN HEMISPHERE, ENERGY SERVICES DIVISION DOWNSTREAM
NALCO CHAMPION

Nalco and Ecolab merged in 2011, how did the merger impact the company's operations in the Asia Pacific region?

The obvious thought behind the merger was that joining the two companies together could create a better combined company than had existed separately. Nalco and Ecolab were seen as complementary, instead of competitors. We now have a company that is based around four strategic pillars reflecting the megatrends in the world: energy conservation, access to safe food, water scarcity and clean environments. We help industry meet these global challenges and have put together an offering that is unique in our marketplace and uniquely needed by industry. In AsiaPacific, this offering is important today, but will become even more critical over the coming decades as more pressure is put on these global megatrends.

As a company we have been present for 85 years and 33 years in Singapore. We go where our industries take us; we serve industries from light to heavy. Singapore has served as a great hub for us and has grown into a location that serves as both a manufacturing location and regional headquarters with more than 200 people based here focused both the Singaporean and regional markets.

As Jurong v2.0 is developed to go "beyond plug and play," what are some of the ways Nalco works with clients to improve efficiencies?

Of the five objectives for Jurong v2.0, three are energy, water, and environmental related. We will continue to be at the core of helping our clients solve these problems.

Another interviewee commented, "Inventions are still coming from the US and Europe, but innovation comes from Singapore." How has Nalco, a US based company, sought to take advantage of this idea?

I am not sure I can answer that but will add that when I began at Nalco 18 years ago, the company felt like a western company that did business globally. The biggest transformation I have seen in the company is that today our company is a truly global company with its roots in the West. We have 12 innovation centers around the world including Singapore. This means that new technology is no longer developed and commercialized first in the West and then gradually introduced to other markets, it is developed globally and introduced at a similar pace worldwide.

What is your strategy for growth within the region and what role can Singapore play in your growth?

Ecolab Asia Pacific has an overall turnover approaching $2 billion with approximately 7,000 employees across Asia. Our recent acquisition of Champion Technologies [in April 2013] makes our energy services unit 27% of Ecolab's global revenue, further enhancing energy's role as a core piece of Ecolab's strategy. We will continue to grow and expand not only in places where oil and gas is produced, but also where oil and gas and petrochemicals are consumed by bringing value to the customers we serve. Singapore, along with several other strategic locations across Asia, will continue to play a key role in our future.

The development of shale oil and gas makes this a particularly interesting time for the oil and gas sector, not just in North America, but also in markets worldwide. As US refiners continue to replace the current heavy, harder to produce crudes currently being refined with shale oil, we could see many of these "opportunity" crudes moving to markets in the East. Nalco brings significant technology and experience in helping refiners successfully process these heavier and more challenging crudes. As feedstocks become increasingly unconventional, and often more complex to work with, the services Nalco provides become even more important. We will also see changes in the global petrochemical markets with the US ethylene industry shifting to shale gas for feedstock and adding capacity. This will drive changes in product mix and result in more US export that will have to be factored in. Shale oil and gas production will likely also become more significant in Asia Pacific as countries like China and others find and evaluate the cost and competitiveness of producing this resource. Nalco will continue to play an important role in improving the performance and competitiveness of our customers through these changes. •

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Plug and Play

Power and infrastructure on Jurong Island

Further development of Singapore's shared utility, raw materials and storage networks is crucial to Singapore's continued ability to attract world-scale investment. Once again the EDB and JTC are spearheading new initiatives that will address constraints and attract investment. "As we map out the future of the island, more infrastructural enhancements are in the works; projects that will benefit the specialty chemicals and other value-added industries. The island's new barge terminal is on track, and the second overland roadway remains under study... In the meantime, the JTC is making enhancements to the current causeway to ease traffic flow and enhance security," says Eugene Leong of the EDB.

Another key aspect of Singapore's infrastructure is its vast network of shared utility pipes that allow users to conveniently "plug in" to service providers. As a more diverse stream of products will have to be used as Singapore further develops its specialty chemicals industry, enhancing this pipeline network will be key for Singapore to maintain its leading reputation. "Common infrastructure such as pipeline racks that promote integration and linkages between companies are critical for the long-term competitiveness and sustainability of operations in Singapore," comments Lim Seck Luan managing director, Linde Gas Singapore.

German-based Linde Group has a substantial presence in Singapore as it is the headquarters of company's South and East Asia Regional Business Unit. The company's Jurong Island facility exemplifies the integrated nature of the island as Linde boasts a world-class gasifier, the largest CO2 plant in Singapore, gaseous nitrogen production capabilities, and a supply chain facility for distribution of specialty gases. Evonik's recent partnership with Linde on its new $500 million methionine manufacturing facility is utilizing the innovative integrated services Singapore has built a reputation on. "To meet the industrial gases feedstock requirements of Evonik's new world-scale methionine production plant 'Me5', Linde Gas Singapore is building a unique and highly customized gases plant on-site - the first '3-in-1' integrated plant in Singapore comprising a Hydrogen SMR, Methane PSA and C02 recovery unit using natural gas as a feedstock," says Lim Seck Luan.

Singapore's integrated facilities are certainly world class. However, the truly impressive aspect of the integration is the way in which multiple companies are able to cooperate and reach a maximizing outcome. Competitors are often forced to have some synergies with one another. Bay Chin Hao, regional commercial manager of Oiltanking points out that the close-quarters on Jurong Island creates this dynamic: "in a sense, the land shortage fosters close cooperation, bringing together parties to jointly seek solutions instead of acting alone."

Power Enabling JIv2.0

As Singapore has grown into a petrochemical hub over the last two decades, it has had to add significant power generation capacity to keep up with the rise of manufacturing especially on Jurong Island. In terms of power generation, the government heavily encouraged the development of natural gas generation as the power sector deregulated in the early 2000s. Today, Singapore relies on gas power plants for 78% of its generation capacity. This single-fuel market buoyed by high gas prices in Asia has put comparative pressure on generation costs as Singapore's regional neighbours have largely opted for cheaper coal generation or enjoy subsidized fossil fuel prices to control costs for their rapidly growing energy needs.

Presently, Singapore ranks as the third highest power costs in Asia behind Japan and the Philippines. As other locales try to emulate Jurong Island's success, industry leaders presently view this cost issue as a potential limiting factor for new investment in Singapore. "The most discussed issue is the cost of energy in Singapore. Chemical players consume a large proportion of energy, and the associated costs have a very significant impact on the industry's competitiveness," says Chiew Nguang Yong, chairman of the SCIC and general manager of Shell Chemicals Seraya.

Although costs are relatively high, Singapore's world-class infrastructure offers customers an unparalleled degree of stability, thus eliminating many of the costs associated with risk in other, more emerging markets in Asia. "For power users, i.e. chemical manufacturers, Singapore has a higher price of electricity, but this market also offers a more developed, efficient infrastructure that allows manufacturers to effectively and predictably manufacture and transport their products for market," says Aaron Domingo, managing director of PacificLight Energy.

In such a market generating companies must find an edge over their competitors through increasing their operating efficiencies, finding innovative, new methods to utilize diversified feedstocks, and integrating services into a total package for their customers. Costs may be high, but inefficiencies are not tolerated.

PacificLight Energy plans to commission their new S$600 million ($475 million) gas powered asset on Jurong Island by the end of the year. The company was formed in March 2013 as Philippines-based power generator Meralco and Hong Kong-based First Pacific acquired 70% of a nearly complete asset. "As the new entrants into the market with our facility expected to go online in December 2013, we have adopted the most advanced methods and technologies for the plant. Thus, compared to the incumbent power generators already present on the market, we expect to gain a competitive advantage through technologically based efficiency," says Yu Tat Ming, CEO of PacificLight Energy.

They will face stiff competition from existing players on the market, namely Sembcorp Industries and Tuas Power Generation, who have both made integration the heart of everything they do on Jurong Island.

Ng Meng Poh, executive vice president and head of Singapore and ASEAN, for SembCorp explains the company's wide range of services to customers in the chemicals sector: "We offer chemical and petrochemical companies a full suite of services including power and process steam, industrial wastewater treatment and on-site logistics. Power and steam generation is the largest contributor to the business, while our water and wastewater treatment facilities which can treat multiple streams of complex industrial wastewater, and our onsite logistics infrastructure which connects facilities on Jurong Island, also play a crucial role in making the whole petrochemical cluster more efficient."

SembCorp, a leader in developing Singapore's famous "plug and play" integrated infrastructure on Jurong Island, has committed an additional S$1 billion ($800 million) to construct a new multi-utilities facility to service the Jurong Aromatics Corporation's new S$3billion ($2.4 billion) complex. In its initial phase, the facilities cogeneration plant will add 400 MW of power and 200 mt of steam per hour of capacity to Jurong Island.

Sembcorp, the first power generator on Jurong Island, has long made sustainability a top priority. Ng believes that this commitment has given Sembcorp a competitive edge in the market: "Because we invested early in green technology, unlike some of our competitors who had to re-

place their older facilities with more efficient new units, we have not had to retire or revamp our power plants. Also, in our combined cycle gas turbine cogeneration plants, we can often achieve a higher plant efficiency, so we use less fuel and can pass on the savings to customers."

In addition to conventional gas generation, SembCorp has also demonstrated its continued commitment to sustainability through investing S$300 million ($240 million) in an industrial waste to power generator and S$30 million ($24 million) in a wood chip boiler. Given Singapore's land constraints, especially on Jurong Island, waste-to-energy facilities provide the integration that will be crucial for the hub to maintain a competitive advantage over regional neighbours.

Along the same lines, Tuas Power has established a solid foothold on Jurong Island through its Tembusu Multi-Utilities Complex (TMUC). "In 2006, Tuas Power secured the rights to develop utilities for the new cluster of petrochemical companies in Tembusu, Jurong Island. We started construction in late 2009 and the first phase of construction was completed in February 2013. We are currently supplying competitively priced utilities to our customers. When fully completed in 2017, the total investment of the Tembusu Multi-Utilities Complex will be about S$2 billion ($1.6 billion). The utilities business is expected to form a core part of the company's business diversification plan. The TMUC project is aligned with the government's push to develop the petrochemical industry in Singapore," comments Lim Kong Puay, president and CEO of Tuas Power Generation.

In terms of generation, Tuas Power has decided to break the mold of gas generation in an effort to gain an advantage in the single-fuel dominant market. Their new facility uses diesel, coal, gas, and biomass for steam and electricity generation. According to Lim: "A multi-fuel strategy [is] a balanced approach to take for this market. Our Tembusu Multi-Utilities Complex is a model of fuel diversification that provides competitive utilities to our customers on Jurong Island."

Although energy cost will remain an issue as JIv2.0 continues to develop, operators can be assured that Singapore's utility providers are reaffirming their commitment to the market through offering an unparalleled package of integrated, efficient services and forward thinking investments. "Ultimately, efficiency is about transforming the cultural mindset of management. Energy prices are not likely to be low in the future; therefore, companies need to commit to scrutinizing areas that can reduce operating expenses and energy consumption from the top-down," says Lim. •

INTERVIEW WITH

Lim Kong Puay

PRESIDENT & CEO
TUAS POWER GENERATION PTE LTD

Can you share Tuas Power's history as one of the top three energy providers in Singapore?

Tuas Power Generation Pte. Ltd. was established in 1995, amidst the liberalization of the electricity industry in Singapore. We have built up to our licensed capacity of 2670MW, comprising two large-scale oil-fired steam plants and four highly efficient combined cycle plants.

In recent years, Tuas Power has diversified into related areas of the energy sector as a part of our growth strategy, leveraging on our expertise in the areas of power generation, steam production, water treatment and waste water treatment.

We started with building large-scale, on-site tri-generation and cogeneration utility plants for clients in the pharmaceutical and chemical sectors, then provided utilities to support Neste Oil's new NExBTL renewable diesel plant, which is located next to Tuas Power Station. We are currently building a multi-utility complex in the Tembusu industrial area of Jurong Island to provide an integrated suite of multi-utility services to the new petrochemical companies.

Energy consumption from Singapore's chemical segment comprises about 40% of the entire industrial sector, how important is this industry to Tuas Power?

In 2006, Tuas Power secured the rights to develop utilities for the new cluster of petrochemical companies in Tembusu, Jurong Island. We started construction in late 2009 and the first phase of construction was completed in February 2013. We are currently supplying competitively priced utilities to our customers. When fully completed in 2017, the total investment of the Tembusu Multi-Utilities Complex will be about S$2 billion. The utilities business is expected to form a core part of the Company's business diversification plan. The TMUC project is aligned with the government's push to develop the petrochemical industry in Singapore.

Chemical manufacturers, like all the other manufacturers, feel that energy costs in Singapore have become very prohibitive; how can the industry work with utilities companies to increase their competitiveness?

A multi-fuel strategy would be a balanced approach to take for this market. Our Tembusu Multi-Utilities Complex is a model of fuel diversification that provides competitive utilities to our customers in Jurong Island. Tuas Power also offers consulting and management solutions for customers looking to increase energy efficiency. Better energy management can be achieved through adopting more efficient variable speed drives and cooling systems, amongst others. Looking at ways of optimizing resources whilst ensuring environmental sustainability is another way that Tuas Power is working with customers to increase their competitiveness. Through TPGS Green Energy, a joint venture with Gas Supply Pte Ltd, Tuas Power introduced cogeneration and trigeneration technologies to large manufacturing facilities such as pharmaceutical and chemical plants in Singapore. These highly efficient technologies produce two or three types of utilities such as steam and electricity that are critical to the customers' plant processes, thus reducing their energy costs and carbon footprint at the same time. By building and managing the facility on a long-term basis, we effectively help them to focus on their core business and channel valuable resources for further growth. •

INTERVIEW WITH

Arthur Knox

MANAGING DIRECTOR
CRODA

What role do your Singapore operations play in the context of Croda's global operations?

Our business is larger in other parts of the world than it is in Asia; currently Asia accounts for about 18% of our turnover and it is becoming an increasingly larger portion of our global business. Singapore operations serve as our headquarters for Asia pacific, the gateway to our fastest growing markets.

Innovation is one of Croda's key goals in Asia and Singapore is one of our hubs for innovation. Our goal is to provide innovative ingredients developed, manufactured and tested in Asia to meet our customer's needs in Asia. We have three business areas, including consumer markets, performance technologies markets and industrial chemicals. We have been very successful in the consumer markets with our innovative approach and we are using a similar model for our performance technologies markets which has also met with success.

Singapore is our regional headquarters and we are making large investments in several functional areas with a key focus on R&D. We are expanding our research, applications, synthesis and product claims lab. Our new product claims lab will enable us to test our ingredients in our customers' products so we can provide performance enhancements recommendations to our customers.

Croda's main manufacturing sites in the region are in Singapore, India and Japan. Our Singapore plant is one of the largest and it has kosher and halal certification, which is important to many of our customers. We have sales offices throughout the region. Singapore is still the preferred manufacturing location in Asia due to the competitive pricing for petrochemicals and the nearness to the oleochemicals from Indonesia and Malaysia.

What are some of the ways Croda is innovating to enhance production capabilities?

We have an Enterprise Technology group that seeks new and more efficient processes to produce our ingredients. This team spans the globe and is very focused on more sustainable approaches to produce our current and future range of ingredients.

Do you feel that this system has limited Croda from pursuing its usual sustainability practices?

No, since we can find ways to bring sustainability to our markets. Since Singapore is close to the largest regions for palm oil and derivatives, Croda was able to link up quickly with its suppliers and is one of the first companies to be offering an entire range of mass balanced certified specialty palm oil derivatives.

We received recognition from the Corporate Knights as one of the 100 most sustainable companies in the world (currently number 25) and it is sustainability initiatives such as this that has enabled us to achieve this recognition. Some of our other sustainability initiatives include an investment of $6 million to develop an energy source from a landfill to power a plant in Atlas Point Delaware. We also used wind energy at one of our plants in England to provide power to our plant.

When GBR interviewed Croda Singapore for our 2010 report, we were told that you were looking to expand your capacity for surfactants by 15-20% in Singapore, but at that point in time there was a shortage of ethylene oxide. How have you addressed that issue?

More ethylene oxide is coming to the island; we should be able to double our surfactants capacity and also bring more innovative chemistries to the island. We have also increased our ester capacity by 25-30%.

You are one of the original tenants on Jurong Island. Does Croda have an infrastructure wish list for Jurong Island?

Energy is the big issue. The cost of energy has increased considerably. The development of lower-cost, sustainable energy sources is critical for the future since chemical processing is energy intensive.

After doubling your output, what is your expansion plan?

We will expand into new and innovative ingredient production. Currently we are planning to expand our Blue Technology production in Singapore. Blue technology is a range of highly efficient ingredients that enables our customers to process our ingredients at ambient temperatures or what we like to refer to is as cold processing. Our customers can produce their products using less energy and thus increasing the sustainability of their products. The cold process batches also take less time to manufacture so our customers are seeing increased throughput at their plants so this chemistry increased sustainability and lowers costs. •

INTERVIEW WITH

Bernd Eulitz & Lim Seck Luan

BE: MANAGING DIRECTOR, SOUTH AND EAST ASIA
SL: MANAGING DIRECTOR
LINDE GAS SINGAPORE

BE

Could you provide us with some general background on The Linde Group and some of your major milestones in Singapore?

BE: The Linde Group is a world-leading gases and engineering company with 62,000 employees working in more than 100 countries worldwide. In the 2012 financial year, Linde generated revenue of EUR 15.280 bn.

Singapore is the headquarters of The Linde Group's Regional Business Unit South & East Asia, which I am responsible for, and its Asia Pacific headquarters, led by our Executive Board Member Sanjiv Lamba. Mr Lamba oversees the Greater China, South & East Asia and South Pacific regional business units, as well as Linde's global electronics business which is also headquartered in Singapore.

SL: In Singapore, our operating unit is Linde Gas Singapore (LGS). Historically, the air gases, compressed gases and electronics gases part of LGS' business has its roots in Singapore Oxygen (SOXAL), which was a 50-50 joint venture between the BOC Group and Air Liquide. In September 2006, Linde AG acquired the BOC Group, forming The Linde Group. As part of the merger, BOC had to divest its shares in SOXAL.

On the syngas (meaning Hydrogen and Carbon Monoxide) part of our business, Linde entered Singapore in July 2004, when Linde AG acquired the Singapore Syngas plant on Jurong Island from ChevronTexaco Corp and renamed the company Linde SynGas Singapore Pte Ltd. Linde has invested heavily in improving engineering and expanding operations at its Jurong Island facility since 2004, turning it into a very successful asset and flagship for the company.

In May 2008, Linde SynGas Singapore Pte Ltd was renamed Linde Gas Singapore Pte Ltd (LGS). In 2010, we amalgamated Linde's Specialty Gas business operating in Tuas into Linde Gas Singapore Pte Ltd. Today, Linde Gas Singapore Pte Ltd serves our Singapore customers through 3 operations bases – Jurong Island, Tuas and Woodlands (at a customer site).

What is the status of your current asset portfolio on Jurong Island? What initiatives are you currently pursuing?

SL: Linde is Singapore's largest industrial gas producer and supplier of three gases: hydrogen, carbon monoxide and carbon dioxide. We operate Linde's largest and the most highly integrated HyCO (Hydrogen and Carbon Monoxide) plant in Asia, on Jurong Island. Our Jurong Island site is in fact also the largest and most technically complex gasifiers in this region, one of the few in the world which is able to take heavy feedstock, remove the impurities such as sulphur, gasify it, purify it and separate it into hydrogen and carbon monoxide to supply to customers.

In addition to the gasifier, our Jurong Island site also houses our carbon dioxide plant which is the largest CO2 plant in Singapore, capable of producing 100 tons per day (tpd) of liquid carbon dioxide. Our carbon dioxide plant, which was built in 2009 with an investment value of S$25 million, enables Singapore to be largely self-sufficient in this gas and to serve a growing customer base.

Our Jurong Island facility also produces gaseous nitrogen via pipeline to customers on the island such as Oiltanking. We also supply liquid oxygen, liquid nitrogen, argon and carbon dioxide in the merchant market to customers across Singapore. Our liquid carbon dioxide and liquid argon also serve other Linde affiliates in the region.

In addition, Linde has built a supply chain facility on Jurong Island to serve as a distribution and storage hub for electronic specialty gases in view of the growing demand for such gases in Singapore and across the region.

Last year, Linde Gas Singapore was awarded a major long term exclusive industrial gases supply contract by global specialty chemicals company Evonik Methionine SEA Pte Ltd. To meet the industrial gases feedstock requirements of Evonik's new world-scale methionine production plant 'Me5', Linde Gas Singapore is building a unique and highly customised gases plant on-site - the first "3-in-1" integrated plant in Singapore comprising a Hydrogen SMR, Methane PSA and C02 recovery unit using natural gas as a feedstock.

BE: Linde is committed to developing innovative technologies and in this spirit we have also recently setup a pilot plant in Jurong Island to undertake a 2-year research programme on Linde's proprietary acid gas removal technology, leveraging on the availability of experienced plant personnel and feed gas from our gasification unit. Our experts are also currently working actively with the National University of Singapore to develop a carbon capture and sequestration (long term storage) roadmap for Singapore. Likewise Linde would be pleased to work with relevant government agencies in Singapore to assess and develop solutions which can capture and transport carbon dioxide on a large scale, so that the carbon dioxide can be put it to commercial uses such as enhanced oil recovery (EOR), or stored below the sea floor rather than released into the atmosphere.

Do you feel that the Jurong 2.0 initiative has made the island more competitive?

BE: The Singapore government is far-sighted and business-friendly, and the Jurong Island 2.0 initiative shows that the government constantly assesses and ensures its regulatory framework and policies continue to ensure a competitive landscape, not only for new companies entering Singapore but also companies who have already made significant investments in Singapore.

The start up of Singapore's new LNG terminal and introduction of LNG into Singapore's energy mix will hopefully bring down the

cost of utilities such as steam and electricity in Singapore – utility prices at the moment are very high especially when such plants are compared with other similar plants located in other petrochemical hubs such as Houston, Shanghai Chemical Industrial Park or Ludwigshafen, and add significantly to the operating cost base.

SL: I would also add that common infrastructure such as pipeline racks that promote integration and linkages between companies are critical for the long term competitiveness and sustainability of operations in Singapore. Today, the cost of such infrastructure currently prohibits users from establishing pipeline networks more easily which would otherwise provide flexibility and robustness to the network.

Is limited manpower an issue for Linde Gas Singapore?

SL: Talent is a perennial challenge in the tight Singapore labour market. One of our competitive advantages at LGS is that we have recruited many of our people early on in their careers and invested heavily in their development, building up a solid team who have grown with Linde. Today we have very highly qualified and talented engineers and technicians in our Singapore operations, and they are highly sought after by new companies or projects starting up on Jurong Island and that does cause some pressure.

BE: In fact, Singapore is a training hub for Linde, where employees from countries in the region come to Singapore for a few years and then return to their home country to take on additional responsibilities. We will continue to drive our people excellence agenda both in Singapore and across Asia, with a strong focus on Six Sigma methodology to further develop our bench strength as talented and professional people are the key success factor behind our market leadership position in the region.

What is your long-term strategy for Singapore and the region?

BE: Singapore is one of the largest energy and petrochemicals hubs in the world, and a very important market for The Linde Group. We expect that demand for clean fuels, petrochemical & specialty chemicals products, driven by rising affluence and population growth in Asia, will continue to attract MNCs to invest and add capacities in Asia to serve this market. With the government's continued efforts to develop the chemicals and refining sector, we believe the prospects for Linde to further participate and support the expansion of these industries are very good.

To prepare for growth in Singapore and the region we are continuing to invest to expand our capabilities to support our existing and potential customers as they move up the value chain. For example in Singapore, Linde supplies carbon monoxide to Lucite's first world-scale plant producing MMA from their Alpha-technology, which is the first such plant in the world. Our hydrogen supplied to SRC continues to support the refinery's push towards clean, low sulphur fuels as emissions standards continue to become more stringent in Asia and globally.

Linde is a technology company, and we pride ourselves on creating innovative gases solutions that truly add value to our customers' businesses. We want to be a leader in every aspect of our business – in market share, safety, building a world-class professional team, always ensuring our foundational principles of safety, integrity, sustainability and respect underpin all our decisions and actions. •

INTERVIEW WITH

Ng Meng Poh

EXECUTIVE VICE PRESIDENT AND HEAD OF SINGAPORE AND ASEAN (UTILITIES)
SEMBCORP INDUSTRIES

Please provide a brief overview of Sembcorp Industries?

Sembcorp Industries has a market capitalisation of approximately S$9 billion and has three main business units: Utilities, Marine, and Urban Development. Globally, the Sembcorp Group is present in 16 countries across six continents. About 80% of our business lies within a flight radius of between seven and nine hours from Singapore. With the rising global demand for our areas of business - energy, water and other essential urban solutions - we are well positioned to grow in a number of fast-developing emerging markets. In particular, we have taken steps in recent years to expand our footprint significantly in China, India, the Middle East, and ASEAN.

Our Utilities business has grown very rapidly. As at the end of the last financial year, the business' 10-year compounded annual growth rate was 20% and it was the top contributor to the Group. The business has over 5,800 MW installed power capacity. We also have over 7 million cubic metres per day of water and wastewater treatment capacity worldwide, making us Singapore's largest water company.

Furthermore, Sembcorp is a pioneer and world leader in the outsourced supply of multi-utilities to energy-intensive customers, such as chemical and petrochemical manufacturers. Without centralised utilities, industrial companies would have to build and operate facilities to generate the various utilities they needed to support their operations. But by outsourcing their utilities supply to us, industrial manufacturers have the opportunity to save time and money and are freed to concentrate on their core business. They also enjoy convenient, one-stop source and delivery of their various utilities and services.

We have played a key role in Jurong Island's unique "plug-and-play" environment since the site's inception. We offer chemical and petrochemical companies a full suite of services including power and process steam, industrial wastewater treatment and on-site logistics. Power and steam generation is the largest contributor to the business, while our water and wastewater treatment facilities which can treat multiple streams of complex industrial wastewater, and our onsite logistics infrastructure which connects facilities on Jurong Island, also play a crucial role in making the whole petrochemical cluster more efficient.

There are several reasons why we are the best utilities partner for Jurong Island companies. We were the first to pioneer the outsourced utilities model. There is no other company which has built up over 15 years' experience in serving the utilities needs of companies here. Our asset base of nearly S$3 billion on the island, and our reach and range of products and services are unrivalled. Importantly, we have built up a deep understanding of our customers' needs over all these years of developing specialised solutions for them.

As Jurong version 2.0 comes online, how has 'plug and play' evolved and what new investments from Sembcorp fit into this philosophy?

The Jurong Island version 2.0 initiatives aims to enhance the site's competitiveness through areas such as alternative feedstock, better logistics and transportation, environmental conservation, water, and enhanced integration.

Last year Sembcorp made the commitment to invest another S$1 billion in Jurong Island to add to our existing portfolio.

For instance, this newr cluster of facilities includes a S$40 million industrial wastewater treatment plant capable of treating multiple sources of industrial wastewater. Also included is a new facility under construction applying efficient, environmentally-friendly cogeneration technology, which will have a 400MW power capacity and be capable of producing 200 mt per hour of steam for supply to JAC's upcoming S$3 billion aromatics complex nearby. We are also developing a new technology and innovation centre for applied R&D in energy, water and industrial wastewater treatment. This centre will support our operations and house Sembcorp researchers and specialists who will run test beds for emerging technologies relevant to the company's business, with the objective of achieving further improvements in efficiency, cost and environmental sustainability.

Furthermore, we're also leading the way in helping our customers reduce their environmental impact through introducing renewable energy to the island. Last year, we opened the first renewable energy plant on Jurong Island: a S$30 million woodchip boiler producing process steam. We are already building an expansion to this facility to double its capacity, and plan to complete later this year. The next investment we are planning is another steam generation facility that will run on industrial and commercial waste. Instead of this waste being sent to the incineration plant, we will be using it to produce steam for our customers on Jurong Island. This facility will be particularly important for Singapore in helping to extract value from waste generated by the local population. It will also be important for us, in helping us make our steam supply more environmentally friendly and strengthening our ability to offer our customers the best competitive solutions amid high fossil fuel prices.

Where integration is concerned, Sembcorp provides access to an entire "service corridor" pipeline network spanning one end of Jurong Island to the other and connecting companies and transporting feedstock sources throughout the island. We have invested in expanding the reach of this network to accommodate new entrants onto the island. So if a company is setting up new operations and they want to connect to their feedstock provider elsewhere on the island, they can simply connect their new facilities to our existing pipeline infrastructure and gain instant connectivity, allowing them to come on-stream sooner. •

What do you look for in an industrial utilities partner?

sembcorp

vital partners
essential solutions

Competitive solutions. Reliability and environmental responsibility. A strong track record. Real understanding of what you need and what can help you carry out your business better.

Sembcorp offers all these and more. The global pioneer in centralised utilities, we provide companies in energy-intensive industrial sites energy, water, wastewater treatment and on-site logistics that are essential for their operations. Outsourcing these critical utilities to us allows them to focus on their core business and benefit from greater reliability.

With more than 15 years' track record spanning Singapore, China, the UK and Oman, an impressive range of products and deep insight into our customers' needs, Sembcorp is the clear choice for all your centralised utilities needs.

www.sembcorp.com

INTERVIEW WITH

Aaron A. Domingo & Yu Tat Ming

AAD: MANAGING DIRECTOR
YTM: CEO
PACIFICLIGHT ENERGY

AAD

YTM

In March 2013 FPM Power Holdings, a joint venture between Hong Kong-based First Pacific and Manila-based Meralco, acquired a 70% stake in GMR Energy (Singapore) Pte Ltd. Why was the asset on Jurong Island an attractive investment?

AAD: Any investment decision Meralco makes has to be taken in the context of our strategy and vision in other areas as well. Most of our projects are in the Philippines and are predominantly green field developments. Thus we wanted to front-load the cash flow of the company by acquiring operational or near operational assets. The asset we purchased in Singapore fits this profile as it is scheduled to come online at the end of 2013. Singapore was an attractive market for investment because it offers a transparent, single-fuel market, based on gas feedstock. Therefore it is easy for us to analyze and understand where we stand in the market vis-à-vis other players in the sector especially compared to our home market in the Philippines, which is a multiple fuel market with less a less defined regulatory regime. Lastly, the enforcement mechanisms in Singapore are firmly in place. You can have the best-defined rules in the world, but they mean nothing if the proper enforcement regime is not in place.

YTM: A key aspect that differentiates Singapore from most Southeast Asian countries is that there is no subsidy of the power sector at any stage in the value chain. The government provides a robust and transparent regulatory framework for the power industry, thus encouraging the market to achieve efficient utilization of resources. This means generating companies can expect a level playing field and return based on market dynamics.

The process industry in Singapore raises concerns that the price of electricity in Singapore is too high. How does it compare to other markets in the region?

AAD: At Meralco we conducted a comparative study of the power pricing across Asian markets. Our study found that the Philippines ranks as the highest prices in Asia, then Japan and third Singapore. These markets are the only fully priced markets in Asia as opposed to the other markets which are semi-subsidized by the government through tariffs or a fuel subsidy, etc. Thus, when we analyzed all the costs between the fully priced markets and the semi-subsidized markets, the differences are apparent. For power users, i.e. chemical manufacturers, Singapore has a higher price of electricity, but this market also offers a more developed, efficient infrastructure that allows manufacturers to effectively and predictably manufacture and transport their products for market.

The asset you purchased represents a S$600 million investment on Jurong Island. What are some of the differentiating capabilities of the plant and what will it add to the market?

YTM: The fully priced, single fuel model encourages companies to find a competitive advantage through increased efficiency at their plants. There is little price differentiation in terms of the price of fuel (gas). As the new entrants into the market with our facility expected to go online in December 2013, we have adopted the most advanced methods and technologies for the plant. Thus, compared to the incumbent power generators already present on the market, we expect to gain a competitive advantage through technologically based efficiency.

Singapore's chemicals sector accounts for 40% of the country's manufacturing sector's power usage. How important will this sector be in terms of customer base for your new plant?

YTM: Although we are a city-state with limited space, manufacturing is still a major driver for growth in our economy and drives robust growth in the demand for electricity. Although

Singapore's GDP growth was only 1.2% in 2012, we still witnessed demand for electricity increasing by approximately 2.4%.

AAD: One reason having customers in process manufacturing, such as the chemicals industry, is attractive for a power generation company is that the 24/7 operation of these process plants flatten the load patterns on the power plants. Our combined cycle plant is designed for high utilization, thus we want to keep it running as close to capacity as possible on a consistent bases rather than have peaks of usage at certain times of the day. Attracting customers in the process industry allows us to achieve this goal and in exchange the buyer receives preferential pricing compared to a buyer from the less stable retail market.

How will the new plant be integrated into Jurong's "plug-and-play" infrastructure?

YTM: The chemical industry potentially provides us with an additional revenue source from our plant as a chemical manufacturer located nearby could use the steam we generate for their process operations. Our location on Jurong Island means there is a good chance a chemical plant could be placed next door to our plant, thus providing a mutually beneficial arrangement.

AAD: The process industries require gas, steam, and power for their own operations. Aggregating them in one area like they are on Jurong is the best possible arrangement because the infrastructure is all there. So the location builds up on itself, as the logistical challenges usually associated with ancillary services are already present and ready to be utilized on Jurong.

Given your new plant and several other players recently completing or nearly completing new investments, how will the market develop over the next three to five years? Will there be the same level of investment in new power plants?

YTM: I believe with the new capacity coming on-stream both this year and next year, there will be a period of consolidation. Through the LNG vesting scheme, the government has incentivized the initial uptake of LNG in order to provide a base load for the LNG terminal that Singapore has recently brought on-stream. This has led to a flurry of investment in power generation that may not be repeated. As a land scarce country, it has become increasingly difficult to find a suitable sea front site to build new plants. On the demand side, we are still predicting 3-4% long-term annual increases in tandem with the economic growth of Singapore. •

INTERVIEW WITH

Kenneth Tan & Ananth Nochur

KT: GENERAL MANAGER
AN: SENIOR BUSINESS DEVELOPMENT MANAGER
EMERSON PROCESS MANAGEMENT

KT

Can you provide a brief overview of Emerson Process Management in Singapore and what role does your process management division play within your global operations?

Emerson is a global technology leader with sales in 2012 exceeding US$24 billion. Process Management constitutes 24% of Emerson's portfolio. The Singapore office was established in 1965, which coincided with the emergence of the first oil refineries and later the growth of petrochemical industry. Today, we are proud to say that we serve the majority of chemical companies on Jurong Island. Acting as a regional hub, Singapore represents our Asia-Pacific headquarters with several manufacturing facilities that supply customers worldwide. We have a broad process automation portfolio, which we classify into three major areas: measurement and analytical, valves and actuators and systems & solutions.

What are some examples you have seen of Emerson Process Management using new innovations in the chemical industry or utilizing new technologies for the first time?

Emerson Process Management follows Singapore's path of continuous innovations and improvement. For example, on Jurong Island, one of the key challenges our clients are facing is the competition from refineries opening in the Middle East and China. In order to stay competitive our customers need to become more cost-efficient and Emerson offers a wide range of solutions to help overcome these challenges. For example, our Smart Wireless technologies allow chemical plants to monitor critical assets, improve efficiency and reduce unplanned downtime. Effectively, this extends predictive intelligence into areas that were previously out of reach and opens new possibilities in process improvement with ease of use and implementation.

Singapore is often portrayed as the pinnacle of efficiency and is ranked number one by the World Bank for the ease of doing business. Do you agree with this statement or do you think there is room for improvement?

Obviously, there is always room for improvement. Many of our customers face challenges such as the scarcity of land, resources and high-energy costs. This means that businesses have to cooperate more and companies need to find innovative cost-saving measures. For example, Singapore does not have its own energy resources – fossil or renewable – and is looking towards energy efficiency as a key driver to address issues around energy security and its vision to be a leader in sustainability. We see that in the immediate future, there will be a significant push to improve efficiency, reliability and sustainability. Emerson Process Management will continue to provide companies with cutting-edge solutions that will help our customers overcome these challenges.

What do you see as the strategic priorities for Emerson in the next three to five years?

Emerson is well positioned to drive the adoption of game changing technology from all facets of control and instrumentation in the process industry. Our strategic priority is to help our customers embrace such technology to improve safety and optimize their plants. For example, Emerson Smart Wireless application is a very reliable and secure technology, which has been proven and adopted by the chemical industry worldwide. Furthermore, we also have a state-of-the-art Service Center based in Singapore that supports our chemical customers around the clock. This Service Center also addresses the manpower challenge in Singapore because customers here are increasingly relying on automation providers like us to help them bridge the gap. •

Courtesy of Hai Lock

New Investments

Specialty chemicals and petrochemicals

Recent activity shows that the EDB's efforts to promote investment in specialty chemicals are paying off handsomely. A number of companies such as Lanxess, Evonik, Clariant, Mitsui, Croda, Asahi Kasai, Sumitomo, Jurong Aromatics Corporation and Zeon Chemicals have bought into the government's development of JIv2.0. In 2012 Singapore's Fixed Asset Investment reached S$16 billion ($12.7 billion), an increase of 16% from 2011.

In June 2013, German specialty chemicals heavyweight Lanxess commissioned its largest single investment in company history in Singapore. Even before the completion of this €400 million ($517 million) butyl rubber plant, Lanxess broke ground on a €200 million ($258 million) neodymium-based performance butadiene rubber (Nd-PBR) facility, the company's second largest investment to date and, at 140,000 tpa, the world's largest polybutadiene rubber plant.

With these investments, LANXESS has shown a firm belief that Singapore will play a critical role in bolstering the company's global earnings. "The establishment of global and regional offices here, along with production sites, cements the focus on Singapore as a key element to the global growth story of LANXESS… With these two major rubber investments in Singapore, the site on Jurong Island will play a key role in LANXESS achieving its mid-term earnings goal of €1.4 billion ($1.8 billion) and €1.8 billion ($2.33 billion) EBITDA pre-exceptionals in 2014 and 2018," says Ian Wood, managing director and country representative for Lanxess Singapore.

Lanxess is not the only company building synthetic rubber production on Jurong Island; three Japanese companies; Zeon Chemicals, Sumitomo Chemicals, and Asahi Kasai are all in the construction phase of their own production facilities.

Zeon Chemicals has invested S$240 million ($200 million) in a solution polymerized styrene-butadiene rubber (S-SBR) and is scheduled to commence the first phase of its operations in 2013, with a second phase coming online in 2016. Once fully operational the plant will have up to 80,000 tpa of production capacity. According to Zeon's managing director, Yuki Hirakawa, raw material limitations in Japan caused the company to look elsewhere for synthetic rubber manufacturing. "After studying several options, Singapore was a good investment because of the government's support and the ability to sign long-term butadiene feedstock supply agreements with reputable local manufacturers."

Sumitomo Chemicals, a long-established manufacturer in Singapore, broke ground on its $120 million S-SBR plant in February 2012. Once completed, the plant will have a capacity of approximately 40,000 tpa. This will add to Sumitomo's massive $7 billion revenue stream in Singapore, which includes its leading stake in the Petrochemical Corporation of Singapore. Asahi Kasai Chemical Corporation's S-SBR production facility will be the second complex for the Japanese plant on Jurong Island, as the company's subsidiary Asahi Kasei Plastics Singapore already operates a $200 million world-scale polyphenyl ethers (PPE) facility. Once fully operational in 2015, Asahi Kasai's S-SBR facility will have a capacity of 100,000 tpa.

German specialty chemical manufacturer, Evonik, is currently within budget and on schedule to complete its $500 million, 150,000 tpa methionine plant by August 2014 and has recently selected Jurong Island as the site of a new polyamide 12 plant. As the company seeks to double its 2010 sales figure in Asia to €4 ($5.17) billion by 2015, Peter Meinshausen, president of Southeast Asia, Australia, and New Zealand for Evonik, explains Singapore's importance to the company's position in Asia: "Since 2009, we have been expanding our asset portfolio in Singapore and Singapore continues to play a vital role in Evonik's considerations for the future. We will continue to expand our asset footprint by investing in production sites and innovation facilities across Asia to better accommodate the requirements of Asian markets and our Asian customers."

Yasushi Nawa, managing director and CEO of Mitsui Chemicals Asia Pacific, explains why Singapore is such an ideal destination for foreign chemical companies: "To summarize Singapore's allure in one word: stability. There is very little country-risk here, both in terms of political and geographical uncertainty. Compared to peers with similar chemical hubs like China, Vietnam, and Philippines, few of them inspire the same levels of investment confidence among Mitsui's leadership as Singapore."

A longtime player in Singapore, Mitsui Asia Pacific is set to begin construction on a 300,000 tpa polyolefin facility with a price tag of S$250 million ($200 million), bringing Mitsui's cumulative FAI in Singapore to well over S$1 billion ($800 million). Given its well-established investment commitment to the country, the company is looking to move "further up the value chain by way of specialized coating compounds and polyolefin products. We are continually growing and diversifying our asset portfolio in Singapore in order to capture a larger share of the titanic Asian market for specialty chemicals," says Yasushi Nawa.

Nawa's comments summarize why corporate boards continue to choose Singapore as an investment destination despite the relatively high cost vis-à-vis other Asian countries: investment confidence and strategic location. One key pillar of this confidence is Singapore's strong IP protection regime. The inherent risk of compromised IP that many innovative multinational companies encounter from doing business in other parts of Asia is not a concern in Singapore. "The IP framework is definitely one of the main reasons that many of our chemical collaborators come to Singapore, knowing that the things they do here will be handled in the strictest of confidence… We do recognize that Singapore is quite small, and we really cannot compete on the same scale as China and India in terms of manufacturing. Consequently, we focus on how to make the best of what we have and try to compete in those areas where we know that innovation and a strong IP framework can actually make a difference. Singapore's strong IP framework supports our work and makes us happy to be here," says Dr. Keith Carpenter, executive director of the Institute of Chemical and Engineering Sciences (ICES).

Petrochemicals Re-up the Ante

Not to be outdone by the specialty chemicals manufacturers, Singapore's major petrochemical players are continually upgrading their portfolios to both expand their capacities and enhance their capabilities in the specialty chemical sector as well. Chevron Oronite is enhancing its offering for additives, while both Royal Dutch Shell and ExxonMobil have undertaken wave after wave of new investments to further enhance their world-leading facilities and move them further downstream, and Jurong Aromatics Corporation is progressing with construction on its new integrated facilities.

In Q42012 Shell announced an upgrade to its ethylene cracker complex on Bukom Island, which will expand the cracking capacity at the Shell Eastern Petrochemical Complex from 800,000 tpa to 1 million tpa. Shell also has announced it will augment its polyols production by 100,000 tpa. On top of this, in April 2013 the final investment decision was made to increase high-purity ethylene oxide and ethoxylation production by 140,000 tpa each at Shell's Jurong Island facilities. In a statement, Chiew Nguang Yong, chairman of the Singapore Chemicals Industry Council (SCIC) and general manager of Shell Chemicals Seraya, comments: "Shell has the right asset base on Jurong Island to capture growth opportunities in the region. Customers will clearly benefit from our investment as we can now produce the products they need more sustainably and efficiently."

In May 2013 ExxonMobil's new ethylene steam cracker began producing ethylene at the company's Singapore petrochemical complex. This upgrade represents the final component of a multibillion-dollar investment over a 15-year period, making the complex the largest

INTERVIEW WITH

Yasushi Nawa

MANAGING DIRECTOR AND CEO
MITSUI CHEMICALS ASIA PACIFIC PTE LTD

Can you briefly introduce Mitsui Chemicals Asia Pacific?

Mitsui Chemicals Asia Pacific is ultimately the product of a merger between Mitsui and one of its petrochemical subsidiaries in 1997, although the company can trace its history back over 100 years to 1912; Mitsui celebrated its centennial only last year. In the late 1990s, Mitsui established a new company in Singapore to develop assets for the production of phenols and bisuphenol. After a couple years, several new lines were added to our offering, and by 2004 our existing plants were incorporated together into Mitsui Phenols Singapore (MPS); those plants are still in operation on Jurong Island today. In terms of polymers, Mitsui entered the industry in Singapore in 2001 and our first elastomer plant, which manufactures products for the automotive industry under the brand name of TAFMER, came online in 2003. The company that manages elastomers production for Singapore is called Mitsui Elastomers Singapore. Mitsui is one of the top three manufacturers for such elastomers worldwide. Our capacity on Jurong Island, exceeds 300,000 mt/y of TAFMER. Along with regional marketing activities, six entities are integrated under the umbrella of Mitsui Chemicals Asia Pacific in Singapore. Regionally, our operations here stand among 20 peer subsidiaries, but we make up a significant portion of Mitsui's business in Asia. Mitsui Chemical Asia Pacific can take credit for accumulated fixed-asset investments into Singapore well in excess of $1 billion.

What developments is Mitsui undertaking to enrich Singapore's chemical sector today?

Mitsui Asia Pacific is moving the industry further up the value chain by way of specialized coating compounds and polyolefin products. We are continually growing and diversifying our asset portfolio in Singapore in order to capture a larger share of the titanic Asian market for specialty chemicals. Our assets have been operating at full capacity since we doubled output for our various products in 2009, and our business still continues to grow. For 2013 and beyond, we are looking to add another polyolefin plant capable of 300,000 mt/y for a pricetag of approximately $250 million. Construction will begin in June of this year and is scheduled to finish by the end of 2014. Singapore will be a home for our business for a long time; it is essential to Mitsui Chemical's operations in Asia.

As one of the first to do so, why would a chemical company elect to set up shop in Singapore and what advice would you have for an enterprise considering the decision?

To summarize Singapore's allure in one word: stability. There is very little country-risk here, both in terms of political and geographical uncertainty.

Likewise, the Singapore Economic Development Board (EDB) is an immense resource for potential entries to this market; it is their mission to welcome new companies into the local industry. The EDB is very cooperative and Mitsui has benefitted greatly from their many incentives for taxation, exemption, and frontier innovation. Singapore, on account of bodies like the EDB, may well be the world's easiest country to invest in.

What are some of the unique challenges that manufacturers face when operating in this region?

Cost-competitiveness is the current challenge to long-term sustainability. Labour, feedstock, and energy pricing are the main culprit, and these costs are restructuring the whole industry. To give an example, American petrochemical companies are often pushed to re-shore some of their manufacturing in the US where the harvesting of shale gas has reduced production costs considerably. Overall, the EDB is aware of our concerns and is actively and analytically addressing these challenges.

Mitsui Asia Pacific's strategy for remaining cost-competitive in this context is to create large growth margins through specialty technology and a commitment to research and development; this will allow us to become less sensitive to feedstock and other fixed-cost concerns. For example, Mitsui currently has the only proprietary technology for bio ethylene production in Asia. The business environment is still favourable, but we are constantly being pressed to adapt.

What is Mitsui Chemical's outlook for the future?

Mitsui's primary concerns for the future are tied to the markets of Asia. Our goals there will be met with heavy marketing activities and investment into the region, and our operations in Singapore act as a bridge to these countries. Singapore is where Mitsui Chemicals group has built itself a platform for all of our products; from here we will consolidate our respective businesses in Asia and continue to grow as a company. •

integrated refining and petrochemical facility for the super major worldwide. The upgrades to the complex will add 2.6 million tpa of finished capacity, more than doubling the current site's capabilities and caps off the largest chemical expansion project in ExxonMobil's history. Matt Aguiar, chairman and managing director of ExxonMobil Asia Pacific, sees this latest commissioning as the culmination of two decades of work. "We made the decision in the 1990s that Singapore would serve as the Asia-Pacific hub for the company as we thought it was the country that offered the best strategic advantages in the region... When ExxonMobil makes an investment, it is on a 20- to 30-year time horizon."

Another ongoing project of note is the Jurong Aromatics Corporation. Held by a consortium of investors led by South Korea's SK Group and China's Jiangsu Sanfangxiang Group, the $2.4 billion complex is scheduled for completion in 2014 following a two-year delay attributed to tight credit markets in the wake of the financial crisis. The project will be complemented with a S$1 billion ($800 million) onsite cogeneration plant from Singaporean-based SembCorp. Once fully operational, the complex is expected to bring online an additional 1.44 million tpa of aromatics as well as 2.47 million tpa of oil products.

The capital flowing into Singapore creates the image of confidence in the market and highlights the favorable market environment for multinational investments. According to Chiew Nguang Yong of SCIC and Shell: "Singapore is fortunate to have a critical number of competitive advantages. Jurong Island, for example, was arduously reclaimed for the sole purpose of building a downstream petrochemical hub characterized by high levels of integration. The presence of major MNCs has managed to attract investment from their global downstream customers and add-value to the industry as a whole. This environment also creates opportunities for SMEs and allows expertise to flow from MNCs to other SMEs and players in the industry. Outside of Jurong Island, the other main advantage of Singapore is the element of stability: the economic, political, and regulatory environments are all very transparent and predictable. Lastly, the growth of markets in the region, such as China, makes Singapore an ideal place to do business; a chemical company in Singapore is well positioned for growth. Indeed, Singapore's model is being replicated throughout the region." •

"The profile of [chemical] investments has changed over the last three to four years. The new wave of investments is focused on specialty chemicals, which involves more hazardous, unique and proprietary processes. From our perspective as a training center, we have to expand our offering to meet the needs of the new profile of companies. Some of the skill sets that these specialty chemicals manufacturers require are of a higher level and require more specialized training. Singapore continues to evolve, for us it is about staying ahead of the curve and prepositioning ourselves to the training and manpower needs to these new investments."

- Lee Wing Kit, Business Development Manager, Petrofac Training Institute

"Singapore has one of the highest methanol consumption rates per capita in the world. Methanol is a bit too expensive to produce in Singapore because of high gas prices, but several chemical manufacturers in the country make sophisticated downstream products in processes, which are methanol-intensive. This high consumption reflects Singapore's drive for more value-added businesses, and this drive has drawn methanol to the market."

- Mark A. Berggren, Managing Director, Methanol Market Services Asia

"According to SPRING Singapore, small to medium enterprises (SMEs) comprise 99% of enterprises here and bolster economic resilience, provide essential infrastructure for larger companies and bring in fresh perspectives. The government is thus trying to grow SMEs like Matex International into globally competitive companies. Companies need ideally to be financially strong to grow to the next level and form Singaporean multinational corporations for the future. As Matex continues its multinational expansion footprints, one of the ongoing key challenges faced is translating ideas from Singapore to our international offices and to our customers. "

- Tan Guan Liang, Executive Director, Matex International

"Alstern, like many other labor-intensive enterprises, has been negatively affected by the shortage of manpower in Singapore. We have worked to overcome this problem by increasing efficiency and fostering close partnerships with subcontractors.
In recent years, health, safety, and environment (HSE) standards, as practiced by the many MNCs in Singapore, have dramatically increased; prompting service providers throughout the sector to build their capabilities. While there is always room for future improvement, we are proud to have greatly enhanced our level of compliance. Alstern Technologies is committed to investing sufficient time, effort and money to ensure that the company runs in compliance with the highest HSE standards."

- Sam Cheok Whai, International Sales Director, Alstern Technologies Singapore Pte Ltd

Outward FDI in Manufacturing by Type

Source: Department of Statistics Singapore

SECTOR / INDUSTRY	2001 S$BILL.	2001 %	2003 S$BILL.	2003 %	2005 S$BILL.	2005 %	2007 S$BILL.	2007 %	2009 S$BILL.	2009 %	2011 S$BILL.	2011 %
Manufacturing	26.4	100	33.0	100	46.6	100	69.6	100	80.1	100	93.7	100
Food, beverages and tobacco	4.4	16.6	5.7	17.4	7.6	16.3	11.1	15.9	13.8	17.2	21.0	22.4
Computer, electornic and optical products	7.3	27.8	8.2	24.8	10.5	22.5	16.3	23.4	15.7	19.5	13.0	13.9
Transport equipment	1.2	4.5	2.2	6.7	5.4	11.5	8.6	12.4	3.5	4.4	12.2	13.1
Chemicals and chemicals products	1.2	4.6	1.8	5.3	2.7	5.8	4.7	6.7	6.8	8.5	8.7	9.2
Machinary and equipment	1.2	4.5	2.0	6.0	2.3	5.0	3.9	5.6	6.1	7.6	7.6	7.8

Investment Commitments by Country (million dollars)

Source: Department of Statistics Singapore

	2009	2010	2011	2012	2011 III	2011 IV	2012 I	2012 II	2012 III	2012 IV	2013 I	2013 II	2013 III
Total	11 753.9	12 854.2	13 734.3	16 007.8	4 038.9	3 382.3	5 959.0	4 610.7	4 068.6	1 369.5	4 098.5	2 258.6	2 425.1
Local	3 368.3	2 069.6	1 875.4	1 837.5	140.7	98.8	353.1	865.9	463.0	155.5	1 435.2	814.2	638.6
Foreign	8 385.6	10 784.6	11 858.9	14 170.3	3 898.2	3 284.0	5 605.9	3 744.8	3 605.6	1 214.0	2 663.3	1 444.4	1 786.5
USA	4 191.0	3 311.4	5 047.4	5 654.5	2 672.1	1 176.1	2 566.7	1 961.0	979.5	147.3	2 005.2	372.8	753.2
Japan	1 032.2	1 175.8	995.0	967.8	355.1	536.0	50.4	490.0	224.0	203.4	109.4	114.7	245.0
Europe	2 466.8	4 819.0	2 131.9	3 134.3	217.8	756.3	516.4	769.9	1 021.9	826.1	384.2	681.8	701.7
Asia Pacific and Others	695.6	1 478.4	3 684.6	4 413.7	653.2	815.6	2 472.4	523.9	1 380.2	37.2	164.5	275.1	86.6

Investments Commitments in Petroleum and Chemical Product Manufacturers (Fixed Asset Investments in million USD)

Source: Department of Statistics Singapore

2006	2 531.8
2007	8 552.9
2008	11 550.0
2009	2 810.7
2010	1 595.9
2011	2 523.9
2012	6 491.6

Investment Commitments in Manufacturing and Services by Industry Cluster (million dollars)

Source: Department of Statistics Singapore

	2009	2010	2011	2012	2011 III	2011 IV	2012 I	2012 II	2012 III	2012 IV	2013 I	2013 II	2013 III
Total	11 753.9	12 854.2	13 734.3	16 007.8	4 038.9	3 382.3	5 959.0	4 610.7	4 068.6	1 369.5	4 098.5	2 258.6	2 425.1
Manifacturing	10 092.1	10 033.6	11 274.3	14 299.4	3 345.9	2 800.9	5 347.5	4 115.4	3 606.8	1 229.7	2 852.7	1 106.6	1 623.8
Electronics	4 672.4	5 647.8	7 384.4	6 239.4	2 399.5	1 403.6	896.7	2 822.1	2 520.6	0.0	2 052.8	14.2	436.5
Chemicals	3 055.6	1 651.4	2 523.8	6 678.3	712.3	1187.8	3 978.2	883.3	969.0	847.8	544.9	474.3	813.7
Biomedical Manifacturing	1 041.9	426.3	196.6	315.9	23.0	50.2	103.7	111.8	47.7	52.7	8.9	59.8	176.6
Preciosion Engineering	868.4	476.8	668.7	359.6	109.0	141.4	105.9	87.5	65.3	100.9	90.9	209.3	97.2
Transport Engineering	337.6	1 480.5	423.7	579.1	90.0	17.9	263.0	180.5	0.0	135.6	128.3	325.3	99.8
General Manufacturing Industries	116.2	350.8	76.1	127.1	12.1	0.0	0.0	30.2	4.2	92.7	26.9	23.7	0.0
Services Clusters	1 661.8	2 820.6	2 460.0	1 708.4	693.0	581.9	611.5	495.3	461.8	139.8	1 245.8	1 152.0	801.3

INTERVIEW WITH

Ian Wood

MANAGING DIRECTOR AND COUNTRY REPRESENTATIVE
LANXESS SINGAPORE

Can you provide a brief introduction to LANXESS in Singapore?

Our history with Singapore dates back to the 1920s when we were part of the Bayer group. We began our formal business relationship with the country in 2004 when we became a separate operating entity on a global scale; July 1st, 2004 was LANXESS' official birthdate in Singapore. In late January 2005, Lanxess went public as a company and become wholly distinct from our parent company.

Since then, our milestones in the region include the establishment of a LANXESS Singapore representative office in Ho Chi Minh City, Vietnam in 2005; the move of the Asia-Pacific (APAC) headquarters of LANXESS' leather chemicals business unit from Hong Kong to Singapore in 2008, and the relocation of our global headquarters of the butyl rubber business unit from Switzerland to Singapore in 2010.

Singapore, together with Shanghai is a pivotal hub for LANXESS' operations in APAC. The country is also home to two of the company's largest production plants – the butyl rubber and neodymium-based performance butadiene rubber (Nd-PBR) plants on Jurong Island. LANXESS currently employees over 370 employees in Singapore, this number will more than double by 2015 when the plants are in full operation.

How does LANXESS' footprint in APAC and Singapore cater to its overall strategy?

Singapore is the hub of our Southeast Asian operations, and the Asian pillar of our global synthetic rubber production.

The geographical location of Singapore makes it an ideal place from which to engage our key customers. Its good infrastructure, including IT connectivity, shipping & logistics and transportation services, translates to high efficiency levels in our business operations. The country has an ideal environment for new technology and innovation, driven by a highly-educated workforce and supported by a business-friendly government infrastructure.

Jurong Island, where our two plants are located, is a world-class petrochemical hub which provides an excellent integration infrastructure of raw materials supply, logistics network and utility services, all of which will optimize our plant operations.

LANXESS' single largest investment to date, the €400 million butyl rubber plant, is currently in the commissioning phase and commercial production is expected in the third quarter of 2013. Likewise, our Nd-PBR plant started its construction phase in September 2012; that asset will come onstream in 2015, and at €200 million is the one of the company's largest plant investments.

With these two major rubber investments in Singapore, the site on Jurong Island will play a key role in LANXESS achieving its mid-term earnings goal of 1.4 and 1.8 billion euro EBITDA pre exceptionals in 2014 and 2018.

How does LANXESS demonstrate its commitment to Singapore's chemical industry and the country as a whole?

We also believe strongly in doing our part for the local community, and we are focused on nurturing young talent through cultural exchange. To this end, we have developed various initiatives on a global scale that involve our youth and music. For instance, LANXESS has organised the bi-national LANXESS Young Euro Classic concert series in China, Japan, India, Russia and Brazil, and sponsors the Saito Kinen Music Festival in Japan.

Singapore is no different. In 2010, we initiated a partnership with the Singapore National Youth Orchestra - a three-year programme comprising activities that aid the development of budding musical talents – young musicians undertook master classes, study tours and concert performances with world-class musicians. The programme, which is the largest of its kind in Singapore, was a resounding success and we recently took the natural step of extending it for another three years till 2015.

What is LANXESS' future outlook for Singapore?

We expect the global megatrends of urbanization and mobility to continue driving growth in the emerging ASEAN markets. Singapore will continue to play a key role as a hub from which we manage regional operations for our business units.

The establishment of Singapore as a regional production hub puts us in good stead to supply the demand for synthetic rubber in surrounding markets for the foreseeable future.

Our focus in the near term is to ensure the upcoming butyl rubber and Nd-PBR plants remain on schedule, in order to meet the demand for high-performance rubber from the growing regional tyre markets. •

INTERVIEW WITH

Hiroki Sakasai

MANAGING DIRECTOR & HEAD CORPORATE BRANCH (SEA & PACIFIC)
SUMITOMO CHEMICAL SINGAPORE PTE LTD

Could we begin with a brief history of Sumitomo Chemical's presence in Singapore?

Sumitomo Chemical group has had a presence in Singapore since the 1970s, as Sumitomo Chemical was integral in establishing the Petrochemical Corporation of Singapore (PCS), Singapore's first petrochemicals plant. This S$2 billion investment was a joint venture between the Singapore government and a consortium of Japanese companies led by Sumitomo Chemical. This was complemented by the construction of phase two of PCS. Completed in 1997, Phase 2 represents S$3.4 billion of investment and the total capacity of the plant is now 965,000 1,100,000 mt/y of Ethylene, 480,000 645,000 mt/y of propylene, 730,000 mt/y of polyethylene, and 310,000 mt/y of polypropylene. In 1998 Sumitomo Chemical moved downstream in Singapore through the commissioning of our S$300 million SMAG project, which produces methyl methacrylate monomer (MMA), polymethyl methacrylates (PMMA), acrylic acid, acrylic esters and super absorbent polymer. This downstream project represented Sumitomo Chemical's first MMA production facility outside Japan. Today, Sumitomo Chemical group and affiliated companies in Singapore have annual sales of US$7 billion and employs approximately 1,200 people.

Why did Sumitomo Chemical choose Singapore to be its first location for MMA production outside Japan?

After Japan's phenomenal economic success in the 1980s, Sumitomo Chemical was looking to diversify where it produced chemicals in the 1990s. The company decided to choose Singapore because of the accessibility it offered to markets throughout Asia and because at this time Sumitomo Chemical did not have many overseas operations outside Japan. We felt comfortable investing in Singapore because we were already familiar with this country due to our experience with PCS and because of the strong support we received from the EDB.

What about Singapore makes it an ideal market to produce specialty chemicals?

The EDB's invitation through the creation of Jurong Island has been the key to attracting investment from both Sumitomo Chemical and other multinational corporations. For Sumitomo Chemical, Singapore is such a small country that we can focus almost solely on using it as a base for supplying external markets, so it serves as a convenient hub from where we can serve anywhere in Asia.

What are some of the challenges facing Singapore's chemicals manufacturers?

Of course, the operating costs in Singapore is much higher than other countries in Southeast Asia, especially the utilities costs. This is an issue we constantly bring up with the EDB and we are studying the feasibility of cogeneration in an effort to reduce costs.

Although Jurong Island is an excellent hub for the chemicals sector, it only has one bridge connecting it to the mainland. This can create a road shipment bottleneck on the island that needs to be addressed through the construction of a second bridge.

What other areas of Sumitomo Chemical's business in Southeast Asia are you excited about?

Sumitomo Chemical group company, Sumitomo Chemical Asia, has exclusive rights to sell the products from our joint venture with Saudi Aramco except for the Middle East. Singapore serves as an ideal base for distribution of petrochemicals from the Middle East into Southeast Asia and China.

Although talks are still in the very early stages, we are speaking with the EDB to acquire more land on Jurong Island for high value petrochemicals facilities. There is scarce space on Jurong Island, so any new investment will have to be made very carefully.

What are your key priorities for Sumitomo Chemical over the next three to five years?

Our first goal is to enhance our research and development capabilities in order to make our MMA production more competitive. Our next goal is to increase sophistication of process at our existing plants in order to minimize high operating costs. Lastly we want to establish Singapore as a regional headquarters for Sumitomo Chemical. •

INTERVIEW WITH

Dai Yu

CEO
JURONG AROMATICS CORPORATION

Jurong Aromatics Corporation (JAC) will be one of the largest aromatics plants in the world when it comes online in 2014. Could you provide some background on the project?

The Jurong Aromatics complex was started to ride the fast growing demand for energy and petrochemical products in Asia by producing and selling competitive aromatics and oil products into the market. The construction of our plant on Jurong Island started in August 2011. Upon completion, it will be a highly integrated, world scale complex with the latest high efficiency technology and processing facilities that will process 4.5 million mty of condensate, to produce 1.44 million mt/y of aromatics, consisting of 800 kilotons of paraxylene, 200 kilotons of other xylene and 440 kilotons of benzene. In addition, it will also produce 2.5 million mt/y of oil products, mostly jet fuel and diesel. The shareholders include SK Group, Glencore, Jiangsu Sanfangxiang Group, Shefford Investments, Arovin of Vinmar Group, UVM, EDBi, and ESSAR Group.

Operating costs are a difficulty for producers in Singapore as they attempt to compete against companies from China and other countries. What are you doing to minimize yours?

Existing producers in Singapore have been operating for many years, however the business environment has changed rapidly and operating costs has been a challenge to all the players. JAC understands this challenge and has on the onset taken actions to address this. Our approach is twofold. We will use the latest high-efficiency technology to minimize production loss and utilities consumption. We will also maximize operational efficiencies through simplified and standardized management structures, training to improve staff competencies, optimization of supply chains and plant utilization and operation, and the use of the best automation technology in production processing. Our organization will have few hierarchies to make information-flow and decision-making fast and efficient, and we use more IT automation and ERP in our management than most chemical plants.

Demand for aromatics is strong, particularly in Asia. Do you foresee the opportunity to expand your complex in future, and would there be physical space to do so?

There are some areas on our current site reserved for potential expansion. At this moment we are more focused on the construction, commissioning and startup of the project, but we are also doing initial assessing work for the future.

What are your strategic priorities for JAC over the next five years?

Our first priority is to have a successful project completion and a flawless start-up of our operations. Following which, JAC will have to achieve overall operational excellence across the organization and achieve first quartile performance within the industry. Our goal is to achieve satisfactory returns to our lenders and shareholders and to build JAC into a company with a high-performance culture and good industry reputation. JAC will also tap on the best practices from the industry including our shareholders, some of which are strong aromatics producers, while simultaneously maintaining our independence as a company. In the long term, we want to be the industry leader.

Do you have a final message for the readers of Chemical Week?

In the recent decade, low-cost products from the Middle East have impacted the whole commodity petrochemical industry, and in future shale gas may be an additional threat to the commodity petrochemical industry. Singapore's government is currently promoting the specialty chemicals industry. Specialty chemicals, at the high end of petrochemical value chain, normally have special purposes and specific processing technologies, niche markets, which makes them less cyclical and more profitable. The specialty chemicals business is not easy, however; it has high technological, R and D and logistical requirements. Producers should be located in the right geographical location and ensure they have access to reliable and competitive feedstock supply – preferably over the fence, and good logistics conditions to serve the markets. Jurong Island benefits from its integrated industry, excellent supply distribution facilities and location and R and D centers. The demand for specialty chemicals is bound to increase as living standards rise across Asia, and JAC's production will contribute substantially to the balance of Singapore's petrochemical portfolio, to the booming of specialty chemicals industry in Singapore. •

INTERVIEW WITH

Akira Yonemura

MANAGING DIRECTOR
PETROCHEMICAL CORPORATION OF SINGAPORE PTE LTD

The Petrochemical Corporation of Singapore (PCS) has evolved considerably since becoming the first petrochemical facility in Singapore. Can you give us a brief overview of the history of the company and some of your achievements?

PCS' main purpose is to produce basic materials for petrochemical products and supply companies with the same. At the same time, we also provide some utility and infrastructural services to our downstream clients at the Singapore Petrochemical Complex. These are used by us as well as by our customers in their operations. One of the benefits in offering these services is our competitive pricing, especially given how expensive utilities have become.

PCS was established in 1977 started as a joint venture between the Singaporean government and a consortium of Japanese companies led by Sumitomo Chemical. In 1989, Shell acquired a large share in the company and took over the interests of the Singaporean government; PCS then became a joint venture between Shell and the Japanese business consortium. After 2009, Shell sold half of its shares to QPI, but still remains involved in the company with a 25% stake.

One of the industry's main concerns are rising production costs, particularly with the price of feedstocks. What is PCS' strategy for addressing these challenges?

In Singapore, doing business is not cheap. Singapore's priorities include value-added considerations such as health, safety and environmental protections (HSE), which is why we continue to have excellent safety performance. For PCS specifically, one of our current challenges is how to enhance our competitiveness within the region. When we started our operations, we were the only complex of its kind in Southeast Asia. Now competition is everywhere in the region, including Singapore. We are working on strategies on how to further outperform our competitors, and this is a big change for us. Even though we have been successful thus far, we need to continue pushing ourselves to stay on top. The entire industry is changing and we need to continue to adjust accordingly. We have to manage our increasing costs while upholding our quality standards. Over the years, PCS has adopted a strategy of diversification, both in terms of feedstock and products.

We do not have immediate plans to further expand our production capacity except for the on going new BD plant project, but we are trying to introduce variety into the products that we offer. PCS is trying to harness the variety of hydrocarbon streams produced by the cracking process more efficiently. These include propylene, acetylene and benzene, as well as toluene and xylene, which are exported to the Southeast Asia region a nd beyond for further processing. Some of the other streams a re not fully value added, so we are working on enhancing the conditions.

ExxonMobil and Shell are both consistently and considerably enhancing their respective petrochemical assets. How does that affect your business at PCS?

We are the pioneers in this field and so their business models are a bit different. They are integrating this with their refineries. The key issue is that our market is not Singapore but instead all of Asia. In a sense, these companies do not pose a problem because we are mostly competing together with other petrochemical hubs in neighbouring countries.

How has PCS contributed to long-term sustainability initiatives in Singapore and the region?

We are participating in various initiatives around sustainability including the Energy Efficiency Movement. Moreover, PCS is constantly working to reduce its C02 emissions. This is just one among many efforts we are working on in conjunction with the government to promote sustainable practices. One of our core values is to maintain high standards in HSE protection, and we would like to eventually see these standards expanded to our competitors as well.

Where would you like to see PCS in three to five years time?

PCS would like to remain one of the most competitive producers of petrochemicals in this region. We have the experience and the drive to continue to do so. Additionally, we would like to expand our operation whenever possible. Singapore continues to be a good location for the petrochemical business, especially regarding high value added chemical products. PCS has and always will strive to keep our products competitive and of an extremely high quality. •

Success Brings Challenges:
Human Resources and the Environment

"We actually find that by being committed to sustainability makes us more competitive. Sembcorp was an early investor in green technology and sustainability and has been well positioned to deliver cost-effective sustainable solutions vis-à-vis other competitors. For example, in our water business we have built up years of unique know-how in applying various technologies and operating facilities treating complex industrial wastewater. This includes wastewater with a chemical oxygen demand far higher than regular municipal wastewater, and high-salinity wastewater. We were among the earliest in Singapore's industrial wastewater treatment scene and today, our expertise in this area has become a core competency of the business and a key competitive edge. This expertise is also very much in demand even overseas in markets like China."

- NG Meng Poh, EVP and Head of Singapore and ASEAN (Utilities), Sembcorp Industries

Courtesy of TÜV SÜD

Innovation and a Sustainable Environment

Getting more from less

One of the most common complaints heard from Singapore's' manufacturers is the cost of power. In a region where rivals can rely on indigenous hydrocarbons and subsidized electricity tariffs, Singaporean energy bills are a real challenge to the city's ability to compete. Used to dealing with a lack of resources, which is the case whatever the endeavor, Singapore offers solutions. These come largely from efficiency, quality and clever management that might even add an edge to Singaporean industry that its energy guzzeling neighbours may come to envy. The EDB is working on new ways to help operators achieve greater energy efficiency "from the top-down." In addition to working with the mega projects like ExxonMobil and JAC on cogeneration plants, the EDB has also spearheaded several studies and initiatives to engage all relevant parties in order to streamline efficiencies.

One such initiative is the Green Campus, a collaborative effort between consultants McKinsey&Company, the EDB, and the National Environment Agency to inform the sector of ways to achieve energy saving measures: "The Green Campus is about helping corporations turn energy efficiency into a competitive advantage. It is about seeing energy not as a burden but rather as a business opportunity and a point of differentiation that can increase overall performance. The Green Campus will offer companies a hands-on opportunity to drive an end-to-end energy transformation by providing experiential learning opportunities in a live process plant," says Dr. Mads Dührkop Lauritzen, managing partner of McKinsey&Company's Southeast Asia Operations Practice.

Dr. Lauritzen comments that companies attempt to address inefficiencies, but in most cases these initiatives are not upheld in the long term: "Many companies have attempted to transform their companies to be more energy efficient. However McKinsey research shows that 90% of energy transformations fail after four years – mainly due to non-technical issues. The role of the Green Campus is to help companies achieve lasting change."

Another company at the forefront of sustainability is testing and certification services provider Tüv Süd PSB. CEO Chong Weng Hoe believes that when it comes to environmentally friendly products and energy efficiency, companies are finally starting to enact permanent changes: "Companies are getting better at assessing the environmental impact of their purchasing habits. We notice that companies are more and more willing to spend on green products. On the other hand, the prices of green materials are also coming down. As these forces affect the price level of green products, the sustainability of our industry will continue to improve… The green initiative requires many different supporters to succeed. We are one component of a larger effort."

Once a government agency in Singapore, PSB was privatized in 1996 and subsequently acquired by German based Tüv Süd in 2007. The company has grown by 150% over the last six years and has set ambitious growth targets for the medium term. At the heart of this growth strategy is a desire to facilitate their client's optimization through their full suite of services. "As the global population continues to grow, the challenge is to create a sustainable living environment powered by energy efficient necessities and cost efficient clean energy" says Chong.

Energy efficiency and sustainability should no longer be buzzwords on an annual shareholders report; the concepts make business sense and must be treated as such. In Singapore, where the government has steadfastly focused on long-term investment, many companies would be behooved to do the same in their long-term investment in energy efficiency and sustainability. In a globalized business world where driving costs down is limited by local factors, driving down energy costs and adapting environmentally friendly policies now are likely to pay off in the long run.

Erman Tan, CEO of Singapore-based producer Asia Polyurethane, sees cost increases as a perpetual issue in such a worldwide-interconnected market. Limited by economic conditions and present in a fast-changing market, the company has to adjust its business to stay ahead of its competitors. "Price pressures are coming from everywhere. Inflation is prevalent. Learning to be more cost-effective than your competitors is one of the survival skills that you must learn to succeed in the tough market conditions. Whether you are in the chemical, oil and gas, automotive industry etc., costs are rising and will continue to do so. Continued innovation is our strategy to combat these rising costs and to achieve superiority, we must be able to drive the costs out of the system," says Tan.

Asia Polyurethane exports its polyurethane resins and blended components to Asia-Pacific and African markets for use primarily in the insulation and automotive sectors. The company is looking to become more dynamic in the face of shifting market conditions, as specialty chemicals of yesterday become contemporary commodity chemicals. "Realizing that new technology can quickly become outdated and commoditized, we focus on developing innovative materials to add value to our customers' products and processes. To ensure that the latest technology is being adopted, we source our raw

"The project market will slowly tail off over the next 10 years as Jurong Island fills up. The emphasis will need to change towards sustainable and responsible maintenance. The island is very integrated, and everyone needs to be concerned about safety standards, as well as providing value for money, now that the original facilities are ageing. The quality of maintenance is highly relevant to these concerns, so PEC is well-positioned to play an even greater role as a one-stop engineering service provider. The multinationals need to change their contracting strategies – rather than picking the cheapest providers, they should think more about long-term partnerships. This is especially important especially with the recent changes to foreign workers policy it is no longer possible to bring in such workers on a job-by-job basis. Companies here must be able to attract good people, train them in a variety of skills and retain them. The government recognizes that such moves will raise the industry's standards."

- Robert Dompeling, CEO, PEC Ltd

"We are one of the first independent system houses in the world to be awarded all the three international quality and safety certifications: ISO14001, ISO9001, and OHSAS 18001. We constantly work towards enhancing our internal control to ensure that our employees are properly trained. In Singapore, we have received the 4-in-1 Business Excellence Certifications for our commitment and efforts in achieving innovations and quality in our processes, people development, leadership, customer satisfaction since 2005. We were also being awarded the 'bizSAFE STAR' certification for the demonstration of our commitment towards acquiring risk management capabilities and implementing a Workplace Safety and Health management system. The ardent support for the need of greener products have enabled us to be awarded the 'Green Label' and 'Green Mark' certifications."

- Erman Tan, CEO, Asia Polyurethane

materials and technology partners throughout Asia, USA and Europe. Our primary market is in Asia but we have also extended our reach into the Middle East, Europe and Africa," says Tan.

In Singapore there is neither a miracle solution to improving processes, nor are constraints such as energy costs or land scarcity going to disappear overnight. However, the attitude that puts innovation at the forefront contributes to the notion that Singapore's chemicals industry has not reached its peak. "In my view when you look at Singapore's role more globally, inventions are still coming from the United States and Europe, but innovations are coming from Singapore. This attracts chemicals manufacturers to invest here," comments Fritz Graf von der Schulenburg, executive vice president of Jebsen & Jessen.

Given the amount of integration and efficiency already present, success in improving efficiencies through innovation will likely be measured in inches not miles. Nevertheless, these small gains can eventually add up and reinforce the competitive advantages most companies already enjoy in Singapore. Dr. Carpenter, executive director of the Institute of Chemical and Engineering Sciences believes these gains will be the key to Singapore's future growth: "Really, it is about increasing productivity. There is massive investment here, but you can see that the land itself is fairly limited, so the opportunities for growth are not associated with just continuing to attract new investment. Going forward, it will be a matter of increasing output through increasing productivity." •

Courtesy of EDB

INTERVIEW WITH

Chong Weng Hoe

FORMER CEO AND DIRECTOR
TÜV SÜD PSB

Could you provide a brief history of TÜV SÜD PSB?

TÜV SÜD began in Germany over 145 years ago. In Singapore, TÜV SÜD PSB has been serving the testing and certification needs of local companies for over forty years. In 1996, the Singapore government decided to privatize PSB and received a lot of international interest in the company. TÜV SÜD valued the PSB brand and acquired PSB. In Singapore and ASEAN, TÜV SÜD companies operate as TÜV SÜD PSB.

How did the TÜV SÜD acquisition affect your business and offerings?

Being part of the TÜV SÜD family has helped our business in many ways. Prior to the acquisition, we focused on serving local industries. With the acquisition by TÜV SÜD, it propelled us into the global arena, making us an international player overnight. Some of the new services which we could offer included industry services for petrochemicals, renewable energy and the leisure industry.

You described Singapore as a hub for your other services. How do you leverage your position in Singapore throughout Asia?

We are present in six countries in ASEAN: Singapore, Malaysia, Thailand, Indonesia, Philippines, and Vietnam. Singapore is the hub of our technical operations in the region. We have more than seven hundred technical staff in ASEAN, of which, about four hundred and fifty are based at our laboratory facilities in Singapore. We have chemical labs in Singapore, Thailand, Vietnam and Indonesia. We are investing in laboratories, structures and human resources throughout the Southeast Asian region. In Indonesia, we are looking at providing testing services for the textile industry and we are also expanding into food chemicals. We are always looking at long-term opportunities and aim to increase our investment in ASEAN over the next three to five years.

Which of your services is in the highest demand by the chemical industry in the region?

Currently about 25% of our business is related to the chemical industry, but we are quite well-balanced. For a new plant, the first few stages of service will typically involve design review, quality assurance/ quality control (QA/QC) during procurement for manufacturing of equipment, material, component as well as during site construction supervision. After the building phase, we can provide maintenance and safety inspection services which also include a risk based assessment of the plant. For more mature companies, we can perform safety evaluations and inspections on an annual basis to ensure the integrity of tanks and pipelines. We also have a dedicated failure analysis team who are able to look into any potential safety concerns and offer solutions. We work with companies both on an ongoing and a project-by-project basis.

Singapore hosts many international players that target a variety of markets and it seems as though the industry is ahead of the regulatory environment. How you can help companies to commercialize goods for global markets?

Our certification services can be classified generally into two types: product certification and system certification. In Singapore we are active in both areas. TÜV SÜD globally operates only two major certification bodies – one of these is in Singapore. Our laboratories are ISO 17025 accredited and we are also accredited as a certification body.

With our international compliance management (ICM) service, we help manufacturers gain global market entry conveniently and cost effectively. Our professional ICM team provides one stop compliance solutions that include advisory on international compliance requirements, design and test data compliance reviews, and local representation to help foreign manufacturers submit applications. We also provide post-submission follow-ups to ensure minimal delays to certification. We also work closely with national regulatory bodies and update customers with first hand information on any changes to regulations and support them with re-certification if such changes dictate it.

What is your perspective on sustainability in the region? How can TÜV SÜD enhance a company's sustainability?

I think that companies are getting better at assessing the environmental impact of their purchasing habits. We notice that companies are more and more willing to spend on green products. On the other hand, the prices of green materials are also coming down. As these forces affect the price level of green products, the sustainability of our industry will continue to improve.

We are one of the first few companies capable of certifying green products. We work closely with Singapore agencies like SGBC, NEA and BCA, who are some of the earliest proponents of green products. The green initiative requires many different supporters to succeed. We are one component of a larger effort. •

INTERVIEW WITH

Erman Tan

CEO
ASIA POLYURETHANE

What are your current activities?

The majority of our customers are in the oil and gas, insulation and automotive industries. In the oil and gas industry, our products are being used in chemical storage tanks, LPG tankers, risers and buoys, just to name a few. We have supplied PU for several oil projects such as Maersk Oil, Pearl Oil, Liwan and South Belut.

APU has a fully equipped laboratory in Singapore to carry out a wide range of full scale validation testing, chemical analysis and physical property determination. The availability of the facilities enable us to benefit our customers with shorter delivery lead-time which in turns help keep warehouse cost low and facilitate better cash flow and maximize the dollars of the material value. The flexibility of partial delivery also ensures that the customers are getting "fresh materials" which are able give optimal performance.

For example, many of us may enjoy the "new car smell" which is common in all new cars. However, such odours are actually bad for our health. APU is working with the automotive industry players to develop materials that are odourless and safe for use. We also aim for the materials to be zero-ODP and zero-GWP.

How have you improved your facilities to meet the stringent standards of the larger companies that you work with?

We are one of the first independent system houses in the world to be awarded all the 3 international quality and safety certifications - ISO14001, ISO9001, and OHSAS 18001. We constantly work towards enhancing our internal control to ensure that our employees are properly trained. In Singapore, we have received the 4-in-1 Business Excellence Certifications for our commitment and efforts in achieving innovations and quality in our processes, people development, leadership, customer satisfaction since 2005. We were also being awarded the "bizSAFE STAR" certification for the demonstration of our commitment towards acquiring risk management capabilities and implementing a Workplace Safety and Health management system. The ardent support for the need of greener products has enabled us to be awarded the "Green Label" and "Green Mark" certifications.

Part of Singapore's new strategy is to become a hub for innovation. To what extent does your geographic location help you innovate?

Our research is very market focused and driven by customer needs and requests. Unlike a big company which may do research on academic issues and IP, we do not. We tie our research to Returns of Investment. Our extensive partners' networks allow us to gain exposures to the different markets and equip us with the knowledge of the different cultures to innovate and better tailor our offerings to the customers. We also rotate our staff to take on different functions within the organisation so that they can better understand the structure and processes.

Innovation, in our view, should not just be focusing on the products. We need to be able to encourage our people to be innovative and also to be able to develop and nurture the already innovative ones to ensure sustainability. Singapore, though small in size, is a global meeting place for many businesses and people. These present the opportunities for interaction and the development of creative ideas.

We emphasize human capital development because the chemical market is very volatile and we need people who are capable of making good and quick decisions to meet the changing market conditions. Within APU, we promote an innovative culture and a set of forward-looking value systems. Employees are highly empowered, encouraged to think out of the box and constantly seek new ways of doing things.

What role do you see for APU as the Singapore market becomes more focused on specialty products?

Singapore is an international logistics hub with good linkages to different parts of the world. In this sense, the WORLD is our market. In the chemical industry, companies either stay close to upstream suppliers or stay close to the customers. In Singapore on Jurong Island, we are close to both our suppliers and customers – it is a very efficient production base. Other strategic advantages for Singapore, like being a free port and the conclusion of numerous free trade agreements create the flexibility and further enhance our ability to put our company on the world stage. We aim to be an icon of the Singapore Chemical Manufacturers in the near future. •

APU®

Since 1985

We Value Your Assets





GREEN POLYURETHANE PRODUCTS FOR THE OIL & GAS INDUSTRY

Asia Polyurethane Manufacturing (APU), is a Polyurethane resin formulator that provides customized solutions for the Oil and Gas Industries. Our products are being used in insulation for oil pipe line (off- shore and on-shore), field joint, risers, buoys, chemical storage tanks, LPG tankers and others.

As a responsible manufacturer, our "Green" products are environmentally friendly. They are Zero Ozone Depletion Potential (Zero-ODP) and Zero Global Warming Potential (Zero GWP) so that we can better protect the global environment. We continue to focus on developing innovative materials to add value to our customers' products and processes, being environmentally friendly and of higher safety standards.

SGS UKAS

ISO 14001 BUREAU VERITAS Certification

OHSAS 18001 BUREAU VERITAS Certification

SINGAPORE QUALITY CLASS

SERVICE CLASS

SINGAPORE INNOVATION CLASS

PEOPLE DEVELOPER SINGAPORE

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INTERVIEW WITH

Keith Carpenter

EXECUTIVE DIRECTOR
INSTITUTE OF CHEMICAL AND ENGINEERING SCIENCES (ICES)

Can you give an overview of ICES and its major milestones?

At ICES, we are tasked with creating an R&D platform for Singapore's chemical industry: this platform is charged with the supply of talented people; the fostering of a scientific culture and environment; and the provision of advanced facilities to develop new technologies and solutions. The ICES was established in 2002, at a time when the chemicals industry was already significant in Singapore, yet there were not any institutionalized R&D centers to serve it. Our first major milestones were the moving ICES to Jurong Island from the mainland in 2004 and the establishment of a set of credible laboratories. We reached our target manpower levels around 2007, and have continued to evolve and grow since that time. Currently, our staff consists of about 300 scientists and engineers, about half of which hold PhDs. Our focuses include chemistry, process engineering, solids handling, crystallization formulation, industrial biotechnology—using biology to make chemical feedstocks and chemical materials—polymers, and catalysis.

What can you say about the relationship between innovation and Singapore's framework for IP protection?

While not the only reason, the IP framework is definitely one of the main reasons that many of our chemical collaborators come to Singapore, knowing that the things they do here will be handled in the strictest of confidence.

Can you elaborate on what research programs ICES has that involve diversifying feedstocks and making the use thereof more efficient?

Some of the alternatives we are looking at include C1 chemistry, which can be synthesized from biomass sources and converted from agricultural waste like lignocellulose—found in palm oil, rice, or cassava starch products. Bioethanol is another option; Singapore does not produce it, but we do have the facilities to import it in large volumes. The real scientific breakthroughs have to do with integrating catalysis engineering with biology, as you need all of those disciplines to develop a process that is sustainable and can match current processes on cost.

In a sense, that is an issue the ICES been looking at for many years already. Really, it is about increasing productivity. There is massive investment here, but you can see that the land itself is fairly limited, so the opportunities for growth are not associated with just continuing to attract new investment. Going forward, it will be a matter of increasing output through increasing productivity. Feedstock costs are definitely a weakness for us here, but that also means that we have an opportunity because to develop high-yield, low-waste-generating processes.

What is on the horizon for the ICES?

Our next wish is to start new programs in new areas of research. Looking at oil field chemicals, for example, one of the issues is about being able to get at oil deposits in a sustainable way. There is a lot of potential harm in the chemicals used in enhanced oil recovery, so we want to know how we can have enhanced oil recovery without causing major problems. There are also major programs in personal care: one of the major issues facing the pharmaceuticals industry is how to deal with the fact that there are not any more big blockbuster innovations in development. Conducting research in personal care builds upon our strengths in pharmaceuticals because of the formulations involved, as well as link to our biology-oriented sister institutions that understand skin and hair care; we are currently in collaboration with one of the pharmaceuticals majors in developing an emerging markets business.

Jurong Island has been at the heart of the chemicals industry in Singapore and will continue to be. That being said, it is no longer the only part of the story. Going forward, the growth of specialty chemicals is the future. Jurong will always be important, but the impact of the chemical industry on Singapore is greater than just the island itself. •

INTERVIEW WITH

Fabrice Billard & June Lam

FB: SENIOR VICE PRESIDENT
JL: KEY ACCOUNTS MANAGER
SINGAPORE MARKET, SULZER CHEMTECH MASS TRANSFER TECHNOLOGY BUSINESS UNIT

Could we begin with a brief discussion on Sulzer Chemtech's operations in Singapore within the context of the company's global operations?

FB: Sulzer has four divisions, three of which are present in Singapore: Sulzer Pumps, Sulzer Turbo Machinery Services and Sulzer Chemtech. Sulzer Chemtech has been present in Singapore for over 25 years. Year after year since we entered Singapore our chemical sector business has grown. In the early 2000s Singapore became Sulzer Chemtech's regional headquarters and, as of March 2013, Singapore is the new global headquarters for Sulzer Chemtech's largest business unit, Mass Transfer Technology, which I am leading.

While Singapore has been an important part of Sulzer for over 25 years, what was the impetus of moving the Mass Transfer Technology's global headquarters from Switzerland to Singapore? Why was Singapore chosen over other potential cities in Asia?

FB: Several aspects contributed to the decision [to move from Switzerland to Asia]. First, slightly more than half of the Mass Transfer Technology business unit's revenue is in the Asian region, including India and the Middle East. Asia is where we see the most growth and we want our headquarters closer to our customers. Additionally, our biggest factories are in India and China, so being close to these locations is important as well. We want to further develop the Sulzer expertise and culture in Asia and having a headquarters located here makes this easier as well.

When we decided we wanted to move our Mass Transfer Technology business unit headquarters to Asia we looked at several cities: Shanghai, Mumbai and Singapore. We ultimately selected Singapore because of its business friendliness; people call Singapore the Switzerland of Asia. As a Swiss company, this certainly resonates with us! The EDB is more like a business partner than a government bureaucracy. Additionally, we already had a large operation here and many big customers are on the doorstep.

One of our interviewees commented: "Inventions come from the United States and Europe, but innovation is increasingly coming from places like Singapore." Is this reflected in Sulzer's operations here?

FB: There is a degree of truth to this statement at Sulzer. Our R&D center is in Switzerland as this is where we have the highest depth of expertise, but we are also increasingly witnessing more innovation in terms of development in China and Singapore. Our people here [in Asia] are thinking and moving so fast that they are often developing on-the-spot solutions to meet the customers' needs. When considering increasing R&D capabilities in Asia, Singapore is a place of choice due to its strong intellectual property protection.

When we speak to plant operators in Singapore rising costs are their main concern. Which areas is Sulzer focused on to reduce costs in this market?

FB: The aspect we see the most acute cost reduction is energy saving. This is an area that customers in Europe may have attacked several years ago, but we are increasingly seeing customers in Singapore recognize the benefits of saving energy. We get a number of inquiries from clients who want to reduce energy usage and we can provide solutions that can be applied to help them reduce costs.

JL: We can offer our services to introduce heat pumps on the distillation column. Typically, the distillation column is the highest energy consumer in a chemical plant. If a column is equipped with Conventional Trays, we can revamp it with structured packing. If there are multiple distillation columns in a plant our heat pumps allow you to reuse energy rather than injecting new energy into the system in distillation columns.

Many plants in Singapore are over two decades old. To what extent is maintenance of existing plants a portion of your business and do you see this growing in Asia?

FB: The direction is clearly towards increasing our maintenance and upkeep services in Asia. For example, in the United States, the most mature market, more than half of our business is focused on these services while in Asia it is less than 20%. One of our key strategic objectives over the next five years is to grow these services in Asia so that they make up 30% to 40% of our business.

What do you see as your key strategic objectives for Sulzer Chemtech Mass Transfer Technology in Singapore in the coming years?

FB: Internally, we want to continue to build up our global capabilities in Singapore by developing application know-how. Externally, we are focused on building up our turnaround services as plants mature in the region. Our goal is to achieve around 10% to 15% per annum organic growth rate in the coming years. •

The Environment in ASEAN

Structural Issues at Fault

Courtesy of EnviroSolutions

In late June this year Singaporeans found their typically green and clean city transformed into something more akin to notoriously polluted cities like Beijing: a thick blanket of brown haze had enveloped the skies of the Lion City. Pharmacies quickly sold out of breathing masks as the three-hour Pollution Standards Index (PSI) reading skyrocketed a record level of 401 on 21 June: any reading over 300 on the 500 point scale is classified as hazardous.

Despite its position as a petroleum refining and chemicals hub, Singapore typically enjoys low levels of air pollution. The culprit of this smog was not the industrial facilities of Jurong Island or the oil tankers docked in Singapore's port, but man-made forest fires on the neighbouring Indonesian island of Sumatra as palm oil farmers made space to plant new fields. Singapore was not the only country affected: Malaysia, Brunei and Thailand all experienced higher than normal pollution levels.

This phenomenon is nothing new to Southeast Asia, where farmers annually use detrimental slash and burn techniques to clear land. However, the extremity of this year's haze meant it had a particularly strong economic impact on Singapore's economy as everyone from construction workers to tour bus operators were forced to suspend work.

With the renewal of the Kyoto Protocol currently stalled, international cooperation on climate change issues ranging from deforestation to renewable energy seems to have faded from the agenda for governments across the world. In the ASEAN region, the haze serves as an opportunity to reinvigorate broader awareness surrounding trans-border pollution.

Just as the ASEAN region is home to a wide diversity of economic development, environmental regimes and enforcement mechanisms within the organization vary widely in sophistication and vigor. Despite impressive achievements in other areas, public and business consciousness of environmental impact remains low across the developing region. "In Southeast Asia, the environment only counts in Singapore… Unfortunately, there is little regard for the environment [everywhere else]," says Ruprecht Latterman, president and CEO of MWM Southeast Asia.

This is perhaps most aptly illustrated by the failure to exploit renewable energy opportunities: one area where Southeast Asia clearly lags behind the rest of the world. Only one ASEAN country (Thailand) registers on Ernst and Young's Renewable Energy Country Attractiveness Index, which ranks the top 40 countries in the world and factors in government incentives for the sector.

In many cases the blame lies at the top; government policy sets a culture of waste that exacerbates environmental degradation. While many Southeast Asian countries have set lofty goals for the developing their renewables sector, in most cases government policy structurally fails to create a level playing field.

The single largest impediment for renewable energy investments, however, is fuel subsidization. Of ASEAN's six largest economies (Indonesia, Malaysia, Singapore, Indonesia and Thailand) only Singapore and the Philippines have no subsidy. "Fossil fuel subsidies in Southeast Asia absolutely harm the feasibility of renewable projects in the region. They distort the price of fuel and allow companies to sell electricity below the true cost of production. How can renewables compete in this environment? They have a very good chance where the full cost of electricity is charged," says Kavita Gandhi, executive director of the Sustainable Energy Association of Singapore.

Not only do fuel subsidies crowd out renewables, they also encourage inefficient use of fuel in conventional power production. Generators have less incentive to adapt more efficient, cleaner technology if they are paying below market price for fuel.

Fuel subsidies represent the quintessential case of sound policy versus popular will: although the economic and environmental benefits are evident, ending subsidization results in higher electricity costs. In developing countries, this can have a particularly major impact on spending habits and standard of living. Therefore, ending fuel subsidization in Southeast Asia will not be a simple task; the populace often takes to the streets and, if necessary, the ballot box to express discontent when the issue is put on the table by the government.

If ASEAN countries are serious about renewable energy and the environment, then governments need to redouble their efforts and create consensus to end fuel subsidization across the region. Indonesia, the culprit of the haze, is taking an encouraging yet controversial step in the right direction. The same day Singapore's PSI reading hit an all time high, Indonesia's government agreed to significant cuts to its fuel subsidy, which raised petroleum prices by 44%. Protesters took to the streets of Jakarta, yet thus far the government has thus far held firm in its stance.

However, the protests and subsequent clashes with police in Indonesia reveal the difficult path that lay ahead for all the region's governments. Solidarity on an ASEAN level may hold part of the solution. Regional cooperation may also draw the praises and even assistance of countries outside the region, making the pill of higher electricity prices a bit less difficult to swallow. And recent events may have provided the motivation necessary. "The haze initiated proper talks from government officials on the environment," says Sri Thirumagan, executive director of Asian Carbon Global. Leaders from across the region have come together to discuss a broad range of environmental issues beyond the haze. Creating a regional consensus for ending fuel subsidies should be on the agenda. •

"We actually find that by being committed to sustainability makes us more competitive. Sembcorp was an early investor in green technology and sustainability and has been well positioned to deliver cost-effective sustainable solutions vis-à-vis other competitors. For example, in our water business we have built up years of unique know-how in applying various technologies and operating facilities treating complex industrial wastewater. This includes wastewater with a chemical oxygen demand far higher than regular municipal wastewater, and high-salinity wastewater. We were among the earliest in Singapore's industrial wastewater treatment scene and today, our expertise in this area has become a core competency of the business and a key competitive edge. This expertise is also very much in demand even overseas in markets like China."

- NG Meng Poh, EVP and Head of Singapore and ASEAN (Utilities), Sembcorp Industries

"In recent years, health, safety, and environment (HSE) standards, as practiced by the many MNCs in Singapore, have dramatically increased; prompting service providers throughout the sector to build their capabilities. While there is always room for future improvement, we are proud to have greatly enhanced our level of compliance. AlsternTechnologies is committed to investing sufficient time, effort and money to ensure that the company runs in compliance with the highest HSE standards."

- Sam Cheok Whai, International Sales Director, Alstern Technologies Singapore Pte Ltd

"Under JI v2.0, many ongoing projects focus on enhancing energy efficiency, both at the individual company level, and at a systems level, which spans plants and even companies. Some companies with larger plants or campuses have already invested in efficiency projects such as co-generation plants. One example of a systems-level energy efficiency project arose from an opportunity presented by the upcoming Liquefied Natural Gas (LNG) terminal. We are exploring how the 'cold' from LNG can be utilized in companies' manufacturing processes. With the high global energy costs, energy efficiency enhances both the competitiveness and sustainability of Jurong Island."

- Eugene Leong, Director of Energy & Chemicals, Singapore Economic Development Board

"Performance Products considers the Asian market to be very important. We want to expand the industrial specialty part of our business, and APAC is one of the fastest growing markets in the world. In the last five years Huntsman Performance Products has started putting significant resource into Asia. Five years ago the best opportunities were in China and India, and we have now penetrated these countries to a great extent. Huntsman Performance Products has given a lower priority to ASEAN up to now due to available resources, but some of the countries in it have faster growth than China and India, so the division is looking very seriously at the ASEAN region now. India has issues with ethics and compliance, which are also present in ASEAN but not to the same extent; and the governments of these countries are doing more to resolve them."

- Albert Decelis, Vice President, Asia-Pacific, Huntsman Performance Products

INTERVIEW WITH

Mads Dührkop Lauritzen

MANAGING PARTNER SOUTHEAST ASIA OPERATIONS PRACTICE
MCKINSEY&COMPANY

What capabilities and services does the Green Campus offer?

At McKinsey&Company we believe that "green is the next lean" and the best way to address energy problems is by launching innovation initiatives in collaboration with both the public and private sectors. This is what we have done with the Green Campus; a unique, strategic partnership between Singapore's EDB, the National Environment Agency (NEA) and McKinsey & Company.

The Green Campus is about helping corporations turn energy efficiency into a competitive advantage. It is about seeing energy not as a burden but rather as a business opportunity and a point of differentiation that can increase overall performance.

The Green Campus will offer companies a hands-on opportunity to drive an end-to-end energy transformation by providing experiential learning opportunities in a live process plant.

With a focus on practical experience, the Green Campus trains executives and front line operations managers across a range of core operations issues. It will give participants an opportunity to learn energy-efficient processes across six live learning stations – from a water cooling system to an operational furnace. The center also offers world class training programs led by McKinsey experts from Singapore and around the world.

In short, the Green Campus helps corporations build two types of skills: technical skills and soft skills, which in combination help drive lasting change.

Could you give us an overview of the type of training modules you offer?

Studies have shown that experiential facilities allow adults to learn; meaning we learn by doing. This is why McKinsey decided to create a Green Campus where we have about twenty technical and twenty soft management modules. This setup takes participants through transformation scenarios and role-plays, which teaches them how to implement energy cost-saving measures within their respective companies.

We essentially try to empower the management of corporations to go out and identify waste scenarios across plant processes. To accomplish this, there are numerous technical tools. However, to actually minimize waste you need to be able to convince the people within the company that it is a good idea and this requires good negotiation or soft skills. At our Green Campus we provide companies with technical waste identification methods plus enhanced communication techniques to successfully implement and sustain energy efficiency measures.

Why did McKinsey&Company choose Singapore for this initiative and how has the chemical sector responded to the Green campus?

As you are already aware, the Economic Development Board has played a major role in turning Singapore into a hub of excellence for Asia and particularly, promoting energy efficiency. In addition to the Singapore's government's strong commitment to innovation, Singapore has a high concentration of multinational and regional corporations, so it is a strategic location for us to provide McKinsey&Company services to clients that need our cutting edge solutions.

What sort of capabilities would you like to expand in the future?

Capacity investments are a massive balance sheet driver for most corporations and if you can influence this then you have another source of competitive advantage. We call this lean construction or lean capacity investments and we are looking to expand into this area because increasingly companies are trying to compress the period it takes to build a facility. Furthermore, we are interested in becoming more involved in the field of lead process design. This field addresses the productivity of a plant and the operational efficiency of its equipment.

What are your future goals for the Green Campus?

Naturally, our primary goal is to make our clients successful. For McKinsey&Company, success means building lasting and distinctive energy efficiency capabilities, while at the same time moving into fields of clean processes and clean capacity investments. To do so we need to continue to offer the best capabilities and the most talented faculty. In the end, it all boils down to the fact that sustainability is the same as continuous improvement. You need to be able to continuously make your business more lean and get more value out of your processes and your people.

Finally, we have launched this Green Campus to help corporations turn energy efficiency into a real competitive advantage because we believe that this is going to be one of the hottest topics in the next one or two decades. •

INTERVIEW WITH

Carlo Patteri

BUSINESS DEVELOPMENT DIRECTOR
VEOLIA WATER SOLUTIONS & TECHNOLOGIES (SEA) PTE LTD

Can you provide an introduction to Veolia Water Solutions & Technologies (SEA) and some of the company's major milestones?

Veolia is the worlds largest environmental services company with head offices in both Paris and New York. The company operates globally through three main divisions: water, energy and environmental services. The water division is the largest as it originated from the founding company "Générale des Eaux", which was the main water treatment company in France 150 years ago. Today, Veolia provides a fully integrated service offering that satisfies any client needs within the water industry ad beyond.

What are the major challenges in the market and how do you convince clients to adopt a more long-term vision?

The main challenge is that Asian countries have wanted to grow rapidly and with little care for the environment. Fortunately, this mindset is changing and we are seeing countries implementing measures to protect the environment. As we can see in Singapore, Asian countries are finally trying to strike a balance between being heavy industry focused and committed to addressing corporate responsibility concerns.

Veolia is by far the most advanced company providing the most cutting edge environmental solutions to its clients. Thinking up to 10 yeas into he future, we often struggle to explain the true cost of water to our costumers. Some multinational companies, which show a particularly high level of environmental sensitivity, have started to become receptive to our idea that it is not just about the price you pay for water but rather how you can reuse it and save money.

It always boils down to the fact that Veolia has to show its clients the value of water in terms of savings per year in comparison to what the company would have to spend on disposal, recovery, shutdowns or other health and safety related matters.

How important is Veolia's Zero Liquid Discharge technology for the Singaporean market?

If I had to mention a technology that I believe will shape the future it would be Zero Liquid Discharge (ZLD) technology. ZLD means that you are not allowed to dispose of any liquid that is not fully cleaned up and wastewater needs to be recycled. This policy is very important in Singapore because the city wants to be as autonomous as possible and does not want to keep importing water from Malaysia. Furthermore, unlike its neighbours, Singapore has a limited amount of land, so practices such as free dumping or wastewater ponds are simply not sustainable in the long-term. Once again, this is where Veolia steps in to help find and implement a suitable solution.

Do you think Singapore's goal of being both a green hub and a chemical investment destination is achievable?

I am confident that Singapore will be able to strike a balance because the caliber of companies it attracts is quite high. Major multinational petrochemical players have global reputations to maintain, and are therefore required to find responsible ways of operating. Overall in Singapore, public and private environmental concerns seem to be becoming more aligned. The government has to be careful when setting in place new requirements but companies are realizing the benefits of adhering to stricter environmental policies.

How does Veolia differentiate itself from its competitors?

Due to Veolia's large size and the financial resources it has to invest in non-profit activities, many smaller companies are unable to compete with us. Our main competitors here, while international, are relatively small players who tend to focus on one or two markets or specific applications. Unlike Veolia, virtually none of them can operate across all markets. While this is a clearly a competitive advantage, it is also a challenge because it requires Veolia to have the ability to deal with every different type of wastewater across different industries. Furthermore, Veolia' s advantage over a pure consulting company is that it not only has the technologies to conduct studies but also the capabilities to implement the proposed solutions. This is an important advantage, which I believe none of our competitors can do.

What do you see as Veolia's top three strategic priorities over the next three to five years?

The first priority is to strengthen Veolia's position in the petrochemical wastewater industry in Asia. We are the industry leader in Europe, the Americas and the Middle East but we have not reached our full potential in Asia. The second strategic priority, is to strengthening Veolia's overall positioning in the municipal market, which is particularly difficult in Europe where governments are heavily regulated and lacking financial resources. Finally, within the industrial arena, we want to expand beyond our markets of comfort. Veolia has certain markets where we are traditionally strong, such as in the upstream oil and gas or the pharmaceutical sector. It is will be important to branch out into new markets which have not been targeted in the past, which includes the chemical industry.

For Veolia, how much more complex is working in chemicals in comparison to its traditional markets such as oil and gas, pharmaceuticals or even electronics?

Among these given markets, chemicals are by far the most complicated industry due to the highly complex wastewater compounds discharged. In the oil and gas sector wastewater can be harmful but it remains constant. For example, oil refineries or microelectronics factories always produce the same types of waste streams. The further downstream you go the more complex the situation becomes. Within the chemical industry there are many sub sectors and therefore, many different complex types of wastewater discharged. •

Manpower

The Political Paradox of Success

From a business-friendliness perspective, no issue threatens Singapore's near spotless image more than the debate currently surrounding foreign labor in the country. For most of its short history, the Singaporean government has kept its borders open to a large foreign workforce, both to attract highly sought after foreign experts and to bring in the mass of lower skilled workers necessary to build and provide services in a modern economy. However, recent dissidence against the continuation of this long-term government policy has coincided with announcement of new restrictions on foreign labor.

According to the Ministry of Manpower, Singapore's 1,268,300 foreign workers presently account for one third of the country's labor force. Of this foreign workforce, over three quarters (952,100) are Work Pass holders. This means they are considered lower-skilled workers and that the sponsor company must pay a foreign worker levy based on the nature of the worker's work, the skill set the worker brings, and the percentage of foreign workers in the company's total domestic workforce.

The controversy behind immigration came to light when the government announced its "White Paper on Population" in February 2013, which sought to raise Singapore's population from 5.1 million to 6.9 million by 2030 largely through immigration. The government's intention was to keep the population and thus the economy growing at a healthy pace. However, the public reacted negatively to the announcement setting off a firestorm of popular backlash by Singaporean standards. People claimed that such a wave of immigration would adversely impact the employment prospects for Singaporeans. On February 16, approximately 4,000 people staged a peaceful protest opposing the White Paper, the largest public demonstration of dissent since Singapore's independence in 1965. The PAP, still trying to define its identity and regain credibility after losses in the 2011 election, reacted by announcing new restrictions on foreign workers 10 days later.

These new restrictions, expected to take full effect in 2015, impact not only lower skilled Work Pass holders, but also mid-skilled and high-skilled S and Employment Pass holders. The changes raise levies on lower skilled Work Pass holders by an average of S$50 ($40) per month for workers in the manufacturing sector and S$160 ($125) per month for those in the construction sector, while raising the qualifying salary for low to mid-level professionals and specialists with S and Q-1 employment passes. In announcing these new restrictions, the government cited a need to raise the productivity of all workers in Singapore. "Recent changes of governmental policies concerning foreign worker's permits have hurt small to medium sized service providers. However, the government has acted very proactively in providing means and incentives to help these companies overcome this struggle," remarks Lim Jit Say, executive director, Association of Process Industry

Ooi Tiat Jin, executive manager of locally based distributor Absotech explains how SMEs can take advantage of new government incentives in the wake of these changes to the manpower regime: "If one looks at the Singaporean government as a whole, labor restrictions are being offset by many new incentives to help SMEs become both more competitive and productive. Whereas a local SME in the past might have built up its manpower, the government today is promoting investment into technology and capital that decreases reliance on man-hours. The government is now providing more funding programs and other initiatives to prop up SMEs; however, it is not a one-size-fits-all model."

Although the government has tried to promote more automation and efficient business practices through organizations such as SPRING (Standard, Productivity, and Innovation Board), the gains to be made in labor-intensive industries are minimal. As the government seeks to raise productivity in the workforce, Don Cheng of Hai Leck Engineering points out that there are only so many gains that can be made in the EPC industry: "Hai Leck Engineering has implemented automation in some of its processes… Hai Leck's strategy is to continue to invest in capital and technologies that increase productivity, reduce operating costs, and lower the number of man-hours required on projects. The extent to which a company like Hai Leck can automate its operations is limited, however, and we are nevertheless in a labor-intensive industry."

The changes to the labor regime will hurt businesses looking to hire low and semi-skilled workers as foreign workers make up 43% of the non-professional, managerial, executive, and technician workforce according to the Ministry of Manpower. Dato Andrew Ng, managing director and CEO of ChemstationAsia points out that the hardest positions to fill are low-skilled jobs: "The local Singaporean labor market is… notoriously difficult to navigate. Workers generally do not want jobs that involve the three D's: difficult, dirty, and dangerous."

Small businesses, many of them reliant on low and semiskilled Work Pass holders, are feeling the pinch. Chow Wai Leun, manager of process plant maintenance and service provider Hong Heng Iron Works, sees the levy increase as just the latest employment

related cost increase for his locally-based SME: "Even before levy increases, the cost of labor has perpetually risen in Singapore. The proposal being discussed now means that the levy may increase by 30%. This is definitely something that will adversely impact our business. On top of levy increases it is now commonplace for workers to demand 10% wage raises across the board…. As a small company, wage pressures could completely wipe out our profit margin. This pressure on wages will hurt smaller, local businesses more than multinational companies, who can easily transfer workers between countries or cut down on staffing if necessary."

As new policies squeeze the labor pool further, pressure on wages is certain to increase. Melvin Tan, managing director of Cyclect, echoes the sentiments of many industry leaders who are looking to hire as investment increases in the chemicals sector: "Cyclect's goal is to expand its operations in the area of chemicals; it is a key space for growth. In order to do this, we need to attract talented people to Cyclect; there is no shortage of business, but there is a shortage of manpower in Singapore and it is becoming increasingly difficult to bring people in from overseas."

The cheap, relatively inexperienced, laborers, that many EPCs relied on to fill their ranks before the financial crisis, are quickly becoming a relic of the past. Instead, EPCs are now more focused on employing workers on a longer-term basis. "It is no longer possible to bring in such workers on a job-by-job basis. Companies here must be able to attract good people, train them in a variety of skills and retain them. The government recognizes that such moves will raise the industry's standards," says Robert Dompeling of PEC.

INTERVIEW WITH

Sil Hoeve & Jon Proctor

SH

SH: GENERAL MANAGER
JP: BUSINESS DEVELOPMENT MANAGER
BRUNEL INTERNATIONAL SEA PTE LTD

What is the history of Brunel International SEA Pte Ltd in Singapore?

SH: Brunel International came to Southeast Asia (SEA) in 1996 via the acquisition of Oil Tool Engineering, which had three offices in operation in Singapore, Malaysia, and Indonesia. Since then, Brunel has grown significantly and become very successful in the region. In Singapore, Brunel employs approximately 360 people for its clients.

JP: On Jurong Island, Brunel contributed over 60 staff of various disciplines, primarily project management professionals and we will be actively involved in supporting the upcoming ethylene cracker expansion in Singapore commencing later this year.

As a proportion of your overall business, how important is the chemical sector to Brunel in Singapore?

JP: A few years ago, petrochemical projects accounted for approximately half of the talent that we were providing in Singapore. Today, our manning levels have decreased; however, there are a great many chemical projects and contracts about to be awarded, and we have high hopes for being involved in those projects. In other words, the proportion of our overall business from the chemical community is poised to rise by Q3 of 2013. In terms of EPCs operating here, we typically work with the biggest names in this market.

From a cost standpoint, many clients are not only looking for professionals with the right skills, but those who also have experience in Singapore, and Brunel's network is expansive enough to meet this requirement. One thing that Brunel provides that other agencies may not is our BTS (Brunel Technical Services) division, which focuses on construction-level talent.

Our clients are also putting a premium on compliance with regards to health, safety, quality, and other performance indicators. Given our global reach, Brunel is able to offer clients the highest internationally recognized standards in these areas, which sets us apart from many of our competitors.

Limited manpower is viewed by the chemical industry as a continuous inhibitor of cost-competitiveness in the region; to what degree is manpower a 'perennial problem' for Singapore?

JP: Manpower may indeed be an acute cost in Singapore, but this is true everywhere. Workforce is a function of quality and price, and with the amount of activity coming to the sector there is a great opportunity for companies like Brunel to handle that equation. Singapore's quota system is in place to promote local employment: for every expatriate brought in on a project, a company must also employ a certain number of Singaporeans. Brunel employs a substantial number of locals, which means we are able to bring in enough specially skilled professionals into Singapore to satisfy our biggest clients.

SH: Companies here are concerned about the quality of workers, and on the other hand they are constantly putting pressure on price. It is quite difficult to balance. Nevertheless, for contracts in the chemical industry, the focus is less about price and more about quality, service and meeting deadlines. Some companies may experience bureaucratic issues in attracting talent, but Brunel is able to move quickly to fill roles.

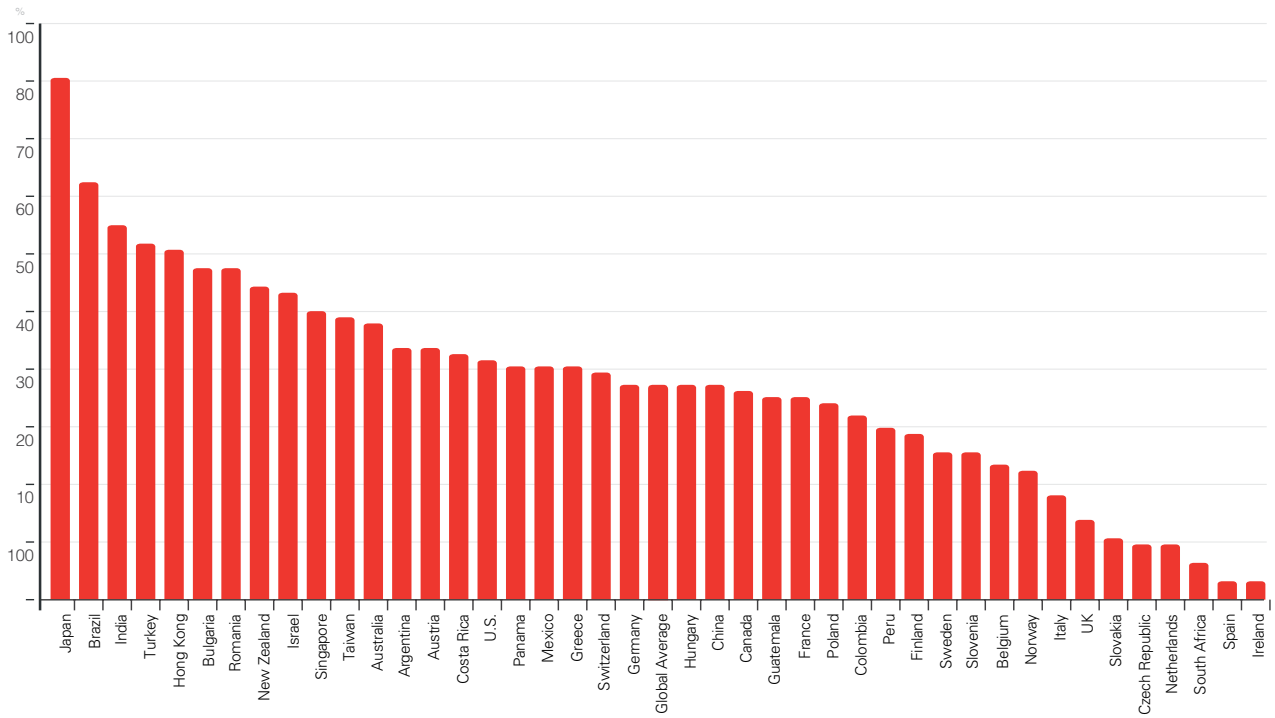
Can you share Brunel's near-term objectives for its chemical and petrochemical clients?

SH: For SEA, Brunel is focusing on meeting the needs of the industry on Jurong Island, and to work more effectively for our main clients. We want to be more proactive than our clients themselves, and part of that initiative may involve opening new offices in key markets such as China and Myanmar. We have also invested heavily in our global IT system which keeps all Brunel employees connected with countless recruitment tools and market intelligence. This system will further enable Brunel to focus on specific clients, including those in chemical and petrochemical industries.

JP: Considering how many new manpower agencies have appeared in Singapore over the past few years, part of Brunel's focus is reclaiming lost market share. This will be achieved by our ability to provide multifaceted services, high-levels of support, and stringent health, safety and quality compliance standards that are specifically tailored to chemical and petrochemical clients. •

Percentage of Employers having Difficulty Filling Jobs

Source: Manpower Group



Changes in Employment by Sector

Source: Department of Statistics Singapore

	2009	2010	2011	2012	2011 III	2011 IV	2012 I	2012 II	2012 III	2012 IV	2013 I	2013 II	2013 IIIp
	Compared To The Previous Period												
TOTAL	37.600	115.900	122.600	129.100	31.900	37.600	27.200	31.700	26.200	44.000	28.900	33.700	28.100
Goods Producing Industries	-21.000	3.300	26.500	52.100	10.800	7.400	11.400	14.400	13.500	12.800	7.800	10.900	14.100
Manufacturing	-43.900	-800	3.400	11.400	3.900	-1.400	2.000	4.700	3.700	900	-1.200	2.300	3.000
Construction	24.000	3.400	22.000	39.100	6.700	8.400	8.700	9.700	9.700	11.100	8.400	8.500	10.600
Others	-1.100	700	1.100	1.500	200	400	700	0	100	800	500	200	600
Services Producing Industries	58.600	112.600	96.100	77.000	21.200	30.200	15.800	17.300	12.700	31.200	21.100	22.700	14.000
Wholesale & Retail Trade	5.700	14.500	15.900	10.100	2.900	7.900	700	2.000	100	7.300	2.600	-1.100	2.200
Transportation & Storage	-2.400	6.200	6.700	8.600	1.600	1.200	2.200	2.200	1.500	2.800	2.500	3.600	1.300
Accommodation & Food Services	3.200	12.700	9.200	8.000	3.100	6.200	-500	-900	1.500	7.900	-100	2.200	-400
Information & Communications	2.900	8.800	8.000	900	2.000	700	-100	500	400	100	1.500	4.600	1.000
Financial & Insurance Services	2.200	11.400	10.900	6.500	3.000	2.100	0	1.800	2.900	1.700	1.900	-1.300	2.500
Business Services	15.100	25.000	21.100	22.500	3.600	4.200	4.900	8.700	4.900	4.000	6.300	9.900	4.200
Other Services Industries	31.900	34.000	24.300	20.400	5.100	8.000	8.800	3.000	1.400	7.300	6.300	5.000	3.200

Labor Productivity by Sector

Source: Department of Statistics Singapore

	2009	2010	2011	2012	2011 III	2011 IV	2012 I	2012 II	2012 III	2012 IV	2013 I	2013 II	2013 III
	Percentage Change Over Corresponding Period Of Previous Year												
TOTAL	-3,4	11,1	1,3	-2,6	1,8	-0,4	-2,2	-1,6	-3,8	-2,5	-3,6	0,2	1,6
Total (excluding Construction)	-2,9	11,6	1,1	-2,2	1,5	-0,5	-2,2	-1,4	-3,4	-1,9	-3,1	0,8	2,4
Goods Producing Industries	-2,3	24,5	6,0	-3,2	7,1	6,2	-2,9	0,5	-5,0	-5,1	-9,3	-2,7	0,6
Manufacturing	1,5	32,2	7,9	-1,4	8,6	8,8	-1,8	2,5	-3,2	-3,1	-8,0	-0,1	4,4
Construction	4,2	0,5	3,3	-0,2	6,6	3,8	2,7	3,0	-2,4	-3,5	-4,0	-2,1	-3,4
Services Producing Industries	-4,1	6,1	-0,4	-2,4	-0,2	-2,8	-2,0	-2,7	-3,3	-1,7	-0,8	1,9	2,4
Wholesale & Retail Trade	-5,6	11,0	-2,0	-3,5	-3,9	-1,2	-3,6	-3,7	-2,7	-3,9	-2,1	3,4	5,5
Transportation & Storage	-10,1	5,2	0,2	-0,8	0,2	-1,7	0,9	-1,6	-1,6	-0,9	-4,9	-2,2	0,5
Accommodation & Food Services	-5,8	9,2	2,2	-1,0	1,8	-1,8	-0,1	-1,4	-1,2	-1,4	-1,7	-2,2	-1,9
Information & Communications	-0,4	1,0	-6,7	-0,7	-5,6	-7,1	-2,7	-2,2	-0,5	2,8	1,4	-1,1	-1,7
Finance & Insurance	-0,4	5,6	1,3	-3,7	5,7	-6,4	-4,3	-3,5	-6,4	-0,4	6,6	10,6	7,6
Business Services	-1,6	2,1	-2,4	-1,0	-2,0	-2,4	-1,2	0,1	-1,1	-1,9	-1,7	-1,7	-1,4
Other Services Industries	-0,1	8,4	2,2	-3,3	0,2	-2,2	-0,7	-4,5	-5,6	-2,1	-4,5	-0,8	0,2

"We want to replicate the European or American recruiting model across the globe, but it depends on the maturity of the country. In the West people do not mind working three months on and three months off, whereas Asians do not want temporary work; the salaries for temporary work are lower and they see little value in it."

- Mark Hall, Vice President and Country General Manager, Kelly Services

"Most MNCs have much stronger EHS protocols than would be required by Singapore in terms of what's enforced locally. Nevertheless, many companies active in Singapore operate at lower levels of EHS compliance here than they would under other regulatory frameworks elsewhere in the world for many reasons; cost-competitiveness being chief among them. The local government is focused on industries such as chemicals, but given the country's size, there is a perceived lack of knowledge and a credible shortage of manpower inhibiting Singapore from the challenge of meeting EHS standards as robust as those in Europe or North America. MNCs such as ExxonMobil are blessed with more manpower and expertise globally than may be available in the entirety of Singapore. A common issue is the introduction new products that have never previously entered Singapore; the government and the local industry are simply not aware of the risks to EHS from these new chemicals. As environmental risk regulations become tighter, companies on Jurong Island will be faced with real planning challenges; the island is densely populated and incidents have the potential to affect more players and thus become more costly."

- Andrew Young, Managing Director, EnviroSolutions & Consulting Pte Ltd

"In 2011 Zeon Chemicals broke ground our new Solution Polymerized Styrene-Butadiene Rubber (SSBR) plant. This is our first construction experience in Singapore, although we have previously acquired companies here. We were not familiar with the process and day-by-day we struggled with new issues. Of course, we received assistance from the EDB and each contractor and consultant. Singapore has good consultants. If we make another investment in Singapore, our experience will make the process easier."

- Yuki Hirakawa, Managing Director, Zeon Chemicals Singapore

"It is very costly for a foreign company like Leschaco to acquire land in Singapore. Nevertheless, due to the strong local demand for chemical warehousing, Leschaco is considering opening its own warehousing facilities in Singapore by the end of this year.

Another challenge in Singapore is that the government heavily regulates the property acquisition process. This challenging cost environment has made us contemplate moving our operations to Malaysia. However, relocating to Malaysia would entail new risks and disadvantages. Unlike most neighbouring countries, our business in Singapore benefits from easy costumes clearances, favorable trade agreements with Europe and the Americas and a robust infrastructure."

- Kai Chladek, Managing Director, Leschaco

The problem of upskilling workers is not limited to the low skilled labor pool; EPCs are having difficulty attracting local entry-level workers. Alvin Leong, managing director of W H Marathon, explains that EPCs are often forced to look overseas for entry-level engineers, despite Singapore's world-class education system. This is a particularly alarming problem as it could eventually lead to a local skills gap of mid-level and high-level engineers and executives in the coming decades. "In the past, young engineers would be very proud of their profession, but these days most of Generation-Y want the comfort of the air-con room and to stay out of the sun – they have forgotten someone has to build the buildings they sit in and that hard work is what pays. Young people should remember that most CEOs in the oil and gas industry are engineers. Singapore has a lot of talented new graduates, but not enough of them are engineers," says Alvin Leong.

Increased reliance on specialized recruitment and staffing agencies provides a possible solution for companies trying to grow their ranks in the wake of these new restrictions on foreign labor. Given the rapid development of Singapore's economy and its traditional reliance on foreign workers, the market is home to a host of staffing agencies working in the chemicals sector including executive recruitment firm Spencer Stuart, and staffing agencies Brunel International and Kelly Services.

Despite the new restrictions, Brunel International is well positioned from a regulatory

compliance standpoint to handle new business. "Singapore's quota system is in place to promote local employment: for every expatriate brought in on a project, a company must also employ a certain number of Singaporeans. Brunel employs a substantial number of locals, which means we are able to bring in about 750 foreign workers into Singapore—a number that would satisfy our biggest clients," says Jon Proctor, business development manager, Brunel International S.E.A.

Brunel has grown considerably in SEA since entering the region through an acquisition in 1996. The company has played a major role in staffing key projects as new refineries and petrochemical complexes were built. "Brunel usually follows the investment and construction trends taking place in Singapore and Jurong Island. If one looks at our past projects, Brunel accounted for a major share of the provided workforce, especially in terms of white-collar expatriates," says Sil Hoeve, general manager of Brunel.

Despite the challenge it poses businesses looking to hire workers, the government appears set in its course. Although manpower will remain an issue for Singapore, it is also an encouraging sign for growth as businesses are having issues finding enough staff for their ranks. The labor pool is expected to remain constrained in Singapore, making it harder for labor-intensive businesses to operate. Whether or not this will have a measurable impact on final investment decision for new chemical projects remains to be seen. •


Courtesy of Fortrec

INTERVIEW WITH

Melvin Tan

MANAGING DIRECTOR
CYCLECT

As Cyclect's third-generation leadership, how has the company evolved since it was first established?

Founded in 1943, Cyclect has been in the business of providing technical services and solutions for 70 years. We began as a modest repair and maintenance facility focused on the marine industry in Singapore. As Cyclect progressed, we entered into project development as the needs of our customers became more sophisticated; we built skillsets in onshore as well as offshore industries. When Singapore's electrical, manufacturing, and petrochemical sectors grew, Cyclect expanded its capabilities in line with new trends; whatever the EDB brought to our shores Cyclect sought to stay ahead of the curve with its involvement. In the context of the chemical and petrochemical sectors, Cyclect entered the industry in the late 1990s, offering repair, maintenance, engineering, and construction services.

Despite breaking the $100 million turnover threshold in 2010, Cyclect remains a private family-owned company in order to maintain flexibility.

What is the state of Cyclect today in terms of its dealings with the chemical industry in Singapore?

Cyclect has three major business units: marine and offshore, infrastructure, and energy solutions. Cyclect's infrastructure division, however, is the most relevant business unit for the chemicals sector. Our infrastructural unit serves chemicals clients mainly on Jurong Island; namely niche plant operations, maintenance, engineering, procurement, and construction (EPC) services. Our specialists and technicians can design anything from tailored tanking and storage solutions to emergency and safety equipment.

About 30% of Cyclect's overall business is derived from Singapore's chemical industry both on and off Jurong Island, with our mechanical, electrical and instrumentation solutions experiencing the highest demand from the sector. Cyclect's typical clients include ExxonMobil, Royal Dutch Shell, TPC, PCS, Sumitomo, Mitsui, Evonik, the Singapore Refining Company, OilTanking, and Vopak Terminals, not to mention some of the key contracting firms in Singapore.

What makes Cyclect's service offering unique?

In serving chemical companies, we utilize products and technology such as instrumentation and absorption chillers from quality suppliers from around the world. An absorption chillers synthesizes heat into chilled water as a means to efficiently utilize otherwise wasted heat as coolant from a plant. We find that clients make an easy return on their investments from such solutions.

In terms of reach, Cyclect is capable of exporting its knowledge and solutions gained in Singapore out to chemical clients operating in other markets. We send out construction, management, and EPC teams to undertake projects in line with international standards and certifications all across Asia. Clients who are comfortable with Cyclect in Singapore can utilize our services throughout the region and increasingly the globe; we are seen as good long-term partners.

The EDB consistently cites co-generation and sustainability as answers to the chemical industry's concern for high energy and utility costs: how does Cyclect play its role in fostering these solutions?

When compared to land and manpower costs, energy, along with water consumption, is one of the easiest areas in which a chemical manufacturer can control costs. We were one of the first engineering companies to enter the realm of co-generation in Singapore. Cyclect was the main contractor, in partnership with Tuas Power and Gas Supply (TPGS), on the first co-generation plant in Singapore. This was a turnkey project led by us. The objective of this project was to develop a pilot 10MW tri-generation plant for MSD Singapore (previously Schering Plough). Since inception, the plant has saved MSD millions in energy costs. This technology is extremely portable; issues of scale, space and balancing a facility's need for steam, chilled water and power are the only variables from plant to plant.

Furthermore, Cyclect is currently conducting R&D to develop our own proprietary adsorption chiller systems that recover low-grade waste heat from chemical plants. If extraneous heat is 80 °C or greater, it can be absorbed for coolant or heated further and harnessed for co-generation; however, temperatures below that threshold are typically discarded. Cyclect is looking for innovative ways to optimize this lower-grade heat; squeezing every bit of energy from a plant's processes and thus making it more efficient in terms of energy consumption. Our second major technology project relates to heat to power conversion. The Organic Rankin Cycle converts heat to electricity. We are undergoing research presently and we believe we have patentable practical technology.

What are Cyclect's goals within the chemicals sector over the next several years?

Cyclect's goal is to expand its operations in the area of chemicals; it is a key space for growth. In order to do this, we need to attract talented people to Cyclect; there is no shortage of projects, but there is a shortage of manpower in Singapore and it is becoming increasingly difficult to bring people in from overseas. •

INTERVIEW WITH

Robert Dompeling

CEO
PEC LTD.

Please provide an overview of PEC and its service offerings in Singapore. What are some of the latest developments since we interviewed PEC in 2011? How is the market changing?

We are the largest maintenance provider in Singapore. Since we last spoke, PEC has gained new contracts with ExxonMobil's expanded petrochemical facilities and an integrated engineering and maintenance job for the still-under-construction Jurong Aromatics Complex. Market trends are changing; there will be future investments in Singapore's petrochemical industry, but it will be very selective. The EDB will continue to collaborate with MNCs, who will get bigger, but there will no longer be efforts to bring in new ones – it is too expensive for companies to start from scratch. The project market will slowly tail off over the next ten years as Jurong Island fills up. The emphasis will need to change towards sustainable and responsible maintenance. The island is very integrated, and everyone needs to be concerned about safety standards, as well as providing value for money, now that the original facilities are ageing. The quality of maintenance is highly relevant to these concerns, so PEC is well-positioned to play an even greater role as a one-stop engineering service provider. The multinationals need to change their contracting strategies – rather than picking the cheapest providers, they should think more about long-term partnerships. This is especially important especially with the recent changes to foreign workers policy it is no longer possible to bring in such workers on a job-by-job basis. Companies here must be able to attract good people, train them in a variety of skills and retain them. The government recognizes that such moves will raise the industry's standards.

You have been CEO for six years, during which time PEC transformed into a public company in 2009. What were some of your original goals and how have they had to evolve with the market?

Whether we like it or not, capital investment in the industry has tapered off somewhat. The global economic crisis hit the petrochemical sector, which in turn also impacted us. Our growth has been curtailed and our margins have been squeezed, in particular because costs in Singapore have been increasing rapidly. Our maintenance contracts are locked in for three to five years. The whole environment is pretty tough. Five years ago, there were many projects but few contractors, but now it is the other way around. Today, there is a great deal of emphasis on quality of service – if PEC fails to excel at what it does best, we will be in trouble. We continue to invest in tools & equipment to improve efficiency and reduce reliance on manpower, without comprising on safety.

Are you concerned about the impact of new labor regulations on the petrochemical industry?

In order for PEC to expand abroad, we use Singapore as our training and development hub, but it is a challenge to bring in talented people from overseas. In the past, PEC has recruited good Filipino welders and fitters, who worked their way up over the years, gaining invaluable experience along the way. Now we have to let them go because of the policy changes. We then have to recruit new inexperienced employees and train them all over again. The new rules and regulations have hurt productivity and even put safety at risk. Fortunately there is now a dialogue between the EDB and the petrochemical industry to examine these issues. In every sector, the Singapore government should offer more assistance for companies intending to branch out overseas.

What are the main opportunities you see for PEC over the next three to five years?

Opportunities will return. There will be an upturn, like any cycle. We have gone through a few years of down-cycle, so hopefully we will see several years of up-cycle after that. I believe this is the lowest point in the market and by 2015 there will be new investments. I am excited about the Refinery and Petrochemical Integrated Development (RAPID) project by Petronas in neighbouring Johor in Malaysia – hopefully with PEC's expertise and experience we can secure some contracts. Myanmar is starting to look promising and I am increasingly enthusiastic about the Vietnamese market. In Singapore, we need the cooperation of both multinationals and the government to make the industry more sustainable over the long term; and professionalize the industry to increase its attractiveness. •

INTERVIEW WITH

Malini Vaidya

MANAGING DIRECTOR
SPENCER STUART, SOUTHEAST ASIA

Does Singapore attract talent and how would you describe the Singapore's workforce?

At the leadership level, Singapore is probably one of the most attractive locations for executives. Due to its location and good reputation, Singapore has never had a problem attracting talent. Speaking as a proud Singaporean, I would say that the Economic Development Board (EDB) has made an outstanding effort to reinvent the country and ensure that it remains an interesting hub for all types of industries, including the chemical sector. As a result, we see a constant inflow of talent to supply both multinationals and regional players.

Singapore has a well-balanced mix of local and international talent across industries. This is due to two reasons. On the one had, multinationals tend to cycle their top executives through Asia in order to give them a new perspective before they return home to become more senior executives. On the other hand, there are efforts to strengthen the local workforce and promote Singaporeans within organizations.

Why is Singapore considered a knowledge hub and do you see the country losing ground to more lucrative markets?

Over the past five to ten years, whilst Singapore did lose some ground to Shanghai as the regional headquarter for the chemical industry, the pendulum is shifting back as the competitive advantage of China is resulting in a rethink and relocation.

The benefit of having regional headquarters in Singapore, instead of in China or in India, is that it lets companies keep their headquarters separate from their main manufacturing sites. This allows leaders to distinctively manage their operations by having an external perspective from Singapore alongside their local mindset.

Additionally, multinationals are particularly attracted to Singapore because of its outstanding infrastructure and its continuous political stability. Given that Singapore is equidistant from China and India, the city is strategically and conveniently located for attracting leadership roles. Furthermore, executives and their families can enjoy an exceptionally safe and comfortable standard of living in Singapore, which they could probably not find elsewhere.

How important is executive leadership in the chemical industry?

The chemicals industry is very complicated with many different end-users and significant safety concerns. In this complex environment, having the right senior leadership becomes very critical. Simply having good people working on the ground does not suffice. The leadership needs to have a macro-approach of managing the orchestra otherwise the company cannot succeed. If smaller companies strive to become global leaders they require talent that can take care of a wide range of issues including crisis management and safety issues. Hence, it is very important to have an experienced and diverse leadership profile with a bird's eye view that can lead companies through different phases.

What are Spencer's Stuart's near term future objectives in terms of capabilities or reach?

One of the most important goals for the next three to five years is to continue to be the leader at C-Suite level recruitment. Following our past success, our continued strategy is to find strong Asian talent for advisory board or C-level roles.

Spencer Stuart is growing rapidly and we are constantly investing in new talent but we will never be a firm with large numbers. Nevertheless, we are conscious that we have been very busy lately and therefore we are adding new members to our own team at the senior level.

Can smaller local companies successfully compete with the multinationals and what are the differences between them?

Spencer Stuart has worked with a good mix of both multinational and local players. From our experience, I can say that both types of companies have done extremely well with recruiting new talent. While small to medium sized companies often appear below the radar, the EDB has helped make it a level playing field and enhanced the competition so that all parties regardless of their size can have a voice and learn from each other.

Do you believe Singapore will continue to be an investment destination?

Singapore has an exceptional economic philosophy, so I am confident that the country will continue to reinvent itself.. It is constantly seeking to improve and innovate and this mindset has attracted investment and it will continue to do so in the future. •

INTERVIEW WITH

Debajit Das

PRESIDENT
ASIA PACIFIC, AGGREKO

Can you provide an introduction to Aggreko?

Aggreko is the global leader in providing interim power and cooling solutions, with a history that spans over 50 years. We conduct our business under two distinct models: Power projects and Local business. Power is simple: we generate and sell energy on shorter-term IPP tenders according to market requirements. In terms of Local business, Aggreko provides a wide range of services and applications to local companies on a project-by-project basis with power generation and temperature control at the core of our Local business.

Aggreko entered the Asia Pacific (APAC) region and the local market in Singapore in 1989 by way of an acquisition. From our base here, we manage not only Singapore, but also the entire APAC region. This area stretches from India to Japan. Since 2008, Aggreko has witnessed phenomenal success in the region driven by growth in markets such as Indonesia, Malaysia, and the Philippines. Our services have also been mobilised in response to natural calamities: Aggreko and its power solutions were a part of the restoration and response efforts for the tsunami in Japan. In sum, both our Power Projects and Local business divisions have experienced growth in APAC and this trend is very encouraging for Aggreko worldwide.

What role do the chemical and petrochemical industries play for Aggreko in the region?

All of our chemical and petrochemical clients are a critical component of our business in APAC because they challenge us in terms of the applications and solutions we provide. For example, a petrochemical refinery may require Aggreko to employ nearly all of its service offerings for the client, from energy generation to process solutions. Our client profile in the region for chemicals is quite extensive; we have served major players across the value chain such as Shell. In general, Aggreko's offshore applications and temperature control solutions for processes related to energy and production efficiency are in the highest demand from our chemical and petrochemical clients.

Part of the mission of the Singaporean Economic Development Board (EDB) is to create an environment where chemical companies can focus on their core operations and rely on third-party players for peripheral support. Where does Aggreko lie on this vision for Singapore's value-chain?

The proposition of the EDB and Aggreko are one and the same, regardless of location and industry. Irrespective of the industry, Aggreko enables its clients to focus on their core business by taking care of their interim power or temperature control needs with our rental solutions. Power generation, expertise and temperature control are auxiliary support services that Aggreko can handle to meet the special needs of a short or longer-term project and increase overall efficiency.

Manpower limitations continue to trouble Singapore's manufacturing sector; as an ESP, how does the labor environment affect your business?

Retention of workforce is a challenge in any market; however, Aggreko Singapore maintains a strong balance of both foreign nationals and local talent for our operations. We are fortunate to have a strong roster of what we at Aggreko call "orange-blooded" people: expatriates and locals who form the core of our solutions in Singapore and the region.

What is Aggreko Singapore's vision for the future?

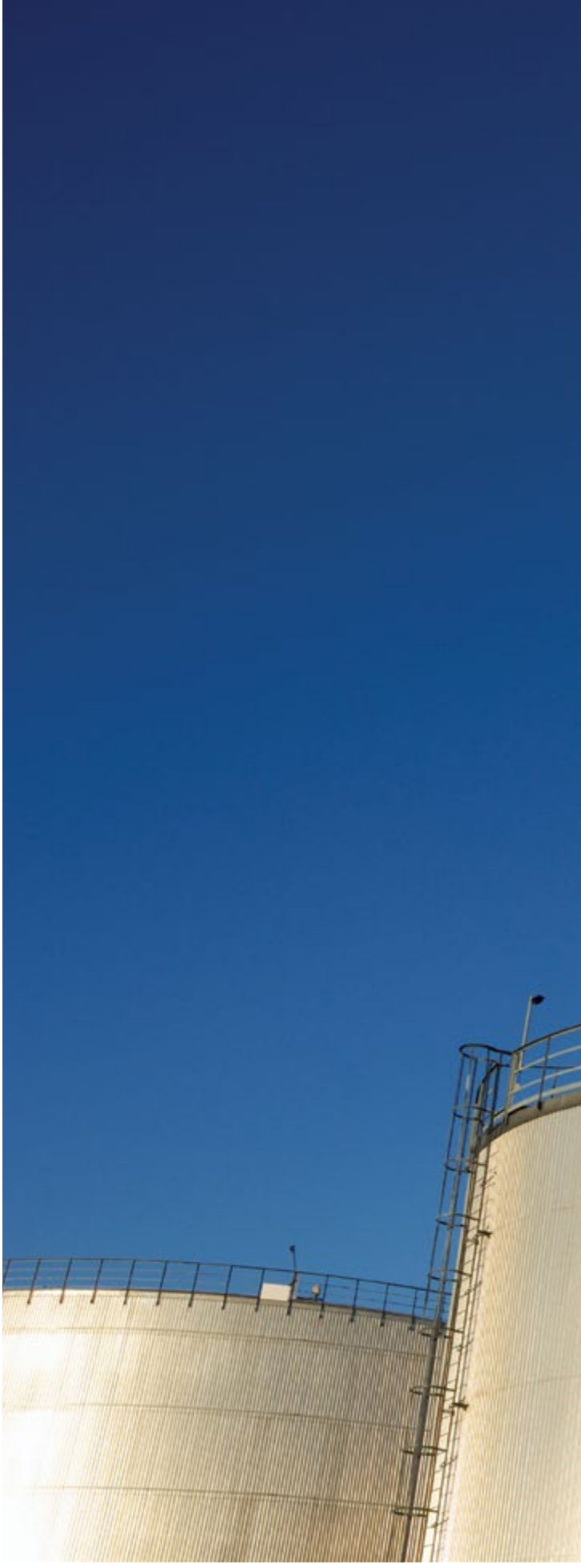
Aggreko evaluates its strategic decisions on a five-year basis. Currently, we foresee strong growth within our Local business division: Aggreko has created more headroom for local operations in APAC. Regional expansion in Southeast Asia is one of our primary goals over the next five years. Power projects in emerging markets are also earmarked for growth given the gap between demand and current supply levels as these economies continue to grow. Aggreko's power solutions will serve the margins created by unanticipated but nonetheless welcome growth in Asia, where actual demand often outpaces forecasted demand. Aggreko will continue to be a round-the-clock business that has the ability to serve customers across all industries with its critical applications, solutions that we have perfected over a 50-year history. •

Engineering Success:

The Services Supporting Singapore's Chemical Industry

"With new technologies, we must look at how we can integrate new inventions into something that can handle the industry's requirements as well as the market's needs. We are always on our toes to look out for new technologies that are cost effective for the disposal of hazardous waste."

- Benjamin Tan Chee Hian, Director- Revenue,
Eco Special Waste Management



Courtesy of Brunel

Built for the Job

Engineering, procurement and construction providers

The landscape of Singapore's engineering, procurement and construction providers (EPCs) has deteriorated considerably since the pre-crisis highs that huge new investments engendered. Today the general sentiment is that Singapore's EPC market is in the depth of a trough and doing what it can to survive until the next anticipated wave of contracts lifts them out of it. This has given Singapore's EPC companies time for some introspection. Tomorrow will be different in many ways; the next wave of investment will require different skill sets. No longer able or eager to compete on price, safety and quality are the new mantras. New labor laws are an especially tough blow for an industry so dependent on manpower and basic skills that have always formerly been imported. The restrictions on foreign workers will effect productivity, price and even safety. EPC companies are being forced to radically rethink the way that they do business and adapt to a more difficult environment. Looking further ahead, many see their destiny beyond the shores of the island to developing markets where their experience, skills and reputation will serve them well. As Singapore's mega projects are completed and new land harder and harder to come by, there will be less Greenfield projects and EPC's should expect more maintenance contracts as their future staple diet.

Singapore's EPC industry is more diverse than the chemical and related industries that it serves. While the chemicals industry is largely made up of investments from large multinationals, the process industry is composed of both multinational and domestic players, which vary dramatically in size, capability and niches. As investment flowed into Singapore, a complex web of contractors and subcontractors has developed to meet the needs of a growing country and world-class chemicals industry. Amongst this network is a handful of notable players including locally based Hiap Seng, Rotary, PEC, Hai Leck, Cyclect, Tiong Woon, W H Marathon and Mun Siong and multinationals such as Cape, McConnell Dowell, and Hertel. These companies can attribute a significant amount of their growth and success to the development of Singapore's chemicals industry.

Nevertheless, Singapore was certainly not immune to the global financial crisis, and Singapore's EPC's faced a rather rough environment as projects such as the $2.4 billion Jurong Aromatics Corporation complex were put on hold due to the credit crunch. A market that had boomed became uber-competitive as the number of new contracts decreased in the aftermath of the downturn. "Five years ago, there were many projects but few contractors, but now it is the other way around," comments Robert Dompeling, CEO of PEC.

With the new wave of specialty chemicals investment, many process industry leaders see their prospects as strong in the near-term. "From our perspective, and that of our members, the future looks very bright. The EDB has done an excellent job in attracting new investments into Singapore and promoting the city as an international business hub," says Lim Jit Say, executive director of Singapore's Association of Process Industry (ASPRI).

Although there is a general consensus that the demand for EPC services has picked up again after a few years of stalled growth, companies do not expect the huge workload they experienced before the crash. "At the moment, there is more activity in the industry than there was a few years ago, but it is not at the level it was before the financial crisis and I am not sure it will recover to that level any time soon," says Murray Dundas, managing director of McConnell Dowell.

D. Ramesh, operations manager of Cape East explains how the fewer available contracts have created a race to the bottom in terms of pricing: "Local companies have responded to this [more competitive marketplace] by slashing prices."

This slashing of prices is not healthy for the EPC industry as it leads to lower standards and squeezed margins. According to Robert Dompeling of PEC, it is up to the clients to recognize that just because a cheaper tender helps their bottom line, it may hurt the quality of the industry in the long run. "The multinationals need to change their contracting strategies; rather than picking the cheapest providers, they should think more about long-term partnerships. This is especially important in view of labor restrictions which do not allow for workers to come in on a job by job basis."

The EPC market with regards to the chemicals sector is currently oversaturated in the wake of the commissioning of the ExxonMobil cracker upgrades which have created a gap. The multi-billion-dollar investment represented a boon to those in the process industry contracted on the project and the projects in the pipeline do not equate to its magnitude. "The nature of our business is quite cyclical and with the completion of the ExxonMobil project, the market will be very competitive due to less volume of work," says Ramesh of Cape East.

Cape East, a non-mechanical service provider that has 90% of its Singaporean business coming from oil, gas and petrochemical services, is looking to revitalize its Singaporean operations as the megaproject is completed. The issue for the company will be the scale of new projects as mega investments in integrated cracking facilities become fewer. "On smaller projects, we face competition from mechanical service providers who are able to offer non-mechanical solutions as well. However on larger developments, like the ExxonMobil project, we are one of the only companies

with the expertise to handle such a complicated project from the non-mechanical side," says Ramesh.

As activity in the sector picks up, companies will continue to face stiff competition in the market still hungry for new business and new staff. "The chemical and petrochemical industries are upgrading and expanding their current assets to cater to increased demand from Asia and stricter emissions standards in Europe. Singapore's current economic conditions have made pricing very competitive for EPCs: we face a great deal of competition from foreign peers in the market, moreover manpower shortages have made growth difficult for contractors overall," according to Don Cheng, managing director of Hai Leck Engineering.

Despite rising construction costs in Singapore, Murray Dundas of McConnell Dowell believes the market is still price competitive because of Singapore's transparent regulatory regime, expertise and world-class efficiency. While less developed markets may encounter build stalls due to logistical issues or an opaque inspection process, Singaporean projects have a reputation for going up quickly. "Looking at Singapore in comparison to other countries, construction costs are extremely competitive here; it is a good environment for initial investment because of the relatively short build time," says Dundas.

Melvin Tan, managing director of Cyclect sees the EDB's recent investment in high-value specialty chemicals manufacturing as an exciting growth opportunity: "A more sophisticated chemical industry creates a gap of expertise, and at Cyclect our goal is to enhance our skill set and fill these gaps for our customers. Our current niche is in heat recovery, co-generation, MNEs and instrumentation, where Cyclect is very competitive. There is great potential within the chemical industry to reduce cost and drive profits through the implementation of co-generation and other cutting-edge energy technologies."

The privately held, locally-based company has grown substantially over its 70-year history, reaching S$100 million ($80 million) in revenue in 2010 with the chemicals sector contributing 35% to 40% of that business. According to Tan, one of the key strategies for Cyclect's growth is to closely align its agenda with national priorities: "Whatever the EDB brought to our shores, Cyclect sought to stay ahead of the curve with its involvement." •

INTERVIEW WITH

D. Ramesh

OPERATIONS MANAGER
CAPE EAST PTE LTD.

Can you provide a brief introduction of Cape's operations in Singapore in the context of the company's global operations?

As part of our UK-based parent company's global strategy, Cape has entered 30 countries worldwide through using large contracts from leading companies as a means of entering a new country. Cape has approximately 21,000 employees worldwide with 1.4 billion SGD of turnover. Established in 1990, Cape Singapore is a regional office for the company in Asia and we run both our Singaporean and Malaysian operations out of this office. Malaysia has traditionally been a rather small market for us, but we are seeing demand in this market increase significantly as new, major projects are becoming more prevalent. In Singapore, we have worked on some of the largest projects in the country including our recently completed work with ExxonMobil. Over the last three years our turnover in Singapore has averaged around 70 million SGD annually, however the nature of our business is quite cyclical and with the completion of the ExxonMobil project, the market will be very competitive due to less volume of work. Despite this downturn, we have kept a strong core team onboard and we are confident we can get revenues to previous levels.

What role do the chemical and petrochemical industries play for Cape in the region? How can Cape differentiate itself from others in a crowded marketplace?

As a non-mechanical industrial service provider, the importance of chemicals and related industries varies as we work on a project-to-project basis across several different sectors. Nevertheless given our recent projects, we have about 90% of our business coming from oil and gas and petrochemicals. On smaller projects, we face competition from mechanical service providers who are able to offer non-mechanical solutions as well. However on larger developments, like the ExxonMobil project, we are one of the only companies with the expertise to handle such a complicated project from the non-mechanical side.

As an international company, we have a reputation and proved track record of safety and quality. In terms of safety, our present project has reached 80 million man-hours without a lost time incident (LTI) from which our branch in Singapore contribution is 14.6 million man-hours. In terms of quality our Cape Management System is ISO 9,000 and OHSAS 18,000 certified to ensure we are consistent in our work across the globe.

Unlike manufacturing, where each day is basically the same and issues are therefore easy to spot, our business requires adaptability each and every day because every project brings with it a new challenge. To remain consistent and safe in this environment is extremely difficult, but our team takes pride in accomplishing this everyday.

What are some of your strategies for dealing with an increasingly limited foreign less-skilled labor pool?

As a labor-intensive industry, we do our best to maintain the same workforce within the country as much as possible. The government allocates foreign labor allowances on man-hours per project-based formula, so to keep workers in the country and employed with the same company in a fluid and cyclical market environment is a major challenge. We want to keep people working with us as much as possible because we can better ensure our standards are met and our workers gain a sense of loyalty and pride in their work. We are not here to manage people; we want to give people the tools to do their jobs in a self-disciplined and efficient way.

What are your objectives for Cape East in Singapore over the next three to five years?

We are currently bidding on several major projects on Jurong Island and mainland. The dynamic of Singapore has changed in the last couple years as more Korean companies have invested and entered the market both on the process and industrial services side. This has created even more competition amongst service providers, as opportunities for new contracts have been limited. Local companies have responded to this by slashing prices, but as a global, publically traded company it does not make sense for us to follow suit and slash prices here in Singapore. Thus we must continue to use our quality work to uphold our reputation in the coming years and this will bring us new business. •

INTERVIEW WITH

Murray Dundas

MANAGING DIRECTOR
MCCONNELL DOWELL

McConnell Dowell has been active in Singapore for several decades; can you provide a history of the company here and its major milestones?

McConnell Dowell has been active in the country since 1971, starting with a project for ExxonMobil constructing a tank terminal and then laying the original crude pipeline that ran to the SRC refinery. In the early days our work centered on solutions for industrial clients in the private sector; we have developed several pipeline systems on Jurong Island mainly for the refining and petrochemical industries in Singapore. One of McConnell Dowell's main strengths in Singapore has been its ability to cater to a diverse array of needs in both civil works and manufacturing. Our past chemical clients for our civil and mechanical processing expertise consist of major players including DuPont, Celanse, Lanxess and of course work on ExxonMobil's Singapore Parallel Train (SPT) project. Our work for ExxonMobil represents a major milestone for McConnell Dowell in Singapore: We performed over 8.5 million million man-hours worth of work LTI free, we modulated over 6km of interconnecting piperacks, we utilised 2,500 people in our Batam yard fabrication facility where we fabricated 130 modules, and carried out the work on site with over 1,000 people on the project before its successful completion in 2011.

What proportion of McConnell Dowell's order book today is dedicated to the chemical industry in Singapore?

McConnell Dowell is committed to the growth of the chemical industry in Singapore. As a major player on Jurong Island, we have supported the growth of the sector with our services from its early stages until today. McConnell Dowell is heavily present in Singapore's chemical and petrochemical industries, and we will continue to apply our mandate of 'creative construction' in Singapore as the industry evolves along the lines of the government's Jurong Island v2.0 initiative. Indeed, the beginning of the industry was the creation of the Petrochemical Corporation of Singapore (PCS), and McConnell Dowell served PCS with a pipeline integration project in the early days of Jurong Island. We are currently working on two Chemical projects on Jurong Island; Undertaking the construction of the civil, underground piping and structural works for the new Lanxess Compass facility, and the Design and Construction of the Marine facilities, including all ME&I topsides for Jurong Aromatics Company.

Our solutions are expanding alongside the more specialized needs of our clients on and off of Jurong Island: McConnell Dowell is continually advancing its pipe-racking and subsea pipelines solutions to suit a more integrated and sophisticated portfolio of clients in Singapore's downstream specialty chemicals industry.

Today, McConnell Dowell is working with the industry to add further value to Singapore's chemical sector through innovative designs and our industry expertise. At the moment, there is more activity in the industry than there was a few years ago, but it is not at the level it was before the financial crisis and I am not sure it will recover to that level any time soon.

In a crowded domestic EPC market, what distinguished McConnell Dowell from other firms?

Whilst McConnell Dowell is a foreign-owned company we have been in Singapore since 1971, so in many cases we have more local experience than the locals. Our 40-plus years experience in Singapore with over 300 locally based staff, of whom a large number have been with us for many years instills an excellent safety culture and track record, reputation for timely delivery and a diverse offering in Singapore along with an ability to lever off additional international resources if required helps distinguish us from other EPC Contractors in Singapore.

In terms of design we are able to offer creative, cost competitive solutions to our clients, we can look to improve the efficiency of the construction process by re-engineering bottlenecks, high risk activities or shut down tie-ins and therefore ensure the projects are delivered safely on time, on budget and to the same high quality standard.

What is on McConnell Dowell's radar in terms of potential opportunities?

McConnell Dowell is currently leveraging its experience in Singapore on further expansions in the region. Whereas we have not worked with Linde Gas here, for example, we are currently involved on a project with them in Thailand and hope to partner with them again for their new facilities in Malaysia as well as tendering other opportunities with new clients and contractors. We are actively tendering projects on Jurong Island for existing clients, new clients and as a specialist sub-contractor for particularly large packages of work that arise. Moreover, we are looking to incorporate a significantly more automation into our mechanical process solutions in order to mitigate costs; limitations on foreign labor in Singapore have made certain operations more cost-prohibitive. McConnell Dowell is striving to achieve greater efficiency in labor productivity in order to enhance our competitiveness in Singapore and throughout Southeast Asia. Looking at Singapore in comparison to other countries, construction costs are extremely competitive here; it is a good environment for initial investment because of the relatively short build time. Another advantage of Singapore is the ease of access to the logistics needed for construction; it is still easier to bring in resources from other countries to Singapore compared to many Western countries and once a project is initially approved by the government there are very rarely regulatory hold ups. •

INTERVIEW WITH

Don Cheng

MANAGING DIRECTOR
HAI LECK ENGINEERING

Please provide a brief introduction to the company and some of its major milestones?

Hai Leck Engineering was founded in 1971, from one man's vision to provide corrosion prevention services in the marine industry. Armed with limited resources and lead by its founder and Executive Chairman, Mr. Cheng Buck Poh, Hai Leck has grown into a multi-disciplinary company serving the oil & gas and petrochemical industries. In the year 2000, Hai Leck acquired Industrial Services, a company that specializes in insulation and refractory services. The company continues to grow and expand its business by integrating multiple disciplines between its core business and alliance partners, providing excellent performance and efficient delivery of projects in the areas of mechanical engineering, civil works, shop fabrication, field construction and plant maintenance. As a testimony of our ability to deliver cost-effective service, Hai Leck was chosen in Q3 of 2011 to provide a turnkey solution for Taiwan's Chang Chun group on Jurong Island: a cumene plant including offsite utilities such as storage tanks and pipelines; that project is expected to be completed by the end of Q1, 2013.

How is Hai Leck expanding its service offering to the chemical sector in Singapore?

The chemical and petrochemical industries are upgrading and expanding their current assets to cater to increased demand from Asia and stricter emissions standards in Europe. Singapore's current economic conditions have made pricing very competitive for ESPs: we face a great deal of competition from foreign peers in the market, moreover manpower shortages have made growth difficult for contractors overall. One of the ways in which we differentiate ourselves at Hai Leck is by integrating multiple trade disciplines under one roof. Being a public listed company has helped build confidence among Hai Leck's current and potential MNC clients. Our IPO signalled to the chemical industry that Hai Leck is a stable, reliable, and approachable partner in Singapore. We are not only recognised as a Service Provider for SIP, but also as a contractor for providing mechanical services, E&I and civil engineering solutions. In our new mechanical business unit, we focus on piping, structural steel, tank fabrication and installation, tank construction, heat exchanger maintenance and plant equipment installation and maintenance.

How does Hai Leck leverage its position in Singapore in its operations overseas, and what markets are you currently targeting?

Hai Leck considers itself a global ESP: we have been active in Malaysia for around 30 years and have more than a decade of experience in both Vietnam and Thailand. Hai Leck is seeking to expand into the emerging markets of Indonesia and Myanmar, which have recently opened up many opportunities in their oil and gas sectors.

Can you elaborate on Hai Leck's involvement in the JTC's Jurong Rock Caverns infrastructural project?

The Jurong Rock Caverns (JRC) is the first underground storage project undertaken by the JTC. Hai Leck has been chosen by Hyundai, the primary contractor, as the main subcontractor for corrosion protection, fireproofing and tank construction services for the JRC; this project is our first project in collaboration with a government body.

How does the EDB facilitate the operations of ESPs in the chemical sector, and how are

contractors like Hai Leck adapting to new regulation?

The recent government approach to reduce dependency on foreign labour has directly affected our operation costs; this challenges local companies who are striving hard to meet deadlines and continue operating with existing manpower levels.

On the other hand, the government and the EDB are pushing for greater productivity as a whole via automation and other efficiency-enhancing measures such as the use of innovative materials and new technologies. Hai Leck Engineering has implemented automation in some of its processes: we have a fully automated blasting and painting facility, and are upgrading our capabilities in areas such as machine welding and cutting for our mechanical works. Hai Leck's strategy is to continue to invest in capital and technologies that increase productivity, reduce operating costs, and lowers the number of man-hours required on projects..

What are Hai Leck's goals over the next several years?

Hai Leck's main goals are to continue to provide quality service and high safety standards whilst ensuring 100% customer satisfaction; increase the scale of projects we undertake; and to expand our footprint across the globe. •

INTERVIEW WITH

Alvin Leong

MANAGING DIRECTOR
WH MARATHON

What is your personal background, and how did you come to form WH Marathon?

My partner, Mr Wong and I have been in the industry for the last 40 years. WH Marathon was formed in July 2009, when I was offered a S$20 million project by Hin Leong Trading to build a 50,000m3 storage capacity in Tuas. WH Marathon is a fully integrated EPC company, serving tank farms, terminals and process plants. We all come from the oil business, where we have vast experience of working for multinationals – this was one reason we were able to set up so fast. We have formed alliance partnerships with key people we know in the industry, and specialize in the areas we know well.

What have been some of the company's key milestones since this first project?

WH Marathon has slowly expanded and is today turning over around S$100 million. Our employees are one of our key assets – we really believe in the professional staff that have been working for us and look after them very well. Our numbers have grown to around 150, and we also have various subsidiaries and joint ventures. We work very closely with companies such as McConnell Dowell, Tiong Woon Crane and Keller. When these partners turn to us, they know they are being taken care of by a specialist.

Many companies in Singapore cite operating costs as a key challenge here. What common mistakes you see operators making that could be eliminated to reduce costs?

Safety is one of the primary industrial concerns in Singapore, and the government is pushing the issue very hard. WH Marathon understands the importance of safety precautions and recognizes that they must sometimes come at a cost. This cost must be minimized for operators to remain competitive, and the best way they can do this is by consulting specialists. This is why we have formed alliance partnerships with experts in specific areas.

Will new restrictions on foreign labor make it harder for WH Marathon to continue to attract new talent?

Finding new talent is now a big challenge in Singapore. In the past young engineers would be very proud of their profession, but these days most of Generation-Y want the comfort of air-con and to stay out of the sun – they have forgotten someone has to build the buildings they sit in and that hard work is what pays. Young people should remember that most CEOs in the oil and gas industry are engineers. Singapore has a lot of talented new graduates, but not enough of them are engineers. Today it is tough to get a job, but labor shortages make executing one even tougher.

Some of the foreign workers coming into Singapore are professionals. My office has EPs and S Passes, but I also have a lot of Permanent Residents and foreigners who have become Singaporeans. With Burmese, Malays, Chinese and Indians on our staff, WH Marathon is an open company, but of course we also try to bring in local people; we do employ many local engineering graduates from NUS and NTU. I would think restrictions on foreign labor are making recruitment tougher. Our strategy is to ensure each of our engineers can do two or three different tasks – for example, we have civil engineers who are also safety managers and registered as surveyors and registered technical officers (RTO) with the BCA. This helps fill gaps that may appear in our company. The other important thing is to pay your employees well – the world works for money, although people also want to be comfortable with their management. WH Marathon pays for its staff to take training courses so they can upgrade themselves.

What do you regard as some of the key domestic projects you want to be involved in over the next few years? Do you see the market picking up at all?

Quite frankly, many big industrial projects in Singapore are now coming to an end, and companies are expanding more in other countries. While a small company, WH Marathon also does business abroad, with projects in ASEAN region and representative offices in China, Hong Kong and across the region. Business in Singapore looks very tough; any new projects will face high costs, and new entrants into the industry may not realize quite how competitive it has become.

Malaysia has its RAPID project, while Indonesia has attracted some Korean investment. Do you see your role in these countries growing?

We certainly see our participation in ASEAN region increasing. WH Marathon has a couple of projects on the table there which we hope will materialize. We will work alongside the same specialists as in Singapore. Singapore's vastly experienced skilled labor pool – especially at top and middle management levels – definitely gives companies here an advantage when entering the neighbouring markets.

The government has tried to promote high value-added chemicals at Jurong Island 2.0. For WH Marathon, what are some of the key challenges when working in this specialty sector?

Our company is always geared up to take high value-added jobs. All of our top and middle managers are graduates, and we work in partnership with NUS on certain studies. WH Marathon also works with Keller, a very good German company specialized in foundations and dams.

What are WH Marathon's strategic priorities for the next five years?

WH Marathon wants to expand and form more joint ventures. We are looking around the ASEAN region. I think the oil and gas industry in Singapore will remain very strong for the next two or three decades; the multinationals place a lot of trust in the country and are here to stay. •

INTERVIEW WITH

Michael Ang

CHIEF OPERATING OFFICER
TIONG WOON CORPORATION HOLDING

Tiong Woon was founded 35 years ago and has played a key role in facilitating the growth of Singapore's chemicals industry. Could we begin with a brief overview of the company?

The late chairman, Ang Choo Kim, founded Tiong Woon in 1978 as a crane rental company with one 20-ton crane. The business grew quickly as we acquired more and more cranes and in 1987, we became the owners of a 300-ton crane which was the largest in Singapore at that time. In the 1990s we bought the AC1600, one of the largest of all terrain cranes in the market with a 500-ton capacity. With these achievements, the company had established a very strong footing in heavy lift and haulage. We expanded our business to provide marine transportation because at that time, Jurong Island had no bridge connecting it to the mainland. Thus, we provided the tugs and barges services to move our cranes in order to satisfy the growing demand on the island.

We listed the company on the main board of the Singapore stock exchange in 1999 and began moving into the heavy haulage sector with 600-ton class and 1000-ton class cranes. This brought us up to the level of the world-class players and we were able to service the construction of petrochemical refineries and infrastructure during this period. In 2005, we began doing mechanical engineering work, which allows us to offer a total package solution to customers. We are now an integrated solutions provider as we offer three services: marine transport, logistics, and heavy lift.

What was the impetus behind expanding your product offering in 2005 and how has this impacted your business today?

I think the impetus behind this decision really speaks to how Singapore has developed its worldwide brand. For example, when Tiong Woon began its operations, safety regimes were almost non-existent until the Ministry of Manpower and the multinational refining companies really took steps to rapidly improve the safety culture.

During the same time as multinational companies invested and brought new standards with them, we looked at what the multinational crane companies were doing and saw them winning some additional businesses through lead engineering. As a result, we moved into the engineering field as well in order to integrate ourselves with our customers. This allowed us to increase our business from petrochemical projects. In 2008, we had a real breakthrough because we were selected by a major Oil & Gas player as an in house contractor for two of their plants in Bukom and Seraya.

Currently, how important is petrochemicals to the company and what is your strategy for winning contracts in the local market?

As a local boy, we have the advantage in knowing the market and regulation better than the foreign players. Thus, we can integrate our services to provide solutions for the given situation. We can help EPCs from the beginning of the project to design and build, and receive permits for things such as temporary jetties, or to work with various authorities to remove lampposts, trees, etc when something like a large column needs to be moved overland.

What do you see as the biggest challenges facing Tiong Woon within Singapore?

Manpower related issue like cost will undoubtedly be our biggest challenge going forward. As a labour-intensive industry we rely heavily on foreign labour regardless of skill level. However, the government's white paper policy is putting restrictions on im-

migration in the future. So to deal with this situation, we work together with numerous government agencies to provide more training for a new local work force like crane operators. One of the key factors differentiating Singapore with other countries is the amount of training and certification that our operators receive to become qualified. Operators in Singapore have to undergo a more structured, extensive training and have to pass a government test to receive the authorization. Thus, they are very valuable to a company and in a high demand.

What do you expect to be the performance of the company in the coming years and what are your key priorities?

The outlook looks generally quite positive right now as there is new investment coming into Singapore. In the next two to three years, our revenue will continue to remain strong in Singapore. However, we are also focused on further integrating our business units and expanding our overseas presence. We are in process of expanding our business into Myanmar, which we are very excited about. •

INTERVIEW WITH

Lim Jit Say

EXECUTIVE DIRECTOR
ASSOCIATION OF PROCESS INDUSTRY

When was ASPRI founded and why?

The Association of Process Industry, ASPRI, previously known as the Process Industry Contractors' Association Singapore, PICAS, was founded in 1997 in anticipation that many chemicals companies would be entering the Singaporean market in the near future. Today, the association serves as a major platform to improve and facilitate dialogues, address industry issues among the various government agencies, such as Singapore Economic Development Board (EDB), International Enterprise (IE) Singapore, Singapore Workforce Development Agency (WDA), SPRING Singapore, the plant owners and the engineering service providers (ESPs). ASPRI also serves four key clusters namely, the petroleum, petrochemicals, specialty chemicals and pharmaceuticals.

When we visited Singapore in 2010, our team encountered an environment that was not favorable to engineering service providers. What is the situation today?

From our perspective, and that of our members, the future looks very bright. The EDB has done an excellent good job in attracting new investments into Singapore and promoting the city as an international business hub. Recent new investments have enhanced the businesses of our members and service providers.

How are ASPRI's members adapting to meet new health, safety, security and environment (HSSE) standards set by multinational corporations (MNCs)?

Firstly, I need to thank multinational corporations for training our members on important universal safety regulations. Today, ASPRI is actually working in collaboration with several multinational corporations and providing them with training services. By helping our members increase safety regulations which will improve their productivity and profitability by minimizing lost working hours. Our process supporting industry has an excellent safety record and Singapore has set the golden standard for the region. This is due to the fact that every ESP must comply with both the plant owners' safety regulations and the regulations set out by the Ministry of Manpower (MOM) and the Workplace Safety Health Council (WSHC). In summary, safety is always the number one priority.

Are all of your members, including the smaller players, capable of investing in these new automation and technology processes?

This is a long and ongoing process for all our members. For multinational corporations, new automation and technology investments are easier to implement. However, in Singapore small and medium enterprises receive government incentives, so it is also a feasible for them. Finally, to avoid production delays caused by stringent safety rules, plants have realised the benefits of automating processes. Overall, these investments represent an educational process to change our society's mindset. With increasingly governmental rules, companies in Singapore eventually have no choice but to change their outlook and adhere to these new processes.

In recent years, management failures and manpower issues have caused significant project delays. Is the problem of manpower also negatively affecting the businesses of ASPRI members?

Recent changes of governmental policies concerning foreign worker's permits have affected small to medium sized service providers. However, the government has acted very proactively in providing means and incentives to help these companies overcome this struggle.

ASPRI- Institute of Process Industry (ASPRI-IPI) aims to train workers and is actively helping members overcome this problem. For example, we have recently signed a Memorandum of Understanding (MOU) with WDA, which will provide structured training and career counseling services attract locals to join the industry.

What are your goals for the Process Industry Academy and for ASPRI in general?

One of ASPRI's goals in the next four phases is to establish a "Process Industry Academy", a one-stop industry training academy. Furthermore, we recently outlined a road map for the next 10 years. In this roadmap, we have planned three phases. The first and most important step is to sustain productivity levels through government-sponsored schemes. Second, we want to encourage Singapore's future development into a regional multi-disciplinary advanced research hub. We also want to help our members move up the value chain through market consolidation efforts. Since many of our members are specialized in very niche areas, we will encourage members to establish consortiums where members with different capabilities can collaborate to maximise their market share. •

Courtesy of Brunel

Retaining the Edge

Maintenance providers for Singapore's facilities

Like the small gains made through innovation, plant maintenance will be an increasingly vital aspect for Singapore's chemicals engineering, procurement, and construction providers (EPCs) as new construction projects become fewer in number and existing facilities age. It is important to note that many of Singapore's facilities have been operational for two decades or longer and Singapore's chemicals market is reaching a more mature phase according to Robert Dompeling, CEO of PEC: "The project market will slowly tail off over the next ten years as Jurong Island fills up. The emphasis will need to change towards sustainable and responsible maintenance."

Despite the long-term view of the chemicals industry that many executives claim to take, Dompeling believes many operators are willing to go with the cheapest service provider du jour: "Some multinational companies should look more at the total costs of ownership and maintenance from a long-term perspective. Scale is crucial – companies can offer competitive rates only if they are relatively large and serving many clients".

Competing on cost is anyway no longer a viable option in Singapore. New labor regulations, an expensive workforce and costly operating environment will counter any efforts to provide a cheap service. Instead Singaporeans look to excellence, sustainability, mechanization and software as areas where they can maintain an edge. Most Singaporean firms are familiar with European and American regulatory criteria and with international best practice after years of working alongside leading multinationals. A cadre of experienced world-class engineers exists who have tasked themselves with insuring that high costs can be offset by operational excellence.

UK-based Hertel is an industrial service construction and maintenance service provider that has made energy conservation a key component of its offering. Due to the stricter European Union environmental goals and objectives the company has become accustomed to handling, it has taken action to adopt thermographic technology to measure heat loss at plants worldwide. Application of this technology helps operators gain a better understanding of their wasted potential energy. "Operators are becoming aware of how much heat their plant is losing, which means the potential of energy saving is huge when they are operating at temperatures between 150 and 300 degrees. For Singapore, this is particularly imperative as we have one of the highest energy costs in Asia," comments Hertel's regional managing director of Asia and Australia, Marinus Jacometti.

Jacometti notes that a single un-insinuated or poorly insulated valve, which is easily identifiable by thermographic technology, can cost a company €2800 ($3620) per year. For large plants, this can mean savings of $7 million to $10 million per year on a one-time investment of $3 million for re-insulation. This has wide ranging implications for Hertel and others in the insulation business as the industry takes a new look at construction and maintenance costs. Jacometti describes how companies used to look at insulation as an afterthought, but this attitude is evolving. "Now the conversation has changed from construction costs to total costs of ownership for plant operators. This is creating a paradigm shift in the industry because in the past operators saw little reason to go through the cost and inconvenience of insulating something like valves, but now modern techniques like thermography allows us to calculate the exact losses in energy from an un-insulated or a poorly insulated valve."

Locally-based player Ad-Meth Mech Field sees its prospects as strong given the landscape of the local market. "Demand is picking up on downstream maintenance as plants in Singapore age. Typically operators are looking to run a plant for up to four years in Singapore without a scheduled shut down in order to minimize operating costs," states Shaun Pang Tong Heng, general manager of Ad-Meth Mech Field.

As operators are persistently put a higher premium on reducing plant shut down time as a cost saving measure, Ad-Meth Mech Field has positioned itself accordingly. "Operators want a quick turnaround time for maintenance and repairs, thus this is at the core of our business strategy. For us at Ad-Meth Mech Field, we understand the urgency of our customers' requests. We recognize for every minute our customer's plant sits idle, their operating costs increases and their plant turns from an asset to a liability" says Pang.

Maintaining Singapore's ageing industrial infrastructure so that it will be able to compete with new installations going up throughout ASEAN will be a demanding task and will entail incorporating the latest and most innovative systems and technologies. If companies can achieve this, such expertise will help them to ensure that Singapore can remain a regional leader for a few decades more. •

INTERVIEW WITH

Shaun Pang

GENERAL MANAGER
AD-METH MECH-FIELD PTE.LTD.

Could you please provide a brief overview of Ad-Meth Mech-Field and the services you provide to the chemicals industry?

Ad-Meth Mech-Field is a local Singaporean company that started operating in 1991 and currently there are three areas of services we provide for our clients in the chemicals process industry. The first is high pressure water-jet cleaning of up to 40,000 psi for a variety of components used in process plants such as heat exchangers, drums and columns. The second area of our business is the fabrication and repair of heat exchangers. We are specialists in this area of heat exchangers and consider ourselves a one-stop-shop for companies in need of heat exchanger maintenance and repair services. The third area is the supplying of valves, pipes, and other specialized equipment that we supply to major petrochemical clients. Our customer base includes a number of the leading companies operating in Singapore including ExxonMobil, Shell, Chevron, Petro China, DuPont, and Lanxess.

We operate in a very specialized niche; in the petrochemical industry the key to operating an efficient, profitable unit is to keep the plant running with as few maintenance issues as possible. Obviously plants develop maintenance issues over time and have to be shut down for repairs and upkeep. Operators want a quick turnaround time for maintenance and repairs, thus this is at the core of our business strategy. For us at Ad-Meth Mech Field, we understand the urgency of our customers' requests. We recognize for every minute our customers' plants sit idle, their operating costs increase and the plant turns from an asset to a liability. We work with our customers in order to have an intimate recognition of their schedules and to minimize the shut down time at their plants. This is why our facility is operating twenty four-seven, to deliver to the turnaround our customers demand.

What do you see as the company's place on the value chain? What value-added services do you provide?

The fact we are a one-stop shop for heat exchangers is very valuable in such a time-sensitive environment. There are several companies who provide services that overlap with ours, but we are the only company in Singapore to provide such a comprehensive range of services in our field. This is critical because coordinating between different service contractors leads to lost time on the maintenance and repair project, meaning operators may have a longer shut down time.

Demand is picking up on the downstream maintenance as plants in Singapore age. Typically operators are looking to run a plant for up to four years in Singapore without a scheduled shut down in order to minimize operating costs. For scheduled maintenance of plants we are often shooting for a turnaround time of around two to three weeks depending on the scope of the work being done at the plant and for unscheduled shutdowns we can usually provide clients with a turnaround time of five days to one week.

What do you see as the biggest challenges facing Ad-Meth Mech-Field?

For us the biggest issue is labour cost as the government has sought to restrict the number of foreign workers in the country by increasing the levy on lower skilled foreign workers. Their philosophy is that restricting labor will create more jobs for Singaporeans. However, what this policy fails to recognize is that Singaporeans do not have a desire to work in hands-on industries such as ours. As an SME, the government wants us to control the number of foreign workers we employ, however if we did not have foreign workers, it would be impossible for us to operate.

Singapore has effectively opened its doors to the largest multinational corporations in the world. What do you see as the role of local SMEs in a market where multinationals are usually considered the focus of the economy?

Small businesses have flexibility and the ability to react quickly to the market. There are SMEs with good, innovative ideas but find it difficult to market yourself. Marketing here is difficult because there is not a ready made domestic market for many SMEs like there would be in a market such as China or the United States. Thus, organizations like the EDB should work more in marketing these innovative SMEs in order to promote their viability. •

INTERVIEW WITH

Marinus Jacometti

REGIONAL MANAGING DIRECTOR ASIA AND AUSTRALIA
HERTEL

Hertel was established in Singapore in 2007. What have been the major developments for the company since then?

Hertel's establishment in Singapore in 2007 came on the back of several big contracts and since then we have established ourselves as a significant regional player. We have made acquisitions in Thailand and have several partnerships in China and Malaysia. However, the main crux of our Asian operations remains in Singapore. Through our acquisitions of Kok Chang Scaffolding in 2008 and Tong Hoi Engineering, a mechanical engineering company in 2009, we were able to develop the Hertel's operations in Singapore quite well both in terms of revenues, profits and penetration of markets.

Our strategy is to work with clients through the construction and into the maintenance phase or to use maintenance to get new projects if a company decides to undertake new construction.

How is the nature of non-mechanical process engineering changing and what initiatives is Hertel undertaking to meet this changing dynamic?

As a global company we are able to share perspective, which is invaluable to improving our operations worldwide. At Hertel Europe, the company has become more aware of energy efficiency given the 2020 goals and objectives set by the European Union. In Asia, we are adopting this as we have recently launched an energy conservation initiative, which incorporates new thermographic technology to measure heat loss in process plants and create substantial savings for our customers. For Singapore, this is particularly imperative as we have one of the highest energy costs in Asia.

This will allow Hertel to move up the value chain as insulation used to be perceived as a necessary, but distinctive part of construction and thus was placed near the bottom of the value chain. However, now the conversation has changed from construction costs to total costs of ownership for plant operators. This is creating a paradigm shift in the industry because in the past operators saw little reason to go through the cost and inconvenience of insulating something like valves, but now modern techniques like thermography allows us to calculate the exact losses in energy from an un-insulated or a poorly insulated valve. This can lead to losses of up to 2800 Euro per year per valve. At an average plant, savings like this can lead to savings of $7 to 10 million dollars per year based on a one-time $3 million investment.

Given the high cost of energy in Singapore, is the market here particularly receptive to energy saving technology?

I think Singapore is just one of many markets clamoring for this. Apart from the fact that energy is becoming more expensive, we are living in a world that is more acutely aware that we need to waste less as human beings, whether it is food, water, or energy. This is a global issue, not just a Singaporean or Asian issue and global companies are paying attention. The traditional tension we used to see amongst our clients was between maintenance managers, who have a set budget to spend on insulation, and operations managers, who want to keep operating costs as low as possible. However, now many multinational companies have an energy manager to bridge the contradiction between these two parties.

Many industrial service companies, including Hertel, have seen a downturn in their Singaporean revenues as a result of lack of investment in new projects during the financial crisis. Given the new wave of investment in Singapore's chemicals sector over the last year, do you expect business to pick back up again?

The nature of this business is cyclical; sometimes you have investments concentrated over one to two years where service companies are struggling to keep up with overwhelming demand. This occurred in 2009 and 2010 in Singapore; there was a huge uplift due to all these projects. In recent years the demand has tapered to what I would call a more normal level. With new, big projects coming in 2014, I expect Singapore to pick back up a bit.

What do you see as your strategic priorities for Hertel Singapore over the next three years?

The first is safety, which is always of primary concern. Second, is to optimize our processes further by lean implementation in order to defend our margins given the price pressure in the market. Thirdly, is business innovation; through collaboration worldwide, Hertel is planning on launching several new initiatives in the coming years to improve upon our products and services as well as expanding our customer base. •

INTERVIEW WITH

Masatoshi Nakahara & Ong Choon Nan

MN: MANAGING DIRECTOR
OCN: SENOR MANAGER
YOKOGAWA ENGINEERING ASIA

Could you provide a brief introduction to Yokogawa in Singapore?

MN: Yokogawa provides automation solutions, particularly to the processing industry. Our business volume is around $3.5 billion worldwide. Our main solution consists of control systems and field sensors, but in addition to the product we will also supply the engineering work and service support. We can help each customer realize stable plant operations and more efficient energy usage. When Yokogawa opened in Singapore in 1974, it began as a factory manufacturing meters. In the 1980s we started selling our products in this region, and later in the same decade we opened an engineering center.

Which of your solutions are in highest demand from petrochemical clients in the region?

MN: Our distributed control systems are our solution in highest demand from petrochemical clients in the region. These are special computer systems which control more than 10,000 sensing points in certain petrochemical plants. Today all temperatures and pressure levels should be set by computers – but these computers must also be reliable, because if they ever crash it will cost plants huge sums of money. Yokogawa has therefore developed its hardware and software very carefully. We also provide management solutions to help customers with their plant operation.

Singapore is a very international market and a gateway into Asia. What are Yokogawa's reasons for investing in automation here?

MN: Singapore has no resources; so to survive its government engages overseas investment. Its ambitions have been very successfully realized in the last two decades; Singapore has good mechanisms for human capital and resource transportation. Many strong investors have come to the country and many major companies have their headquarters here, so there are great opportunities to build a business here. Also, the EDB provides some assistance to companies investing here – it supported us when we first built our factory, and we have established a good relationship. Yokogawa now has four functions in Singapore. The most important is to sell engineering services to customers here; second, we still have manufacturing in the country; third, Singapore is our Southeast Asian headquarters, covering a region spanning from India to Australia to Taiwan; fourth, it is also the headquarters for Yokogawa's international market outside Japan. In each case we have received some help from the EDB.

Your clients are facing difficulties with staffing because of restrictions placed on foreign talent. How can automation help chemical companies get more out of a limited labor pool?

Retention of human resources is a headache for every company, and the Singapore government is now becoming very strict toward foreign workers coming into the country. Yokogawa suffers less than others because our employees are highly skilled, and Singapore still welcomes such capable engineers. The more severe problems facing chemical companies are an opportunity for them to introduce our solutions.

What are Yokogawa's main competitive advantages over other automation companies?

MN: One of our core strengths is in human resources. We have established businesses in Southeast Asia, the Middle East, Africa, Brazil, the US and Europe, so our customer is always local. Being able to speak a customer's language is a very important step in forming a relationship with them, and our local staff is very important to us. Our second strength is in the quality of our products. Some companies talk their products up, but ours are really as good as we say. Yokogawa's service center here improves our understanding of customers' needs and ability to make quality products for them.

Do you have a final message for the readers?

OCN: Yokogawa has established a very strong base on Jurong Island. Last year Singapore brought in about $16 billion of investment, of which about 40% was in chemicals, and we were successful in winning a lot of contracts. The investment outlook for 2013 does not look so rosy, with challenges around energy costs and human resources, but we are seeing more and more upstream projects. We still have a major role to play on Jurong Island: approximately 60% of the companies on Jurong Island use Yokogawa's services. We continue to service systems we installed 20 or 30 years ago, and have more than 100 people supporting customers in Singapore. We run continuous improvement programs to upgrade our customers' systems. •

The Problem of Space

Addressing Land Scarcity

Land-use on Jurong Island and in the neighbouring areas of Tuas and Jruong is a severely limiting factor in Singpaore. With Jurong Island and the main island becoming increasingly built-out, storage and distribution companies in Singapore are having a difficult time acquiring the necessary land to expand their operations. Kelvin Sim, managing director of Singapore-based distributor Absotech explains the conundrum surrounding land-use for storage and distribution companies: "Land has not only become very expensive in Singapore, but it has also become exclusive: many companies may have the capacity to purchase a certain plot or asset, but the company who the government perceives will add the most value in its bid is ultimately the one favored to make a purchase."

Although this behavior limits distribution and storage companies, the government views preservation of prime real estate for high value production as a necessary measure. Furthermore, the government, through the JTC Corporation, is also taking action to introduce its own storage measures. This project, known as the Jurong Rock Caverns (JRC) is an ambitious subterranean complex located 130m below the surface that seeks to save limited space on Jurong Island. The Jurong Aromatics Corporation, whose $2.4 billion integrated complex is expected to go online in 2014, is scheduled to be the first user of this new facility. Eugene Leong comments on the value of the JRC: "It is an efficient and unique way of storing products on the island that does not compromise the limited space available. It has capacity to store up to nine million barrels of petrochemical products, which would have taken up 60 hectares of space above ground." Considering the total landmass of Jurong Island is currently around 3000 hectares, the JRC is a significant space saving initiative that is focused on long-term gains over short-term costs. The government's willingness to get involved in projects like the SLNG terminal and JRC illustrate the long-term vision the government has for the chemicals sector. In these projects the Singaporean government is willing to invest on its own when private companies are reluctant to do so. While time will tell if these latest investment decisions are wise, Singapore has a proven track record of correctly betting on long-term trends.

The JRC is not the only storage project entering Singapore's chemical scene. Private sector companies such as Oiltanking, Yang Kee and YCH are looking to expand warehousing capacity, while minimizing land use. Locally based Yang Kee Group recently christened a S$120 million ($100 million) Jurong Pier Chemical Logistics Hub (CLH) with more than 1 million square feet and two floors for chemicals. "Yang Kee's CLH is specially outfitted for our chemical clients; it has fire-fighting and water containment features, explosion-proof lightning, epoxied flooring, a mechanical ventilation system, and a design that caters to Quality, Health, Safety, and Environmental (QHSE) compliance," explains Ken K.C. Koh, deputy managing director of Yang Kee.

Local warehousing and logistics provider YCH broke ground on an innovative new facility dubbed Supply Chain City™. The facility will offer 15 floors of automated storage and warehousing and utilize Automatic Storage and Retrieval Systems in order to save space and manpower costs. Michael Leong, vice president of sales and marketing at YCH Group explains the concept behind the company's new Supply Chain City: "our SCC will be a fully consolidated and integrated complex, housing new technologies and a wide selection of professionals in the logistics and SCM industries; the SCC is quintessentially plug-and-play." •

Source: Shutterstock

INTERVIEW WITH

Kelvin Sim & Ooi Tiat Jin

KS: MANAGING DIRECTOR
OTJ: EXECUTIVE MANAGER
ABSOTECH

As the founder and Managing Director of Absotech Pte Ltd, can you provide a history of the company and its major milestones?

KS: I started Absotech Pte Ltd in 2002 from outside of the chemical industry; however, suppliers with whom I had worked with at my previous position soon sought me out for my distribution expertise. Namely, ExxonMobil was looking for a partner with experience in emerging markets. After a year, Absotech secured a partnership and support from ExxonMobil. By June of 2003, we were self-sufficient. Absotech's most intensive period of growth came shortly thereafter; we went from less than one million in turnover in 2003 to upwards of S$25 million by the end of 2006. Until Q3 of 2007, ExxonMobil remained our main partner. Today, we purchase stock from a diverse array of major players both locally and internationally.

What are Absotech's supply chain capabilities, and how are they bolstered by your position in Singapore?

KS: Presently, the majority of Absotech's inventory is housed in Singapore. Where we used to only focus on trading, Absotech offers blending, logistics and other value added services to our customers; we buy product in bulk and have our own ISO tanking and drumming capabilities. The majority of our current products are destined for export, but Absotech is building a stronger local distribution network for the future; we want our Singaporean operations to be equally as strong as those overseas. We feel that Singapore has many strengths that can be leveraged within our business. First, Singapore enjoys high levels of transparency. Although other countries may have lower overheads, there are many unforeseen costs when compared to here.

What are some of the methods Absotech has undertaken to make more efficient use of its asset portfolio?

KS: Because chemical markets are so speculative, Absotech is able to explore new opportunities via expanding our logistics assets and capabilities: an experienced trader can regain several months of business lost from a lack of inventory almost overnight, for example. Furthermore, our market intelligence capabilities are very strong, and we can forecast demand for our customers based on firsthand information and Absotech's ability to read the market. Yet currently Absotech has chosen to strategically downsize to S$20 million until the cost-curve for logistics shifts downwards again.

Singapore's Ministry of Trade and Industry is committed to promoting the operations of SMEs like Absotech. What has been your relationship with the government and what incentives are available to businesses such as yours?

OTJ: Labor restrictions are being offset by many new incentives to help SMEs become both more competitive and productive. Whereas a local SME in the past might have built up its manpower, the government today is promoting investment into technology and capital that decreases reliance on man-hours. The government is now providing more funding programs and other initiatives to prop up SMEs.

Is there adequate support in place for a local Singaporean company to meet the HSSE standards of MNCs in the chemical industry, many of which are potential partners and customers for service providers?

OTJ: Capability and compliance building for SMEs can be undertaken through many channels. The SCIC, for example, is a good source of both information and training on issues relating to HSSE compliance. For a company like Absotech, we can utilize the SCIC as a platform to address our concerns. One area in which there is still room for improvement, however, is the promotion of SCIC-MNC partnerships and mentoring programs; the difference between a MNC's HSSE standards and a local Singaporean enterprise's are large, and we feel that these gaps cannot be filled without long-term partnerships or immersion programs.

What is Absotech's vision for the future both in Singapore and overseas?

KS: Absotech is looking to become more than a trader and distributor of solvents; we are building partnerships in the mining industry with partners in the United States. However, new growth requires a stronger asset base, which we cannot enhance despite the fact that Absotech is currently very liquid in terms of funds. Land has not only become very expensive in Singapore, but it has also become exclusive: many companies may have the capacity to purchase a certain plot or asset, but the company who the government perceives will add the most value in its bid is ultimately the one favored to make a purchase. •

INTERVIEW WITH

Kai Chladek

MANAGING DIRECTOR
LESCHACO

What are the recent developments at Leschaco?

In recent years, Leschaco has shifted its focus to Asia, where the company has established a large strong regional network. With regards to the chemical industry, Leschaco serves major global costumers including BASF, Bayer, Lanxess, Evonik and Clariant in Europe.

Leschaco's branch in Singapore opened in 1992. Today, this office has roughly 35 employees and the division frequently hosts key account events for special regional clients. The chemical sector constitutes about 60% of Leschaco's overall business, but the company has diversified into fields such as the automotive sector, shipment, storage logistic solutions and distribution. Particularly in Singapore, every type of service is important and there is a high demand for a combination of services such as manufacturing, distribution and logistics solutions.

In 2009 your predecessor characterized Leschaco as "not only a logistics solutions company but also a distributor". What can one expect from a partnership with Leschaco? What are Leschaco's service offerings?

Leschaco provides its partners with all the necessary supply chain services. It is proud to have capabilities to complete the entire supply chain lifecycle. For example, the company can supply and transport raw materials into Singapore and to other regions. Additionally, Leschaco arranges various in-house operations such as packaging or transportation of goods from their manufacturing site to their destination countries. Also, Leschaco consults clients in handling dangerous goods in cargos. For this, Leschaco has a specialist located in Thailand who is in charge of all of Leschaco's regional dangerous goods and their requirements. He also handles the warehousing, the transportation and any other requirements related to dangerous goods.

What are Leschaco's capacities or capabilities in terms of tonnage transported in and out of Singapore?

Globally, Leschaco runs a fleet of 300 units of which 23 tank containers solely transport chemicals. Singapore is one of many markets, which Leschaco serves in the Asia Pacific region. In terms of global movements, Leschaco imports and exports approximately 10,000 to 12,000 tank containers annually. In terms of local chemical transports, Leschaco moves 40 to 50 chemical tank containers in and out of Singapore annually.

Holding assets in Singapore can be expensive due to the rising cost of land and regulations. Has Leschaco also encountered this problem and how is it's warehousing business dealing with this?

It is very costly for a foreign company like Leschaco to acquire land in Singapore. Nevertheless, due to the strong local demand for chemical warehousing, Leschaco is considering opening its own warehousing facilities in Singapore by the end of this year. Another challenge in Singapore is that the government heavily regulates the property acquisition process. This challenging cost environment has made us contemplate moving our operations to Malaysia. However, relocating to Malaysia would entail new risks and disadvantages. Unlike most neighbouring countries, our business in Singapore benefits from easy costumes clearances, favorable trade agreements with Europe and the Americas and a robust infrastructure.

Given the recent indigenous growth of the chemical sector in Singapore, is Leschaco facing new competition by smaller, local players?

For the past 10-15 years, the Singaporean market has becoming increasingly competitive. There are now over 9000 established logistics companies in Singapore of which the majority are local or regional players. However, there are still a large amount of multinational market entrants because Singapore is such an attractive business hub.

What are Leschaco's primary objectives for the near future and what strategy does Leschaco have for achieving its goals?

The main objective for Leschaco is to expand regionally, to build partnerships and to continue satisfying the growing demands of our costumers. We are looking particularly to strengthen our footprint in Singapore by investing in local chemical warehousing facilities for the storage of dangerous goods. Last year, Leschaco grew by around 14-15 % in the Singaporean market and I expect to see this trend continue in upcoming years. Leschaco's ultimate goal is to become a dominant player not only in Singapore but also throughout the region. •

INTERVIEW WITH

Michael Leong

VICE PRESIDENT OF SALES & MARKETING
YCH GROUP

Can you please introduce YCH and outline the role of the chemical industry in its overall operations?

YCH is a world-class logistics and supply chain management (SCM) solutions provider that was founded in Singapore in 1955. At present, our footprint extends to 10 different countries across the APAC region. In all of these locations, YCH owns and operates its own assets; however, we do believe in an asset-light strategy, and YCH's in-house engineering team designs each of these facilities with maximum efficiency in mind.

YCH's involvement with the chemical industry began in the 1990s when we developed logistics partnerships with companies such as DuPont, Huntsman, Ciba-Geigy; and today YCH has extended its offering to companies like ExxonMobil and Wacker Chemie AG. Nearly 40% of our current business is derived from the chemicals industry in APAC Today, the chemical industry in Singapore and APAC is no longer simply looking at quality and price when making strategic decisions; companies must enhance their supply chain capabilities in order compete. Our Intrabution™ solution, or the distribution of finished goods, remains YCH's main service line to its chemical clients. YCH's Intribution™ solutions are becoming increasingly attractive to the chemical sector for their ability to add value and increase cost competitiveness. These solutions integrate our IT capabilities directly into production lines. The unique quality of Intribution™ is in the way it lowers costs: YCH maintains exclusive partnerships with complimentary suppliers, who fully own stocks at our warehouses until we receive a production order; hence, when plants are not running our manufacturing clients incur no associated inventory costs.

YCH spends about 3 to 5% of its revenue on developing its technological capabilities. In what ways does YCH's focus on technology enhance its SCM services?

YCH employs the use of advanced IT systems in its solutions. Our IT platform is the result of over twenty years of experience in logistics and infrastructure, and supports a high degree of customization to suit the individual needs of our customers. YCH is quite proud to be one of only a few companies that invests heavily into in-house IT systems.

Land and manpower prices are very prohibitive in Singapore, what is YCH's strategy for overcoming these challenges?

YCH is confident that Singapore will be able to overcome these challenges. In terms of ASEAN, Singapore is in a leading position in terms of SCM technology; our logistics companies can closely match if not exceed the technological offering of our peers in Europe and North America. Yet, APAC is a much more challenging and dynamic logistical environment than those regions because Asia's infrastructure is still developing. The EDB and Singaporean government are doing their best to facilitate solutions to these problems, and YCH is seeking to actively engage these agencies to promote our industry.

In which markets and industries is YCH looking to expand its footprint?

China and India are key markets for YCH because of their large manufacturing bases. As new companies enter these countries, YCH wants to assist them in overcoming the infrastructural challenges of operating in a new country or region. In this way, our partners abroad will be able to focus on their core operations and leave support and SCM services to YCH. Indeed, this is no different from our current service offering to chemical companies in the APAC.

What are YCH's goals in the near term and what is your strategy for achieving them?

Apart from the completion of our SCC project, YCH is looking to reach a turnover goal of $500 million over the next two to three years. In terms of technology, YCH is looking to integrate more cloud-based solutions into its IT services for the future.

Although we are already 4,000 strong, YCH wishes to inculcate a passion for logistics amongst APAC's youth, who are less attracted to industries such as ours. To accomplish this, the SCC, for instance, will have the facilities to educate, train, and increase awareness within Singapore's talent pool.

YCH and the logistics and SCM management industries are committed to the APAC; as we increase our infrastructural and SC capabilities, we are actually helping countries and the region to grow and develop to the betterment of the APAC. For Asia, YCH is focused not only on generating money, but also meaning. •

INTERVIEW WITH

Bay Chin Hao

COMMERCIAL MANAGER, ASIA PACIFIC
OILTANKING

Oiltanking has been in Singapore for 24 years. What is your history in the country?

Oiltanking is part of a privately-held family business, headquartered in Hamburg, Germany. Founded in the early 1970s, the company has grown significantly into a worldwide, independent third-party logistics provider for oil, gas and liquids. Our parent company, Marquard & Bahls, holds various other energy-related companies under its umbrella, of which Mabanaft and Bomin are also present in Singapore. When Oiltanking set foot on what was then known as Seraya Island, it was a standalone terminal; we have since grown with the fortunes of Jurong Island and are now integrated with the wider industrial community. In particular, the island's chemical expansion has had a very positive impact on our business – the chemical industry remains very important to us. The continuing development and prominence of Singapore as a global oil trading hub has also facilitated the company's growth.

At the time of our last report, in 2010, Oiltanking was undertaking an expansion program in Asia. What has this entailed to date, and what role does Singapore play in your regional operation?

During this period we expanded the Oiltanking Odfjell chemical terminal in Singapore, adding its fifth, sixth and seventh phases to support both industrial and regional trade flows. Other Oiltanking locations in the region have also experienced organic growth.

It is quite difficult for storage companies on Jurong Island to petition for new space – some claim the government does not see the industry as adding enough value or creating enough local jobs. How is Oiltanking making the most of its limited assets?

The scarcity of land is an issue in Singapore – everyone wants a bit more of it. It is safe to say the amount of land Oiltanking would like in Singapore is beyond its current holdings, but we do sympathize with any party who has the unenviable task of attracting investments and allocating this precious resource. In fact, this predicament has in turn fostered a unique working climate in Jurong Island, where inhabitants cooperate closely to the extent of sharing resources; instead of undertaking projects solely by themselves. Indeed, we see ourselves as collaborators with, rather than mere service providers of, the industry. For example, we have an on-going project with Shell where we are optimizing existing assets to support their expansion, instead of simply adding new infrastructure. Together with the involvement of government agencies, I find this joint solution-focused approach an exciting and mutually beneficial feature.

The JTC is looking for an operator for its upcoming Jurong Rock Caverns project. What leadership and expertise would Oiltanking, one of the potential candidates, lend it?

The Jurong Rock Caverns is a very interesting project for Singapore. Oiltanking has extensive experience in other parts of the world in the area of strategic storage; and as this facility will also serve the industry, we will be ideal candidates to play the required independent role.

Acquisitions have been part of Oiltanking's strategy worldwide. How has the purchase, last year, of Helios here expanded your capabilities?

Oiltanking is very excited about its acquisition of Helios. It functions today mostly as a fuel oil terminal, which complements our current portfolio here well. In total we now have more than 2 million cubic meters of storage in Singapore, of which 365,000 cubic meters are in chemicals, with the balance in petroleum. The Helios terminal also gives us a physical presence on the other side of the island; we are keen to see how we can serve the industry there, either through expansion or optimization of existing assets.

What is Oiltanking's short term strategy for Singapore?

Our immediate focus is on our integration of the Helios asset – many people involved in the business are bubbling with excitement about the possibilities. OOTS still has some land available for expansion at its current site, and recently we have won a contract to support a new chemical plant on Tembsu, Jurong Island. We will receive and in turn deliver via pipeline, the plant's key feedstock by investing in 12,000 cubic meters of pressurized spherical tanks and associated infrastructure. We are very encouraged to have the opportunity to provide such a critical and integral aspect of their plant operations, particularly since it is more than 10km away. It's certainly supports the government's vision to provide competitive plug-in solutions on Jurong IslanD. •

Courtesy of Brunel

INTERVIEW WITH

Richard Strollo

MANAGING DIRECTOR - SOUTH ASIA
BDP INTERNATIONAL

To begin, could you please provide a brief overview of BDP's recent operations in South Asia?

This is one of our largest offices globally with over 200 employees, which reflects the importance of Singapore in global chemicals market. Our capabilities in Singapore reflect our customers' needs as we have a very large warehousing operation in Singapore. Additionally, we have other services offering including ocean, air and ground transportation; lead logistics process analysis, design and management; export freight forwarding; import customs clearance and regulatory compliance; project logistics; consolidation/distribution; and web-based shipping transaction/tracking management systems.

Singapore has a perceived image of being the world leader in logistical efficiency and clear, transparent regulatory regime; does the situation on the ground live up to this hype?

BDP recognizes that Singapore maintains an effective and robust regulatory regime that is able to adapt quickly to the ever-changing business landscape. The Singapore government is always looking at ways to improve the infrastructure and transportation network, be it airports, roadways or ports. Regulatory compliance is one of the key services where we have experts located in each region who are knowledgeable about local regulatory compliance procedures.

Globally the logistics industry is facing higher transportation costs and Singapore is facing land and labor constraints, how is BDP working to mitigate these challenges?

BDP is a non-asset based company. We are able to work with a variety of partners to customize the solution to meet customers' requirements. This model allows us a greater flexibility especially if volumes increase. With BDP's extensive global network and the excellence relationships with core shipping lines and carriers, we are able to help our clients to optimize costs.

In terms of warehousing, Singapore is a land scarce nation and this becomes an issue. With our non-asset based model, we have the flexibility to increase or decrease the space requirements base on market situation and customers.

Labor issues in Singapore are unique with the quotas and controversy surrounding the role of foreign workers, but our strong performance in recent years speaks on how we have effectively dealt with these challenges. BDP is committed to invest in our most important asset, our people by having global responsibility for the education and development of all employees. We have set up BDP's Training, Education and Development (TED) department is further proof that BDP strives to deliver programs that make BDP an employer of choice. In turn, our employees are prepared to handle the demands of the logistics industry in order to best serve our clients.

What do you see as the greatest opportunities in Asia over the next three to five years? What shifts could we experience in the markets that would affect the logistics industry?

The rise of the Asian middle class certainly creates all kinds of opportunities in places like Vietnam, Indonesia, Philippines, and China. The opening of Myanmar to the West is also interesting, but should be approached with caution. When Vietnam opened up, there was a rush into the market and then a subsequent rush to exit as multinationals crowded into a smaller than expected market.

The effects of the shale gas boom in North America could have an interesting impact. Even before this advent of cheap natural gas, North American companies were recognizing the fragility in supply chains such as the tsunamis and earthquakes in Indonesia and Japan respectively. With cheap fuel sources bringing down potential production costs for manufacturers, this could make supply chains more intra regional then they have over the last few decades. At BDP, we are fast and nimble in recognizing trends and adjusting our business accordingly. •

Into the Future:
Final Thoughts, Travel, Company Guide, and Index

"We are orienting ourselves towards Asia everyday. We started small in Singapore and have expanded our network. Today, Asia represents about 30% of Eurotainer's global business... Singapore is an important part of our business as approximately one third of our Asia business comes out of Singapor,e representing approximately 2,000 tanks."

- Claus Ringgaard, General Manager Asia Pacific, Eurotainer Asia

Source: Shutterstock

"Singapore enjoys a great deal of regulatory transparency, but there are nonetheless some key weaknesses. Regarding Jurong Island, the level of restrictions placed on the island's logistics and infrastructural capacities is too high: there is only one overland bridge to and from the island. This often becomes congested, which is not conducive to supply chain management. Singapore's second weakness is in manpower; companies are experiencing great difficulty in recruiting and retaining capable staff. Yang Kee is building its image as a premium service provider; we provide premium service and pay premium compensations to our employees, and we tend to invest more into people and equipment than our competitors. Furthermore, Yang Kee is more hands-on in our approach as a SME; we are not small, but we are not so large as to become indifferent to our staff."

- Ken K.C. Koh, Deputy Managing Director, Yang Kee Logistics Pte Ltd

"We have seen in Europe, North America and South America a consolidation of the chemicals distribution industry. This is being driven by the regulatory requirements and, to a lesser extent, consolidation in chemicals manufacturing. The cost to adhere to regulatory demands are not small and are going to become more difficult as programs like REACH are used as a global model. We believe this trend will be a game-changer in Asia, as rising regulatory costs will cause consolidation here as well. With that said, Connell Brothers is well positioned to manage these regulatory changes given our financial strength and experience in North America."

- E. Scott Graddy, Vice President, Connell Bros.

"Singapore's chemical market itself is quite small, although it has always been an ideal place to trade, purchase, stock, and export our products. In the past several years, the re-export business in Singapore has become expensive and we have been forced to ship products directly from some of our supply sources. Today, it is still the best place to operate, but our inventory is not as extensive in this specific port. Yet, our principals desire to do business here has not abated, and in many cases we partner directly with them to store some of our products when needed in order to provide a better price for all of our customers. The dynamics have changed, but the presence of nearly all of our clients, ease of communication, and ease of business means Singapore continues to be a very important place for Linkers Far East; you can feel the pulse of the whole chemical market in Singapore."

- Shamsher Zaman, Founder and Managing Director of Linkers Far East Pte Ltd

"I think the challenges will revolve around legislations and the fact that Jurong Island will eventually become the only point of entry for hazardous products. Furthermore, I think the size of Singapore, as an island will inevitably limit its capacity for growth. Some of our costumers have recently relocated to neighbouring countries. Hence, another threat is that multinationals are moving their regional headquarter to places like Shanghai. Nevertheless, I am confident that the Singaporean government will continue to attract new multinationals."

- Graeme Rooney, Managing Director of Suttons International Singapore Pte Ltd

"Our next wish is to start new programs in new areas of research. Looking at oil field chemicals, for example, one of the issues is about being able to get at oil deposits in a sustainable way. There is a lot of potential harm in the chemicals used in enhanced oil recovery, so we want to know how we can have enhanced oil recovery without causing major problems. There are also major programs in personal care: one of the major issues facing the pharmaceuticals industry is how to deal with the fact that there are not any more big blockbuster innovations in development. Conducting research in personal care builds upon our strengths in pharmaceuticals because of the formulations involved, as well as link to our biology-oriented sister institutions that understand skin and hair care; we are currently in collaboration with one of the pharmaceuticals majors in developing an emerging markets business."

- Dr. Keith Carpenter, Executive Director, Institute of Chemical and Engineering Sciences (ICES)

"Zeon Chemicals is pursuing very high efficiency in production. Our new SSBR plant is in its infancy, so cost-cutting activities are possible now, if not after the plant starts up. Our new plant will incorporate some new technology, so expect production costs to be lower than in Japan. We will make just a small number of products, facilitating efficiencies; there will be less downtime than in Japan, where our plant frequently switches between products. Our main priority for the next three years is to introduce our Singapore material to customers, especially in Southeast Asia, the most important market of the future. Zeon Chemicals is a pioneer in SSBR and has secured its status in the global market; we must now grow our presence in this core business of ours. High performance plastics are important too, but in SSBR we are able to provide a unique product and contribute to the global supply of environmentally friendly materials."

- Yuki Hirakawa, Managing Director, Zeon Chemicals Singapore

"Brenntag is over 100 years in the chemical distribution business, but in just four short years our business in APAC has grown significantly over the entire group. Over the coming years, we believe that the APAC will comprise approximately one third of the global chemical market. Therefore, Brenntag has been assertively pursuing a focused growth strategy in Asia. Today, Brenntag has a solid position in SEA and now Oceania since acquiring ISM; we are also the largest distributor in Thailand and Vietnam for specialty chemicals. Over the near term, we are heavily targeting China; in 2011, Brenntag secured a fantastic network in Tanjin, Shanghai and Guangzhou for industrial chemicals via the acquisition of the Zhong Yung group. However, the Chinese market will take some time to consolidate fully given its vast size, differences in culture and means of conducting business. India is also a country of interest for us. Brenntag's story in Asia has been a very quick and exciting one, but we will not slow down until we are the market leader in the region, a goal that we are very close to achieving."

- Henri Nejade, President & CEO, Brenntag Asia Pacific Pte Ltd

"The profile of [chemical] investments has changed over the last three to four years. The new wave of investments is focused on specialty chemicals, which involves more hazardous, unique and proprietary processes. From our perspective as a training center, we have to expand our offering to meet the needs of the new profile of companies. Some of the skill sets that these specialty chemicals manufacturers require are of a higher level and require more specialized training. Singapore continues to evolve, for us it is about staying ahead of the curve and prepositioning ourselves to the training and manpower needs to these new investments."

- Lee Wing Kit, Business Development Manager, Petrofac Training Institute

Singapore Travel at a Glance

Travel in Singapore

While Singapore may not hold the exotic cultures or pristine beaches of other destinations, it does nonetheless have a certain charm. It is, first and foremost, one of the world's easiest destination to travel to. Arriving in Changi Airport, consistently ranked the best in the world, travelers from most countries can obtain visas or social visit passes on arrival at no charge. Once out of the airport, Singapore's public transport system (bus and MRT) is fairly slow, but always on time and quite comprehensive. Alternatively, taxis are cheap. Traffic can be bad though, so it is advisable to leave plenty of time, especially if going to Jurong Island or some of the outlying industrial districts from the center of town.

After business is concluded, the most important thing to do in Singapore is eat. With influences from all around China, Malaysia, Indonesia, India, the West and elsewhere, Singapore boasts arguably the world's most diverse and exciting culinary scenes; as the locals are not shy about pointing out. From cheap but delicious hawker centers to Michelin-starred chefs, Singapore has everything a stomach could desire.

Sunday brunches are a national habit and most of the up-market hotels offer one, with the Hyatt and the Mandarin Oriental among the best. Alternatively, a lazy Sunday morning could be spent in one of the multitude of new coffee shops that have opened in the city: Common Man Coffee Roasters in Robertson Quay, the confusingly-named Chye Seng Huat Hardware on the outskirts of Little India or (for those grabbing a coffee before work) Jewel Coffee in the Central Business District are among the best.

Club Street and the area around Neil Road have a plethora of excellent restaurants: for those Americans missing home, Jerry's BBQ & Grill, an unassuming place on Club Street, does Singapore's best buffalo wings. Esquina, just off Neil Road, is in this writer's opinion the best restaurant in Singapore.

For an after-dinner drink, Clarke Quay, Holland Village and Club Street hold the largest concentration of bars (in descending order of drunkenness). For somewhere a little more upmarket, try 28 Hong Kong Street or the Mad Men Attic Bar in the Central Business District.

Climate

	Average high °C	Average low °C	Rainy days	Sunshine hours	Precipitation mm
JAN	30.1	23.3	15	173.6	242.5
FEB	31.1	23.6	11	183.6	162.0
MAR	31.6	23.9	14	192.2	184.8
APR	31.7	24.4	15	174.0	178.8
MAY	31.6	24.8	14	179.8	171.8
JUN	31.3	24.7	13	177.0	161.2
JUL	30.9	24.5	13	189.1	158.3
AGO	30.9	24.4	14	179.8	176.2
SEP	30.9	24.2	14	156.0	169.7
OCT	31.1	24.0	16	155.0	193.9
NOV	30.6	23.7	19	129.0	255.7
DEC	29.9	23.4	19	133.3	288.2

Visa Information

Social Visit Pass
- Valid for 30 days
- Granted on arrival for nationals of most countries
- Onward ticket and sufficient funds required

Up-to-date information can be found on the Immigration & Checkpoints Authority (ICA) website

The following countries CANNOT obtain a visa at the border or airport:
Afghanistan, Algeria, Bangladesh, Commonwealth of Independent States (Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Uzbekistan), Egypt, Georgia, India, Iran, Jordan, Lebanon, Libya, Morocco, Myanmar, Nigeria, Pakistan, People's Republic of China, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, Turkmenistan, Ukraine, Yemen

Exchange Rates

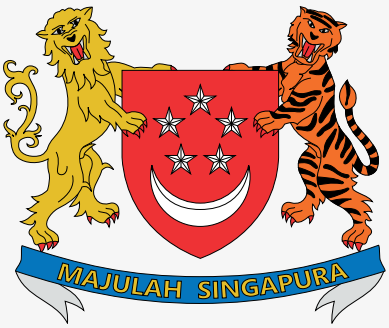
Currency: Singapore Dollar (SGD)

1 SGD = 0.78 USD
1 SGD = 0.59 EUR
1 SGD = 0.50 GBP
1 SGD = 0.82 CAD
1 SGD = 0.85 AUD

Dialing Codes and Useful Numbers

Singapore Country Code: +65

Police: 999
Emergencies/Ambulance/Fire: 995
Non-emergency Ambulance: 995
Police Hotline: 6225 0000



Business and Pleasure

As the central hub of Southeast Asia, Singapore serves as a convenient base from which to take a relaxing weekend on one of the region's multitude of pristine beaches. For some, however, these city escapes offer a business opportunity. GBR spoke to **Monique Hempel Turini** and **Marco Turini**, founders of **BintanGoldenInvest**, to find out more.

What can Bintan offer to potential investors and where do these investors come from?

MT: First of all, it is important to identify two types of investors: those looking for an early stage, long-term investment and higher reward, and who are willing to take up part of the risk developing a project. On the other hand, there are investors looking to invest into developed sites and expect a faster return. While Bintan as a whole offers a number of options, we are looking for those people who have a vision and who are willing to invest and wait for a return on this investment. Our project offers investors land at $35 to $45/sq.m, while other fully serviced properties have a starting price $200/sq.m. It is important to find the right kind of balance between luxury resorts and sustainable tourism, which is exactly what Bintan could offer to both investors and visitors.

MHT: Bintan is an attractive destination for Singapore-based investors for a number of reasons: Singaporean and Indonesian governments have a history of collaboration through an established consortium to develop the north of the island. However, presently we are not aware of large investments on behalf of Singaporeans into Bintan. Our personal experience with Singapore's investment community is they are very traditional, and are not keen to invest into alternative ventures. We attribute this trend to the Singaporean investment culture, where most investors want to see a project package with quick investment return.

Bintan's infrastructure is challenging with lack of roads and interrupted power supply. Does this affect the attractiveness of investing in Bintan?

MHT: The government is investing in some infrastructure. As of 2013, there is already a completed stretch of a newly enlarged east coast road from the new Barakit Ferry Terminal (projected to open Q1/2014) as well as the electricity required to accommodate the harbour as a new point of entry into Indonesia. It is easily accessible from Singapore by ferry. The majority of the hotels situated along the east coast can potentially draw from these main power lines. The island is constantly being developed and the Indonesian government is working hard to attract international investors and realising Bintan's true potential. •

HOTEL GUIDE

Raffles Hotel
1 Beach Road, Singapore, 189673
Tel: +65 6337 1886

www.raffles.com

Arguably Singapore's most historic hotel, home of the Long Bar (birthplace of the Singapore Sling cocktail) and the Royal China restaurant, which serves some of the best Dim Sum in Singapore.

Naumi Hotel
41 Seah Street, Singapore, 188396
Tel: +65 6403 6000

www.naumihotel.com

Pan Pacific Singapore
7 Raffles Boulevard, Marina Square, Singapore 039595
Tel: +65 6336 8111

www.panpacific.com

The Ritz Carlton, Millenia Singapore
7 Raffles Avenue, Singapore, 039799
Tel: +65 6337 8888

www.ritzcarlton.com

Four Seasons Hotel Singapore
190 Orchard Boulevard, Singapore, 248646
Tel: +65 6734 1110

www.fourseasons.com

Conveniently located close to Singapore's main shopping and financial districts, the Four Seasons also boasts one of the countries best lunchtime buffets and a particularly tranquil bar.

Grand Copthorne Waterfront Hotel Singapore
392 Havelock Road, Singapore, 169663
Tel: +65 6733 0880

www.millenniumhotels.com.sg

Orchard Hotel Singapore
442 Orchard Road, Singapore, 238879
Tel: +65 6734 7766

www.millenniumhotels.com.sg

Furama Riverfront
405 Havelock Road, Singapore, 169633
Tel: +65 6333 8898

www.furama.com

Goodwood Park Hotel
22 Scotts Road, Singapore, 228221
Tel: +65 6737 7411

www.goodwoodparkhotel.com

New Majestic Hotel
31–37 Bukit Pasoh Road, Singapore, 089845
Tel: +65.6579.2026

www.newmajestichotel.com

A smaller boutique hotel, located in one of Singapore's most exciting food districts.

Hilton Singapore
581 Orchard Road, Singapore, 238883
Tel: +65 6737 2233

www.hilton.com

InterContinental Singapore
80 Middle Road, Singapore, 188966
Tel: +65 6338 7600

www.intercontinental.com

Shangri La Hotel Singapore
22 Orange Grove Road, Singapore, 258350
Tel: +65 6737 3644

www.shangri-la.com

Marina Bay Sands
10 Bayfront Ave, Singapore 018956
Tel: +65 6688 8868

www.marinabaysands.com

Though relatively new, Marina Bay Sands has quickly become one of Singapore's most recognizable landmarks. It boasts an already-famous rooftop infinity pool, a casino, a multitude of shops and restaurants, and unparalleled views of the city.

Novotel Singapore Clarke Quay
177A River Valley Road, Singapore, 179031
Tel: +65 6338 3333

www.novotel.com

Amara Singapore
165 Tanjong Pagar Rd, Singapore, 088539
Tel: +65 6879 2686

www.amarahotels.com

The Fullerton Hotel Singapore
1 Fullerton Square, Singapore, 049178
Tel: +65 6733 8388

www.fullertonhotel.com

The colonial building of the Fullerton Hotel is one of Singapore's most distinctive historical landmarks. With a relaxing outdoor bar area and spacious rooms, it still lays a claim to being one of Singapore's best hotels.

Grand Hyatt Singapore
10 Scotts Road, Singapore, 228211
Tel: +65 6738 1234

www.grand.hyatt.com

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COMPANY NAME	WEBSITE	PAGE
	Government, Associations and Organizations	
Association of Process Industries (ASPRI)	www.aspri.com.sg	94, 104, 126
Economic Development Board (EDB)	www.edb.gov.sg	10, 12, 15, 32, 39, 42, 43, 45, 48, 59, 61, 65, 66, 70, 77, 80, 86, 88, 89, 90, 91, 94, 95, 98, 99, 104, 107, 109, 114, 126
Institute of Chemical and Engineering Sciences (ICES)	www.ices.a-star.edu.sg	6, 76, 126
National University of Singapore	www.nus.edu.sg	100, 101
Singapore Chemical Industry Council (SCIC)	www.scic.sg	13, 35, 39, 48, 60, 62, 112, 126
	Chemical Manufacturers (Petrochemicals, Specialty Chemicals, etc)	
Asahi Kasei Plastics Singapore	www.asahi-kasei.co.jp	10, 59, 60
Asia Polyurethane Manufacturing (APU)	www.apu.com.sg	70, 71, 74
COIM Group	www.coimgroup.com	
Croda Singapore	www.croda.com.sg	34, 51, 59
Dow Chemical Pacific	www.dow.com	13, 34, 39
Eco Special Waste Management	www.eco.com.sg	92
Evonik Rohmax Asia Pacific	www.degussa.com	10, 15, 18, 38, 43, 45, 48, 52, 59, 60, 88, 113
ExxonMobil Singapore	www.exxonmobil.com.sg	10, 12, 14, 15, 42, 60, 62, 67, 70, 86, 88, 89, 94, 96, 107, 112, 114
Huntsman	www.huntsman.com	34, 38, 79, 114
Jurong Aromatics	www.jurongaromatics.com	18, 48, 59, 60, 62, 66, 89, 94, 110
Kurita (Singapore)	kurita.com.sg	
Lanxess	www.lanxess.sg	10, 15, 59, 60, 64, 107, 113
Linde Gas	www.linde-gas.com	48, 52, 53
Matex International	www.matex.com.sg	62
Mitsui Chemicals	www.mitsuichem.com	15, 59, 60, 61, 88
Nalco (an Ecolab company)	www.nalco.com	43, 46, 47
Ovivo	www.ovivowater.com	
Petrochemical Corporation of Singapore	www.pcs.com.sg	60, 65, 67
Pidilite Industries	www.pidilite.sg	
Riverbank Chemicals	www.riverbank.com.sg	
Sasol Chemicals Pacific	www.sasol.com	23, 32
Standard Chemical Corporation	www.standardchemical.com	
Stella Specialty Chemicals	www.stellachem.com	
Sulzer Chemtech	www.sulzerchemtech.com	77
Sumitomo Chemical	www.sumitomo-chem.co.jp	10, 13, 15, 32, 42, 59, 60, 65, 67, 88
Unifine Chemical	unifinechemical.com	
Veolia Water	www.veoliawater.com	81
Zeon Chemicals Asia Pacific	www.zeonchemicals.com	10, 59, 60, 86, 121
	Distribution, Transportations and Logistics	
Absotech	www.absotech.com.sg	82, 110, 112
BDP International	www.bdpinternational.com	29, 117
Brenntag	www.brenntag.com	28, 35, 121
ChemStationAsia	www.chemstationasia.com	20, 29, 82
Connell Bros Co. (Singapore)	www.connellbrothers.com/	31, 120
Damco Logistics Singapore	www.damco.com	18, 29, 33
Eurotainer	www.eurotainer.com	31, 118
Fortrec Chemicals & Petroleum	www.fortrec.com	19, 24, 25
Goldcrest International Singapore	www.goldcrest.com.sg	
Integra Petrochemicals	www.integra-global.com	18, 26, 27
Jebsen & Jessen	www.chemicals.jjsea.com	28, 38, 71
Katoen Natie Singapore (Jurong)	www.katoennatie.com	16, 31
Leschaco	www.anker-leschaco.com	86, 113
Linkers (Far East)	www.linkers.com.sg	120
Maha Chemicals (Asia)	www.mahachem.com	
Oiltanking	www.oiltanking.com	48, 52, 88, 110, 115
Planet Asia	www.planasia.com	19, 31, 36, 37
Quincannon Associates	www.quincannon.com	31
Richland Logistics	www.richlandlogistics.com	40
Sankyu Singapore	www.sankyu.com.sg	
Stolt-Nielson Ltd	www.stolt-nielsen.com	
Suttons Logistics	www.suttonsgroup.com	120
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YCH Group	www.ych.com	110, 114
	Engineering, Maintenance and Testing	
Ad-Meth Mech-Field	www.admeth.com	106, 107
Aggreko	www.aggreko.com	91
Alstern Technologies Group	www.alstern-technologies.com	62, 79
Amos Solutions	www.amos-sg.com/	
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Cyclect Singapore	www.cyclect.com.sg	83, 88, 94, 95
Emerson	www.emerson.com	58
Falkor Engineering Services	falkorengineering.com	
Hai Leck Engineering	www.haileck.com	82, 94, 95, 98, 99
Hertel Singapore	www.hertel.com	94, 106, 108
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Petrofac	www.petrofac.com	62, 121
Sembcorp Utilities	www.sembutilities.com	48, 49, 54, 62, 68, 79
Shing Leck Engineering Service	www.shingleck.com	
Tiong Woon Corporation Holding	www.tiongwoon.com	32, 94, 100, 102
TÜV SÜD PSB	www.tuv-sud-psb.sg	70, 71, 73
WH Marathon	www.whmarathon.com.sg	31, 32, 86, 94, 100, 101
Yokogawa	www.yokogawa.com	109
	Consultancy, Human Resources and Energy	
Aegis Recruiting	www.aegis-recruitment.com.sg	
Brunel International	www.brunel.net	84, 86, 87
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Methanol Market Services Asia (MMSA)	www.methanolmsa.com	62
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Tuas Power	www.tuaspower.com.sg	48, 49, 50, 88

This list contains those companies interviewed during the course of research for this publication and as such represents only a selection of the companies operating in the chemical industry of Singapore. It should not be considered a comprehensive guide. GBR holds an exclusive and extensive chemical database for Singapore and the wider region. For further information on database access packages, please contact info@gbreports.com or call +44 20 7612 4511.

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THANK YOU

GBR would like to extend our thanks to the following organisations for the assistance provided during the research of this publication:

Association of Process Industry (ASPRI)
www.aspri.com.sg

Economic Development Board (EDB
www.edb.gov.sg

Institute of Chemical and Engineering Sciences (ICES)
www.ices.a-star.edu.sg

Singapore Chemical Industry Council (SCICI)
www.scic.sg

We would also like to express our sincere gratitude to all the companies, associations and individuals who took the time to provide their insights into the market.

BRENNTAG

THE SHORTEST ROUTE ALL ACROSS ASIA PACIFIC

Brenntag is the global market leader in full-line chemical distribution fulfilling value-added services from the purchase, storage to logistics of a wide range of specialty and industrial chemicals.

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