

# GLOBAL BUSINESS REPORTS

INDUSTRY EXPLORATIONS



## Mexico's Regional Automotive Report 2016



*Clusters - Original Equipment Manufacturers - Tier 1s - Tier 2s  
Sub-Tier Suppliers - Affiliated Services - Government Officials*



Number 1 Supplier of the United States.  
1/3 of the total value of U.S. imports of autoparts comes from Mexico

IN 2015, 91 MILLION VEHICLES WERE  
PRODUCED WORLDWIDE



21 of the top leading auto-  
makers are located in  
14 states of Mexico

**81,927**  
Occupied workers in  
the assembly industry

**300** More than 300  
Tier 1 suppliers  
established  
in Mexico

**2<sup>nd</sup>** (156,893 vehicles)  
Exporter of  
heavy vehicles  
(Jan-Nov 2015)

# Dear Reader,

Today, the automotive industry is one of the most vibrant sectors in Mexico and a major economic stimulant. It is an important source of direct employment and a key contributor to a large number of small-and-medium sized local companies that support the industry. This is not merely a local success story, but also a story of healthy competition, synergy, and collaboration between the various foreign and local participants for the greater good of the sector, and the country as a whole.

Many strategic advantages have attracted OEMs and Tier 1s alike to build facilities in Mexico, including the establishment of Automotive Clusters, a very attractive, skilled and cost-effective workforce, the logistical advantages of Mexico's geostrategic location, and most importantly, its vast network of bilateral and multilateral trade agreements. Major multinational OEMs have realized that Mexico is one of the most attractive countries in which to conduct operations, easily reaching the most important automotive market in the world, the United States, as well as many others.

The business environment of Mexico is exemplary, and its overwhelming potential is teeming with opportunities for foreign investors, especially as the internal market has shown some of the most impressive growth in years, with no sign of slowing down.

Following the success of its various reports on Mexico, Global Business Reports (GBR) has collaborated with INA and CLAUT to produce in-depth regional research within the automotive industry to evaluate the opportunities and challenges that the sector faces as it pushes ever forward. Mexico's Regional Automotive Report explores the particular dynamics of the Northeast, Central/Southern Mexico and Bajío regions by not only looking at the OEMs and Tier 1s, but also the Tier 2s, government organizations as well as research and design institutions. Additionally, GBR spends a significant amount of time understanding the supporting industries, including engineering, equipment and service providers, legal, logistics and finance firms. Analyzed together, all of these parties tell the complete story of the automotive sector in Mexico and how it is achieving an unparalleled rate of growth.

We want to thank all of those who have generously donated their time and insights to GBR's research. We hope that you find this publication to be an interesting and informative platform as a means of drawing more attention to Mexico as an automotive investment destination.

**Meredith Veit**  
**Project Director**  
**Global Business Reports**



# Exclusive Interviews

Leading industry, government and academic figures from Mexico's automotive sector discuss market trends, technologies, opportunities as well as collaborative efforts in the cluster.



# Directory

GBR, Cluster Industrial, ProMéxico, INA and CLAUGTO provide a contact directory of major players that together make up Mexico's automotive community.



# Editorial Analysis

Global Business Reports' journalists provide unique insights into all aspects of the automotive value chain by working on the ground and meeting face to face with industry leaders.



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Mexico Automotive 2016  
*Industry Explorations*  
Global Business Reports

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# *Introduction to* **Mexico**



"One of the main advantages that OEMs identify in Mexico overall is the country's trade policy. In 1994, Mexico produced approximately 1.1 million units per year, and in 2014, we were producing about 3.2 million units per year. In that 20 years span, we were able to increase production by 2 million units—a success that can be mainly attributed to the country's adopted trade agreements."

Armando Cortés Galicia  
Automotive Sector Executive Director,  
ProMéxico

# Location of Light and Heavy Vehicle Manufacturing Plants in Mexico



MEXICO AT A GLANCE  
Source: CIA World Factbook

**Population:** 127.0 million (2015 est.)

**Land Area:** 1,964,375 sq km

**Official Language:** Spanish

**Capital:** Mexico City

**Chief of State & Head of Government:** President Enrique PENA NIETO  
(since 1 December 2012)

**GDP (PPP):** \$1.44 trillion (2015 est.)

**Growth Rate:** 2.5% (2015 est.)

**GDP per Capita:** \$17,500 (2015 est.)

**GDP Composition by Sector:** 3.5% agriculture, 34.1% industry, 62.4% services (2015 est.)

**Exports:** \$430.9 billion (2015 est.): manufactured goods, oil and oil products, silver, fruits, vegetables, coffee, cotton

**Imports:** \$434.8 billion (2015 est.): metalworking machines, steel mill products, agricultural machinery, electrical equipment, automobile parts for assembly and repair, aircraft, aircraft parts



# Mexico at a Glance

Albeit a country of vibrancy and tradition, Mexico remains salient as a clear and progressive automotive production destination. Mexico's economy, despite experiencing only modicum growth over recent years, is still the second largest in Latin America behind Brazil, and its manufacturing activity continues to further materialize into a full-bodied automotive sector.

Though briefly eclipsed by the momentum that the BRICS countries garnered at the beginning of the century, due to inexpensive production costs Mexico has continued to stay more productive. Mexico continually beats China from a labor perspective; labor on average in 2015 was 12.5% more expensive per worker, per hour in China than Mexico's average of around US \$4 per hour, while also being more cost effective in terms of manufacturing capacity than the Asian giant. India, on the other hand, boasts labor costs that are about five times cheaper than Mexico, however, India's detriment stems from having no commercial relations with China, coupled by the fact that its industries and supply volumes grow at significantly lower rates than those industries in Mexico. Mexico also benefits from having a workforce much younger in comparison to India, which becomes crucial when taking into account that training and education are key determining factors for the future growth of any industry and any economy.

As the global economy was afflicted by the 2008 financial crisis, companies—the world-over—were forced to reanalyze their operative strategies that had been based mainly on cost-optimization. “The shift back to Mexico as a manufacturing destination became very clear in 2008 during the economic crisis,” explained Carlos González, business development manager of EVCO Plastics de Mexico. “Bringing parts from China and the Far East meant dealing with extensive inventory struggles and elongated shipping times. Customers were looking for cash flow, which meant finding closer suppliers that could provide immediate inventory.”

Oscar Albín president of the National Auto Parts Industry (INA) further argued: “As conditions bettered, there was an industry reassessment that ultimately determined that the best place to reopen plants was in Mexico as it offered advantageous labor conditions, a geo-strategic location not only internationally, but also in relation to the American Midwest.”

“Additionally,” continued Albín, “automotive original equipment manufacturers (OEMs) are becoming strongly convinced of the quality of Mexican auto parts, as they have reached a level of excellence comparable to those pieces manufactured in the United States, Germany or Japan.”

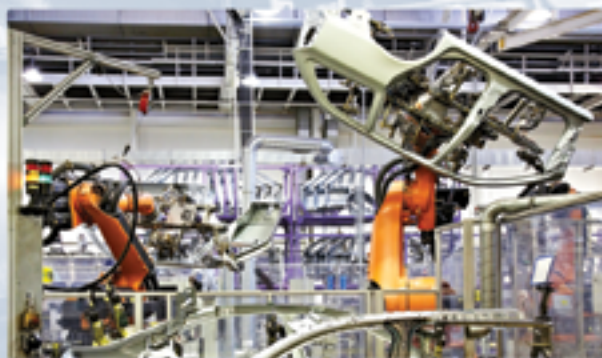


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As such, American automotive OEMs started shifting production from their home country, and the European and Asian automotive giants also followed suit and began strategically setting up operations within Mexican borders—the rationale being Mexico’s quality of manufacturing with an important cost-competitive element, buttressed by one the most attractive factors for operating in Mexico: the expansive reduction in tariffs through the broad coverage of the North American Free Trade Agreement (NAFTA) and Mexico’s other fourteen free-trade agreements (FTAs) granting the country, and all the companies operating in it, free-market access to over forty-six distinct nations around the globe—a global reach much wider than the United States (20 alliances) and China (18 alliances) combined. It is no wonder then, that Mexico exports 80% of its automotive production to over 100 countries, with 73% of that going to the United States and Canada alone.

All of the above, coupled with Mexico’s automotive cluster communities created to strengthen the integration of local players alongside the influx of foreign OEMs and Tier 1s, have all led to the sector’s confident declaration of an expected production increase of up to 45% from its current 3.6 million vehicles to nearly 5 million units of light vehicles annually by 2020 in light of KIA, Audi, Hyundai, Nissan, Ford, Mercedes-Benz, and BMW having recently announced multi-billion-dollar investment intentions into the country for the coming years, transforming Mexico into the world’s industrial park, and its main industrial regions, into world-renowned automotive manufacturing hubs. —



Image: Courtesy of GM

## The Rise of Clusters: A means of Strengthening the Local Industry

As new OEMs pour their multi-billion-dollar investments into Mexico, new waves of foreign providers come in as well, which industry players argue delays opportunities for Mexican players to actively participate in the sector as they struggle to breakthrough the initial barrier of being unfamiliar to these OEMs and Tier 1s. “There is a commitment on behalf of the OEMs to increase its local content on a certain timeline, which, to the dismay of local companies, is not necessarily in the short-to-medium term,” argued Enrique Dorantes, executive director of MD Manufacturing. “The danger becomes then that OEMs make their Tier 1s set up shop in Mexico as well; and some of those Tier 1s make their own Tier 2s set up shop in Mexico, which, in turn, saturates the supply chain as it is basically already accounted for—leaving few opportunities to local players, and those few opportunities then become very competed. What local players really need are integrative collaborations and exposure opportunities to get in front of the relevant purchasing directors from the newly arrived OEMs and Tier 1 and 2s.”

To address this, Mexico’s different automotive regions, comprised of the Northeast (Nuevo León, Coahuila, Chihuahua and Tamau-

lipas), the South-Central (Mexico State, Tlaxcala, Pueblai, Morelos and Estado de Mexico) and the Bajío (Querétaro, Guanajuato, Jalisco San Luis Potosí and Aguascalientes), have created private initiatives known as automotive clusters (CLAUTs) to share the best practices of the industry, as well as establish a support network for local players to actively interact and learn from the foreign players. This ensures efficient and effective transfer of not only technology, but perhaps even more importantly, the transfer of knowledge in order for Mexico to leave its simple manufacturing past behind and enter a new age of design and innovation. “Being part of an automotive cluster as a local player, moreover” continued Dorantes, “allows us to enter the same ecosystem as the OEMs and Tier 1s. The cluster network not only opens the necessary doors for us but, more importantly, gives us the much-needed exposure. In addition, the training courses provided for the member companies not only on a technical aspect but also on a managerial level, coupled with continuous support and impulse towards further certifications, contributes immensely to the strengthening of the local companies.” —



# Armando Cortés Galicia

Automotive Sector Executive Director  
**PROMÉXICO**

## Considering the prominence and importance of the automotive industry in Mexico, how involved is ProMéxico in the sector?

ProMéxico is the federal government agency responsible for attracting foreign direct investment (FDI) as well as promoting exports and the internationalization of Mexican companies. Although our scope of attention involves several industrial sectors, the automotive industry is one of the most important in terms of its maturity and development. In this regard, our objective is to continue attracting new OEMs that do not have operations in Mexico, as well as to continue developing the supply chain.

An important shift in the investment trend in Mexico has to do with the announcement of new plants of OEMs that produce premium vehicles coming to Mexico. As of their premium profile, the projects of the OEMs opened a new era for FDI into Mexico. ProMéxico has been working with these companies providing insights

of the advantages of operating in Mexico with a special focus on continuing to attract premium companies and their suppliers into the country.

We also focus on human capital, fostering initiatives regarding the growth of our skilled workers on both an educational and a technical level. A prime example is the functional dual system in Puebla, based on a German model, which combines theoretical as well as technical training in the classroom. This methodology has been very successful over the last few years, and we are trying to foster more dual education initiatives in order to strengthen our workforce.

## How is ProMéxico helping to make these opportunities for investment a reality?

ProMéxico has 48 offices abroad and 29 offices in Mexico that function as a network in order to capture any investment opportunities. We provide strategic information about the advantages of Mexico such as human capital, trade policies, and the supplier base. We are collaborating with state governments in order to identify the best potential location for a specific project or company. ProMéxico is a critical provider of information as well as an assistant for soft-landings when establishing their operations within Mexican borders.

It is also important for us to strengthen the automotive clusters, as they create synergies between the OEMs, the supply chain and the academics. One of Mexico's competitive advantages and a source of success is collaboration among all the stakeholders. ProMéxico is implementing programs for SMEs that are willing to enter into a particular supply chain and we support companies in attaining required certifications. Increasing the Mexican supplier base will best serve the automotive industry by filling the gaps in the supply chain.

Recently, OEMs have been trying to increase their regional content significantly; for example, Audi's procurement department has publicly declared that the company has a target of 90% of auto parts regional content by 2020. To be competitive, companies need to localize products and processes as much as possible and this provides a huge opportunity for Mexican players.

Mexico has a very young population that is joining the workforce, and the growth of the automotive industry allows us to provide this workforce with a plethora of opportunities. The average age of engineers in design and R&D centers in the United States is approximately 55 years, whereas the average engineer is about 27 years old in Mexico. Our young workforce gives Mexico a competitive advantage, and strengthening the technical education levels of our people will only further encourage investment into the automotive industry.

## What opportunities still exist within the supply chain?

ProMéxico has identified that stamping, foundry, forging, machining, semi-conductors, and plastic injection capabilities provide the most value-addition for the country (many of these are still being imported). We are trying to focus on developing these industrial processes within Mexico.

## How do you see the automotive industry evolving and what is your vision for R&D and design being integrated within the sector?

Mexico has the capability to grow in terms of advanced manufacturing processes, design, innovation and R&D. Companies such as Delphi, Volkswagen, Ford, and Continental already have engineering centers in Mexico. More companies are starting to see the country as a potential location for R&D and design, attracting engineers for these kinds of activities. The automotive industry has significant potential for design and personal development, and many engineers are willing to join this industry in high value added activities.

One of the main strategies of ProMéxico has to do precisely with the attraction of R&D centers related to the automotive industry and the supply chain. In the years to come, we will see an increasing number of these projects coming to Mexico. —

# Óscar Albín

Executive President

**INDUSTRIA NACIONAL DE  
AUTOPARTES, A.C. (INA)**



## Can you provide us with a brief history and introduction to INA?

The INA (National Auto Parts Industry) was founded 52 years ago, as a lobby group defending the interests of the auto part manufacturers. The creation of this group resulted from the automotive decree which stipulated that in order to sell cars in Mexico, those cars had to be manufactured in Mexico. Imports were closed, meaning that those brands that were importing cars now had to assemble the machines in Mexico with a predetermined amount of original local content within those cars.

## The auto part industry has increased 50% within the last 8 years. What have been the determining factors for the growth of this industry in Mexico?

With the 2008 financial crisis, automotive production in North America was halved and a significant amount of auto part plants and production lines were closed. As the conditions bettered, there was an industry reassessment that ultimately determined that the best place to reopen plants was in Mexico as it offered advantageous labor conditions and a prime geographic location. Additionally, the OEMs are becoming strongly convinced of the quality of Mexican auto parts, as they have reached a level of excellence comparable to those pieces manufactured in the US, Germany or Japan.

The domestic market growth within both the US and Mexico is the last great determining factor. New cars and used imported cars are flooding the market, meaning there are more cars in the city, and these cars need repairs. Moreover, in the last two to three years, the American market has grown mainly due to the energy reduction costs in the US. This leaves consumers with an additional monthly US\$300 for

discretionary spending, which allows them to either purchase a new car, or upgrade their existing vehicle.

## The US is the biggest market for vehicles manufactured in Mexico. What role does the US market play in regards to auto parts?

In Mexico, 70% of the Tier 1 auto part production is exported, 90% of that goes to the US where our main clients are the American manufacturing plants. Mexico is now the seventh largest exporter of vehicles in the world, and this in turn helps the growth of the Mexican auto parts industry. The challenge, however, remains that we do not serve the local market. Furthermore, 70% of the production plants in Mexico are foreign, and of those, 30% are American. United States manufacturers are the biggest investor by far, followed by Japanese and then German manufacturers.

## Is the industry looking to diversify into new markets as Mexico enters new multilateral agreements?

The main auto part markets will continue to be the US and Mexico. Through the TPP, new markets are opening up—such as Australia and Southeast Asia—however, those opportunities are mainly for finished cars because they do not have manufacturing plants, meaning there is little to no opportunity there for auto parts, besides the fact that the cars exported there will contain Mexican parts. If Mexico is set to produce 2 million more vehicles, the US cannot consume all of that production, so Mexico does need to look for more markets, otherwise, our own over supply will become a bottleneck to growth. The TPP allows Mexico to sell in big markets like Singapore, Malaysia, New Zealand, and Australia, opening up our distribution

channels. Mexico is also currently working on an FTA with Turkey.

With these new markets, infrastructure including ports, roads, trains and customs are a bottleneck that needs to be addressed in order for the Mexican automotive industry to succeed. Presently, the current infrastructure can handle the 3,000,000 cars Mexico produces, but we are looking to grow 60% to hit 5,000,000 cars. The country will need improved infrastructure in order for these cars to be exported smoothly and remain economically competitive.

## What are INA's priorities and plans for the short-to-medium term and what additional opportunities do you see within the industry?

INA's strategic plans include a continued effort to work with the federal government in order to strengthen the local market. We hope to see increased regulations on the tests and mechanical requirements of cars to be operated in Mexico in order to minimize the illegal used-car imports. We also would like to see increased access to finance for Mexican auto consumers. If more cars are sold in Mexico, the more attractive Mexico becomes for installing new manufacturing plants. While today we sell 1.2 million cars domestically, we should be selling 1.8 million because the opportunity and market are there. If we compare cars per inhabitants, Mexico sells half of what Brazil and Argentina sell, while having a comparably-sized economy.

A great opportunity for the auto part industry in Mexico comes from the second and third tier industry. There is a significant amount of raw materials and components being imported, meaning that there is an incredible opportunity to source the local market. —



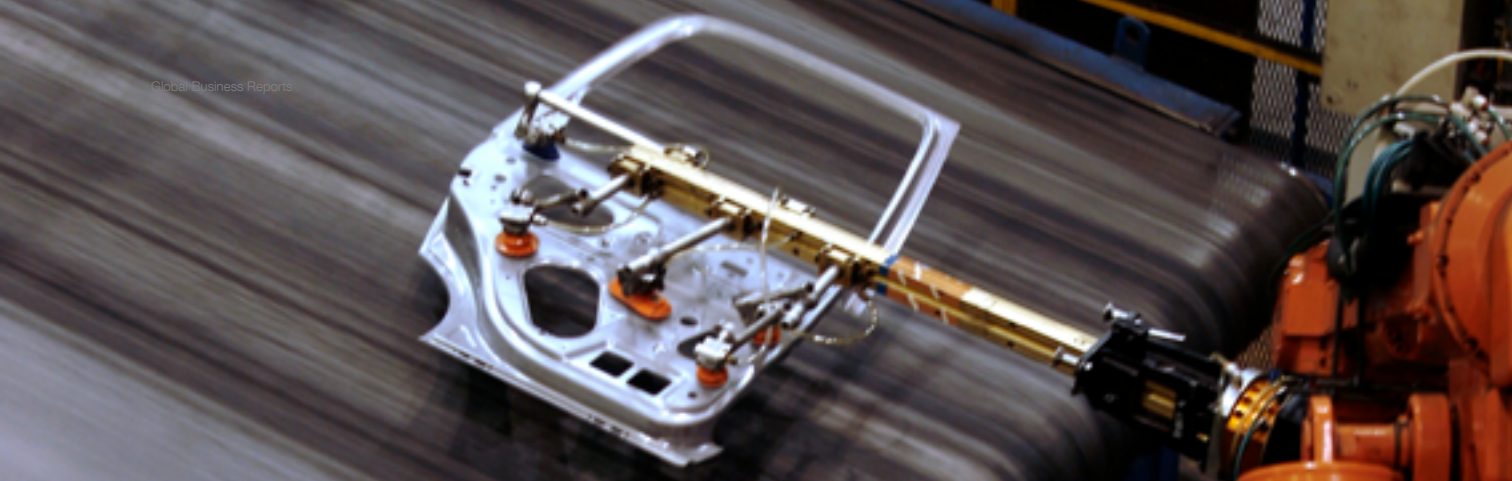


Image: Courtesy of GM

# Globalization: The Catalyst

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Globalization has been one of the most important detonators to Mexico's economy, by far. From 1981 to 2016, Mexico's GDP has increased almost sevenfold, with a significant inflection after the ratification of NAFTA in 1994 which caused a seemingly exponential growth for the country.

A considerable chunk of that growth is due to Mexico's competitive advantages that no other country in the world has—the first (and arguably the most important) factor being its shared border with the United States. In addition to the symbiotic relationship this leads to, however, Mexico's visionary government instilled commercial openness as a priority and it is proven by its vast amount of FTAs. To this day, the country upholds this vision as it continually looks to expand its global connectivity network, now with the Trans-Pacific Partnership (TPP) and the Pacific Alliance. These efforts, combined with very competitive production costs (at least 10% lower than the United States), have made decision makers around the world center-in and focus on Mexico as one of the most enticing countries where to set up their manufacturing plants.

Mexico's economic success since the 1980s has come from maquiladoras—originally with the textile industry—but when automotive assembly plants started moving their operations in crisis times from the American Midwest down to their much cheaper southern neighbor, the Mexican labor force began changing dynamics as it became more technical and specialized, and, thus, started becoming more valuable in the market place.

With this shift, moreover, an increasing amount of foreign players' eyes looked to Mexico for its production capabilities as the

country became the easiest, cheapest and most effective access point to the US market, whose demand for Asian and German cars started growing significantly over the years.

The foreign direct investment (FDI) alone from the automotive sector into Mexico has increased from US \$1.6 billion in 2008 to US \$5.86 billion in 2015. Mexico is now host to the North American giants: General Motors (GM), Fiat-Chrysler (FCA), and Ford; the Asian giants: Toyota, Honda, Mazda and Nissan; Germany's flagship Volkswagen, and the new arrival of the luxury brands Audi and BMW; and lastly, Korean players like KIA and Hyundai, who have most recently penetrated the Mexican market. "There are a significant amount of global players present in Mexico and this has been part of the Mexico's strategy to become globally competitive," confirmed Bruno Graikowski, associate automotive director of HSBC Mexico.

"Mexico's boom has come mainly from its trade agreements," argued Ramiro Escobedo, operations and administration manager of JSP Mexico. "If a plant in Europe wanted to sell cars to the United States, there would be at least an additional 12% fee tacked on to the price. If that same European car is manufactured in Mexico, however, this fee would be non-existent because of NAFTA, and this is the reasoning for European and Asian OEMs strategically positioning themselves in Mexico."

With the successful attraction of the automotive powerhouses, buttressed by the trade benefits of NAFTA, the Mexican automotive industry has doubled its contribution to the national GDP, from 8.4% in 1994 to 17.7%

in 2015 —while the auto parts industry's contribution has grown from 4.6% to 8.4% in that same time period.

Furthermore, Mexico used to manufacture only 10.5% of the total production of light-vehicles in North America from 2000-2005 but, has since 2006 increased its production to 17.4% of all the vehicles produced in the NAFTA region. This impressive growth has made Mexico now the sixth largest producer of auto parts in the world and the seventh largest producer of vehicles globally—where it used to only produce around 1.1 million cars in 2002, to a forecasted 5 million units twenty years later in 2022.

Mexico's demonstrated prowess in manufacturing has taken the country to new heights, but ProMéxico, the federal government agency responsible for attracting FDI, as well as promoting exports and the internationalization of Mexican companies, has identified that stamping, foundry, forging, machining, semi-conductors, and plastic injection capabilities could provide the most value-added for the country, yet many of these capabilities are still being imported. "We are trying to focus on developing these industrial processes within Mexico, and by outlining these opportunities for investment, we are encouraging local entrepreneurs and internationals to take part in developing the automotive supply chain," stated Armando Cortes Galicia, ProMéxico's automotive sector executive director.

The question then arises as technology and the world progresses, can Mexico outgrow its manufacturing core and become the hub for innovation, design and engineering that it needs to be in order to remain at the forefront of the automotive industry? —

# Eduardo J. Solís Sánchez

Executive President

**ASOCIACIÓN MEXICANA DE LA INDUSTRIA AUTOMOTRIZ (AMIA)**



“

There is immense opportunity for local Tier 2 players, as Tier 1s continue to import more than half of the materials needed for their production.

”

14

**Can you please provide a brief history of AMIA's greatest accomplishments since its formation in 1951?**

AMIA's members are the manufacturers and importers of new vehicles in Mexico. Our main goal is always to represent the interests of the automotive industry before the main players, starting from the government (from federal to local) to the academies, private interests and the media. From its work, AMIA plays a key role in supporting the Mexican automotive industry. We also involve ourselves in areas where we can jointly promote the sector with the government.

**March 2015 experienced a record high for light vehicle manufacturing in Mexico. What have been the determining factors that have allowed such a successful growth?**

AMIA believes that production growth over the last five years is mainly due to an increase in investment in the industry. We acknowledge certain key elements that have contributed to the success of Mexico's industry, one of which is its location. The second element is represented by the numerous free trade agreements that Mexico has with

other countries, including new areas such as the TPP and the Pacific Alliance. For a country that exports more than 80% of what it manufactures, it is vital to have easy access to world markets. Another element has been the world class labor force that Mexico produces every year for the automotive industry. The fourth element is Mexico's supply chain. We are the sixth largest producer of auto parts in the world and we are the seventh largest producer of vehicles in the world. Finally, we have been lucky to have an investor-friendly government. The government's policies have been key in both the growth of the automotive sector and the increase in investment. Our view is that these five elements were the vital pillars in decision makers choosing Mexico as an investment destination.

**AMIA believes that Mexico will achieve sustainable long term growth based on diversifying exports. How can this be accomplished?**

According to AMIA's statistics, exports to Argentina, Chile and Puerto Rico have increased in relation to last year. The U.S. is still the destination for about 70-75% of our total exports, with NAFTA as a whole representing more than 80%. China now represents 8-10% of total exports, which is a relatively recent development. The companies are making efforts to export to other countries and discover new markets, proved with the increase in exports to Brazil, Argentina, and the other countries of the Pacific Alliance. Mexico is currently exporting to more than a hundred countries, but the ones mentioned comprise the bulk of our total exports.

**Developing domestic demand is also a necessary path towards long term growth for the industry. How does AMIA believe this can be achieved?**

AMIA anticipates that by the end of 2020, Mexico's production will arrive to 5 million vehicles yearly. One thing that must be improved is logistics, so that while production and demand increases, the goods can flow properly through the local and international transportation networks. AMIA is working together with the federal government to ensure that we arrive at our targets successfully. All entities are also working with the academic institutions to ensure Mexico has the human resources (technicians and engineers) to satisfy the inevitable increases in the demand for skilled labour by the industry.

**Do you have a final message for GBR readers about AMIA?**

Mexico's success in automotive manufacturing is clear, and all automotive industry clusters in Mexico have a collaborative agenda with AMIA and among themselves in key areas of the industry.

The development of the supply chain is a key aspect for the continual progress of the automotive sector in Mexico, especially in the face of waves of competition from foreign players as new OEMs come to Mexico. There is, however, immense opportunity for local Tier 2 players, as Tier 1s continue to import more than half of the materials needed for their production. It is a responsibility of not only the automotive industry but the Ministry of Economy to boost their capacities and capabilities in order to be able to compete.

Over the next years, moreover, Mexico will continue to play a key role among the world's most important producers and exporters. The new aim for Mexico is in the area of R&D and innovation. With close to 120,000 engineers graduating on a yearly basis, Mexico has been succeeding in setting up important engineering and design centers. This is the future for Mexico. —



# Arturo Rangel Bojorges

Automotive Sector President  
**CANACINTRA**



## What are CANACINTRA's strategic plans and priorities for 2016?

CANACINTRA's current agenda was established in 2013 and will be carried out until 2019. The strategic plan consists of five main pillars which include: increasing the domestic market; focusing on regulatory framework; foreign trade; institutional collaborations and synergies between agencies, and the work of our specialized groups in the different divisions of the automotive sector. With regards to the fifth pillar, CANACINTRA is not only dealing with technical rules of the automotive sector, but also with major projects that are connected with international negotiations or special circumstances in the country.

Our priorities in the coming year are deeply connected to the renewal of the public transport fleet, collaborating with the Government in the implementation of new environmental regulation and the design of programs to leverage the role of SME's in our supply chain.

## How is CANACINTRA working to attract more attention to the heavy vehicle industry in Mexico?

CANACINTRA is focusing on the renewal of fleets, upgrading regulations and technical support, and safety and security. The average age of a fleet is 20 years. Financial credit and professionalization of the business is needed and thus the support of the financial institutions which are connected to the OEMs, is very important.

Regulations play an important role in terms of dealing with environmental issues. CANACINTRA is collaborating on the process of upgrading the regulations for heavy vehicles and once the new regulations are implemented, it will force businesses to renew their fleets.

Security and safety are important as more modern trucks means less exposure to accidents. Modern vehicles have active systems to prevent collisions and can make a diagnosis of the fatigue that the driver is experiencing. To achieve optimal safety and security upgrading of fleets and professionalization of the business is important.

## One of CANACINTRA's pillars of development is to increase the local market. What is the strategy to achieve this goal?

Regulations that address the security measures that should be included in every vehicle will force the domestic market to upgrade their vehicles. Secondly, making financial credits more available to the general population will increase the local market significantly. We are also working on generating a better tax structure in terms of less tax on the transaction of buying a vehicle. CANACINTRA

also aims to generate consciousness as for the population to understand that modern technologies in cars are important in terms of safety, health and environmental issues.

## Do you have a final message for our international readers?

CANACINTRA, as the largest chamber in Latin America, is deeply dedicated to servicing the automotive industry. We provide training and knowledge to SMEs, and for large corporations we are actively involved in assisting with lobbying and the modification of foundational regulations. Providing a national coverage, CANACINTRA is effectively working to attract further investment into Mexico as well as facilitate lasting relationships between multinational companies, SMEs and the government. For a soft landing in a prosperous and dynamic sector, CANACINTRA is the right partner for any entity looking to further invest in Mexico's automotive industry. —

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**CANACINTRA**

**75 UNITED WE TRANSFORM MEXICO**

**ANNIVERSARY**

CANACINTRA coordinates, informs, advises, represents and defends more than 50,000 member companies in 13 sectors and 102 branches for any political, industrial and business interest. Canacinttra offers services such as business development, specialized training, customs counseling, economics study center, legal counseling and lobbying among others.

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# The Northeast



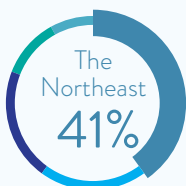
"The automotive industry has grown significantly due to a number of OEMs establishing themselves in Mexico, and though there is also a substantial presence of auto part companies in the country, 25% of those are located in Monterrey while 14% are located in the Saltillo region.

Compared to other automotive regions, Monterrey has the densest concentration of locally owned auto parts companies."

Fernando Turner Davila  
Secretariat of Economic Development of Nuevo León

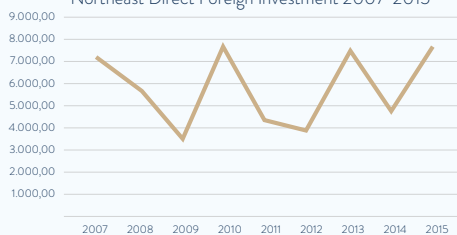


## AUTOMOTIVE EXPORTS BY REGION IN 2014



Source: CIES with INEGI

## Northeast Direct Foreign Investment 2007-2015



Source: CIES with INEGI

# 49.7%

AUTO PARTS  
PRODUCTION  
COMES FROM THE  
NORTHEAST REGION

Source: INA

# From a Foundry Foundation Arises an Industrial Stronghold

The highest concentration of plants and supporting process companies for the automotive industry lies in Mexico's Northeast, specifically in Coahuila and Nuevo León. Saltillo and Monterrey, the two state capitals, are home to 14% and 25% respectively of all auto part companies in Mexico. The region's industrial aptitude has a laborious and calloused-handed past, as steel and glass factories were the single-celled organizations that eventually evolved into the full-bodied metropolitan city of Monterrey. Monterrey hosted its first industrial fair in 1880, followed by the establishment of Compañía Fundidora and Acero de Monterrey in the early 1900s, which were the foundries that provided steel to build the

rest of the nation. "The Northeast of Mexico has a long history of industrial culture, compared to the central and southern areas of the country that have, for the past five years, experienced massive and continued growth. The experience and knowledge of the workforce are at higher levels in the Northeast than in other regions," argued Raúl López, managing director of MPG Casting Technologies. "Nuevo León distinguishes itself from the other states because we have cultivated a culture of hard-working people, making it a territory plentiful in skill, and this kind of breeding helps attain the goals of any industry," said Noé Beltrán Lozano, director of FALCOS Plastic. —

## Molding and Casting Mexican Suppliers – The Northeast as an Entrepreneurial Hub

The Northeast serves as the headquarters for some of the most critical Mexican owned industrial and financial groups in the country—including Cemex, Grupo Alfa, Banorte and FEMSA. Despite the regions achievements and long industrial tradition, the first official automotive cluster of Mexico did not take form until 2007—the Automotive Cluster of Nuevo León (CLAUT).

While Tier 1s and OEMs enjoy a significant amount of government assistance in establishing themselves in-country, across Mexico, smaller, especially locally owned, companies face greater difficulty obtaining capital for expansion into the high-volume automotive realm. As one of the most successful clusters in the country, however, CLAUT's overarching goal and primary challenge is facilitating the integration of local manufacturers into the supply chain. To date it has been quite successful: "Half [of CLAUT's members] are Mexican

owned, which is very beneficial for the region as they are more locally integrated," explained Manuel Montoya, director of CLAUT.

The integration of a local supply chain is not only beneficial for the state economy, but a sign of a healthy industry. "Foreign owned players only tend to focus on supplying to their principal client for which they moved to Mexico...There are many Korean companies entering the Monterrey region to supply to Kia, but Mexican owned companies have an edge, and their competitiveness is increasing on a daily basis," stated Fernando Turner Davila, Secretariat of Economic Development of Nuevo León.

The Northeast houses eight out of the twelve Mexican Tier 1s, and Nuevo León has one of the highest concentrations of Mexican owned companies that operate in the automotive industry, proving that local content is possible from the bottom up. —



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# Manuel Montoya

Director

## THE AUTOMOTIVE CLUSTER OF NUEVO LEÓN (CLAUT)



### Can you give a brief introduction to CLAUT and the cluster's operations in Monterrey?

CLAUT consists of 96 companies including OEMs, Tier 1 and Tier 2 companies and academic institutions. Half of these companies are Mexican-owned which is very beneficial for the region as they are more locally integrated. In Mexico, overall, there are about 120 Tier 1 companies and about 600 manufacturing plants. Most of these companies are foreign-owned with only about a dozen companies that are Mexican-owned. The Mexican-owned Tier 1 companies are global players and eight of the companies are situated in Nuevo León.

The difference between local and foreign-owned companies is that Mexican companies are more open to create a local supply chain and are thus more locally integrated. Developing the local supply chain is still a huge challenge in Mexico and, as such, CLAUT aims to create more local companies.

### What is the specialization that Nuevo León has developed within Mexico's automotive industry?

The cluster has two OEMs that specialize in large vehicles. Navistar International is a leading manufacturer of trucks and they have one of the biggest manufacturing plants in the whole of America. The other OEM is Daimler, which produces heavy vehicles and they have a Freightliner plant in Saltillo. Caterpillar and John Deere are also two OEMs that are members of CLAUT, but they operate in the overall equipment of vehicle business. CLAUT has invited another OEM, Polaris, to be a member of the cluster. Polaris was established in Mexico in 2011 and they have been significantly growing over the years.

CLAUT's Tier 1 supplier base is mostly metal mechanics as Monterrey has a very big steel industry. Metalsa is an important player in the market and they manufacture truck chassis and structural body components for vehicles. Some suppliers also operate in the aluminum industry. One of CLAUT's Tier 1 members is NemaK, which manufactures aluminum engine blocks and aluminum motor heads. NemaK is the biggest company in the world doing this type of manufacturing and the company is Mexican-owned. CLAUT also has members operating in electronics, plastics and interiors, but the main percentage of our companies operate in metal mechanics.

### Could you like to highlight some local success stories within the automotive industry?

Vitro is a manufacturer of automotive glass that signed a joint venture with Ford 30 years ago. Currently, Vitro is the only Mexican company that manufactures glass for international players in the market. The Tier 1 supplier Katcon, which manufactures catalytic converters, also achieved huge success within the industry. Katcon started as a very small company and, with the joint venture with Delphi, it grew significantly over the years to become a global company. Gonher supplies car batteries, filters and lubricants directly to manufacturers and they have also been very successful within the industry.

### What strengths can Monterrey offer to potential foreign investors from within the automotive industry?

In Monterrey there are about 2,600 foreign companies and thus one can see a tradition of investing in the region. Labor costs in Monterrey are not as cheap as in other regions of Mexico, but Monterrey has more specialized workers. Foreign investors that have more complicated processes must thus look to Monterrey where they can find specialized engineers and technicians. The challenge is that there are no economic incentives for investors to come to Monterrey. There is FDI in the region as Monterrey can offer a substantial base of suppliers and specialized operations. The strategy for international promotion is to create awareness of the value added talent pool that Monterrey can offer. We are focusing on promoting the region in Korea, as Korea is a very big player in the Mexican market. CLAUT will focus on attracting required suppliers as to build a local supply chain for our members. There is a significant demand for tool makers in the region as well as for plastic injection mold suppliers.

### What is the strategy to develop local companies?

The strategy is to have joint venture agreements between international and local players. CLAUT is also very devoted to specialized training and thus we are working with the government to deliver trained technicians to local companies. Tier 1 companies do not make an effort to support local suppliers and thus we want to create a synergy between OEMs, Tier 1 and Tier 2 companies as to grow the local economy.

Monterrey is very close to the US market and there is a big talent pool of skilled engineers. The universities in the region are very open to work with the industry. The cluster has been successful in Nuevo León due to the strong collaboration between companies, academic institutions and the government. —

## A New OEM Takes the Stage in Mexico

After long-winded qualms, Kia Motors and the Nuevo Leon government renegotiated the state incentives for the \$2 billion assembly plant project mid-2016. The state eliminated certain reimbursements of federal taxes, limited subsidy payroll taxes, and withdrew certain commitments for community impact initiatives. The original deal, as signed by the previous government in office, would have represented state support at 28% of the investment bill—which is illegal and unprecedented in the industry—but has now been reduced to around 10%.

Prior to the agreement, Kia already commenced producing its compact Forte a few months earlier with the intention of producing 100,000 units. With streamlined operations, the plant will turn out a new Kia Forte every 56 seconds, with a goal of 300,000 vehicles per year.

The South Korean automaker is still in the adjustment phase, as there have been reports from collaborators indicating a strong cultural barrier to be surmounted. In this regard, the retention of Mexican engineers has been a challenge thus far. Operational issues also arose upon initial production due to torrential storms, showing that Kia's new manufacturing facility would have a few stalls before start. "We had many difficulties, but with the support of the government of Nuevo León, along with the team of Kia...we will achieve more and better successes in the future," stated Bea Kim Seong, president of Kia de Mexico.

# Bustling with Change: Nuevo León's New Additions

## Monterrey's Momentum: an Integrated Effort to Go Beyond Manufacturing

"The geographic location of Monterrey in relation to the United States is one of its greatest advantages, and the fact that there are so many Tier 1s here could be another reason why FDI pours into this state," stated Noé Beltrán Lozano, director, FALCCOS. Additionally, "Mexico's Northeast has a greater acceptance and adoption of new technology than other parts of the country," stated Juan Manuel Kuri, country manager and vice president of Siemens PLM Software, Mexico and Central America. "Arguably, the reason is cultural in that the Northeast is closer to the technological influence of the USA, hence why Monterrey is a strategic region."

It is because of these factors that Monterrey prides itself in its high number of skilled engineers that allow for the growth of



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local innovation in comparison to the other automotive hubs in Mexico, especially when considering that there are far fewer OEMs in the Northeast than in the Bajío and in the South. CLAUT and the Nuevo León government, more so than other regions, have taken tangible steps to actively be the “motor propelling local and foreign companies to innovate,” as Cesar Gomez Narvaez, commercial manager of Duralitte pointed out.

“The government is not only trying to focus our economy on creating its own knowledge, but also working with international investors on information transfer to our labor force. Part of the incentives that were given to companies is support in training technicians and engineers. Training increases the competitiveness of the workforce and enables Mexicans to achieve higher positions, which in turn aids in economic development,” affirmed Secretary Turner.

Concrete examples of these efforts include the cultivating of private finance to develop, alongside the involvement of the University of Texas, the Research and Technological Innovation Park (PIIT) R&D Center, which houses over thirty centers dedicated to the transition from an industry based on manufacturing to one based on knowledge. Through the inauguration of an automotive simulation center on campus, as well as granting access to twenty-five software programs specialized in design and optimization processes—such as Catia, Pro Engineer, Abaqus, Adams, Ansys, Delmia, Autoform, Pro Cast, Deform and Optisruct—PIIT strides to make this goal more attainable.

Additionally, the opening of the Center for Innovation, Research

and Development in Engineering and Technology (CIIDIT) on April 2016, has also been a symbolic triumph of Monterrey’s determination to coordinate its resources and partners for a unified purpose: to become the automotive knowledge hub of the nation. The PIIT project involves an unprecedented level of cooperation between Nuevo León’s government, the Autonomous University of Nuevo León (UANL) and some of the major automotive companies within CLAUT, including Caterpillar, Quimmco Group, John Deere, Metalsa and Nematik who, “no longer see Nuevo León as just a place for manufacturing,” according to CLAUT’s Montoya.

Other large Tier 1 suppliers, such as Delphi, Bosch, Continental and Katcon, have their own R&D centers but work very closely with the CIIDIT. The Center’s creators hope that the direct involvement of the aforementioned five major private players will encourage even more companies to follow suit in the effort to craft an ecosystem that catalyzes originality. “Innovation is key to survive,” stated Leopoldo Cedillo, CEO of Metalsa: “In the past, Monterrey was simply used for its inexpensive work force, however, currently, it is now being tapped into for the intellect associated with the region as it is home to terrific universities, and the government has proven to be supportive of finding ways for companies to work with universities for mutual growth.”

For example, in conjunction with the National Council for Science and Technology (CONACYT) and other research entities, Metalsa, one of the world’s leading automotive frame suppliers, just launched their “XeV Chassis” project; the first ever electric



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pick-up truck, built in Metalsa's R&D lab on the PITT campus. The frame, engine mounts and battery are all designed to direct the driving power from the electrical source to the wheel. The design is still considered flexible and adaptable to certain market niches and the continued objective is to create a four-wheel-drive fully electrified truck.

### The Role Of Universities In The Triple-Helix

The automotive industry depends on the mechatronic, electrical, industrial, and design disciplines, as well as mechanical engineering, which includes materials, nanotechnology and tribology. In 2011, Universidad de Monterrey (UEM) started an automotive engineering program focused on automotive design, sourcing the program's content from the local, national and international examples, which includes mechanical, electronic and software engineering. The fifteen-student pioneer generation of UDEM's automotive engineering program will finally graduate this coming December 2016 and May 2017, and the graduates will be the first class to ever be involved in UDEM's collaboration agreement with the industry.

Universities have developed programs alongside the automotive industry players in order to cater to the needs of the companies. Specifically, universities are taking a protagonist role in the triple-helix model as they are providing hands-on experiences, and are supplying equipment and technology for the development of the human capital in order for graduates to be assets, and not just clogs in the machine of an ambitious automotive industry with innovation, and not just manufacturing, in its sights.

"Our university has been involved in several projects within the automotive industry," explained Dr. Jorge Lozoya Santos, research director of the Universidad de Monterrey (UEM), "however one of the most salient examples has been designing and manufacturing a vehicle-dynamics-simulator, which is also integrated with Dynakar, a Spanish software for vehicle dynamic simulation. The software, together with hardware from National Instruments, has allowed us to integrate any kind of automotive

system in real time, enabling us to test the performance of the system."

In this case, the automotive system was the simulation of the three degrees of freedom of the vehicle's angular motions: pitch, roll and yaw. The pitch and the roll was the goal of the simulator, and the UDEM students used a grand mechanism in order to simulate the motions in real time. "The true success of this project, however," argued Lozoya, "was that students involved in this project attained a successful platform for teaching and learning automotive design in the laboratory as well as demonstrating to the automotive industry in Monterrey their abilities at developing test rigs for the real time validation of any kind of system with this vehicle dynamics simulator."

UEM is also working on the development of a test rig for vehicles, which includes testing tires, shock absorbers, and vibration and noise within the structure. The students will have to cumulatively integrate their knowledge to find a solution for this project and the final competition will be judged by an expert within the industry.

The main goal of academic institutions and universities like UDEM, however, is to develop human talent for the industry - a goal that is becoming quite urgent in Northeast Mexico. "Specialized and qualified talent has been, and continues being, one of the main challenges for Estampados Monterrey and many of the other players in the region," argued Sergio Gutiérrez Adame, general manager of Estampados Monterrey. "There has been a strong boom in the automotive industry over the last few years, but unfortunately, there has not been enough quality supply of human capital to satisfy the market's needs. To address this, the private sector, including Estampados Monterrey, has taken steps to collaborate with the Automotive Cluster in creating specialized and technical positions and internships, while working closely with the various universities in Nuevo León like UDEM, I.T.E.S.M (Tec de Monterrey), Universidad Regiomontana (U-ERRE), and UANL in order to cater the curriculum that is necessary to sculpt students and their skills in order for them to be an asset for an industry in need of newly graduates that are ready."

The strong presence of universities in the Northeast region shows promise for a well



Image: Courtesy of FCA

trained workforce to support the demand and development of industry, as long as it is contributing enough skilled manual laborers as well as elite engineers. Though the Northeast has aspirations towards becoming the Silicon Valley of Mexico, it still has a long way to go. "Tecnologico de Saltillo will also open up a campus right beside Server Industrial Park Coahuila's location, which will open up greater possibilities in terms of talent acquisition, and continue developing our existing workforce which will not only benefit Turck but also the region as a whole," declared Rodolfo Ortiz, director general of Turck Mexico. —

## How important is the automotive industry in the development of the local and national economy?

The automotive industry has grown significantly due to a number of OEMs establishing in Mexico, and though there is also a substantial presence of auto part companies in the country, 25% of those are located in Monterrey while 14% are located in the Saltillo region. Compared to other automotive regions, Monterrey actually has the densest concentration of locally-owned auto parts companies.

Foreign-owned players only tend to focus on supplying to their principal client for which they moved to Mexico; however, many locally owned companies target multiple clients, and their market is more spread across Mexico and the United States. Korean companies are entering the Monterrey

region to supply to Kia, but Mexican owned companies have an edge, and their competitiveness is increasing on a daily basis.

The automotive industry in Mexico has really taken advantage of the free trade agreement (FTA) between Mexico, the United States and Canada. Mexico has 13 FTAs with 45 countries, but we have the least diversified economy in the world, as 82% of our trade goes to the United States. There are sectors in Mexico that are reaching a point of maturity where they are not only manufacturing and assembling products, but also adding R&D activities to the industry.

## What programs can be accredited to the government that have helped Mexican companies integrate into the automotive industry?

Nuevo León has a historically entrepreneurial spirit; this region was the foundation of the steel, glass, and cement industries. Investment, both foreign and domestic, has created diversified supply chains across sectors over the years. In 1968, the first Mexican car, Borgward, was built in Monterrey by our own people and businesses from this city. Monterrey is a business incubator, which has enabled many to expand their presence with subsidiaries all across the world, something very unique for a developing country.

## What is the Department of Economic Development focused on with regards to attracting new automotive investment into the area?

There are a few gaps in the automotive supply chain and our aim is fill those efficiently. By promoting Mexico in the United States, Asia and in Europe, we are looking to attract FDI but also create opportunities for local companies to establish joint ventures and become more competitive. Currently we are negotiating with more than 75 companies that are looking at establishing themselves here. The department is always engaged in offering information and aiding with permits and compliance.

A joint venture or a partnership is not necessarily needed, and there are great opportunities in having a pure supplier relationship. We can learn from the different operating cultures. Some Japanese companies that have established themselves in Mexico have a transcending focus on training their suppliers. Training then increases the suppliers'

production capabilities and competitiveness.

## What are the most pressing concerns for companies wanting to establish a presence in Mexico?

Legal certainty about contracts is the main apprehension. Safety, in some areas of the country, is always taken into consideration, but Mexico is heavily focused on improving the country's security. Companies are also concerned about finding skilled labor that will have the capabilities to operate in their lines of production and the gaps in the supply chain. Although Nuevo León has the highest income per capita in Mexico, there are still goals to be accomplished in terms of unemployment and poverty. We have an average unemployment rate of 6% that we need to reduce substantially.

## How much of an impact will the automotive industry have on decreasing the unemployment rate?

To signify its importance to our economy, the automotive industry represented 42% of Mexico's GDP between 2008 and 2014. Our job as an economic department is to create jobs and we are dedicated to doing everything that we can to attract investment into the region. Monterrey is one of the top three regions in the nation for FDI, and we are also the leader in terms of investment. Most of the investment into Monterrey is due to the locally owned companies that have flourished here. In 2015, the total investment in Nuevo León was \$12 billion, of which only \$ 2.5 billion came from FDI. We welcome FDI, but our main focus is to take care of the local industry.

## Do you have a final message to the international automotive community about Nuevo León?

Bajío is doing a great job attracting FDI, but I would recommend that their representatives aid Mexican companies fill the gaps in the supply chain. In Nuevo León, we are focused on trying to develop and support the small to medium sized companies—either local or foreign. We will support these entities in establishing operations and complying with the regulations of the industry in order to offer more economic options in the market. Increasing competitiveness leads to job creation, which in turn leads to economic development and sustainable industry growth. —



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### What critical factors should be considered when planning a competitive business strategy within the automotive industry?

The strategic considerations within the automotive industry in Mexico are many. First of all, there is always a threat of new entrants, the demeanor and interconnections of which must be considered. In addition, capital investment should be high and costs controlled, irrespective of the company's scale. Access to distribution channels is a key factor, as is the negotiating power of buyers, which is dependent on their size, market concentration and organization. Relative to buyer power is the threat of substitute products, which drive rivalry within the industry.

### With the aforementioned factors in mind, how can a company best define strategic objectives?

These numbers highlight how crucial the objectives are best defined using the SMART criteria: specific, measureable, attainable, realistic, and timely. Above all, the objectives must be in line with the ethics and values of the company.

### Once key strategic factors have been identified, what is the next step to be followed?

The next step is to plan. At KIA we believe that everything that can be planned and controlled, and what can be controlled can be managed and improved. In order to plan, a priority hierarchy must be identified. Generally, strategic plans are primary. Every company is structured by its own vision and goals. With these objectives in place, tactical planning can commence by implementing strategy through current operations. For these projects, the budget is of utmost importance, as is monitoring of the operational implementations. For example, Kia is in the process of improving and refining procedures with an objective of creating automobiles with a 100 percent environmentally friendly process



## Yuri Holguín Soto

Logistics Manager  
**KIA MOTORS MEXICO**

“

Kia is in the process of improving and refining procedures with an objective of creating automobiles with a 100 percent environmentally friendly process.

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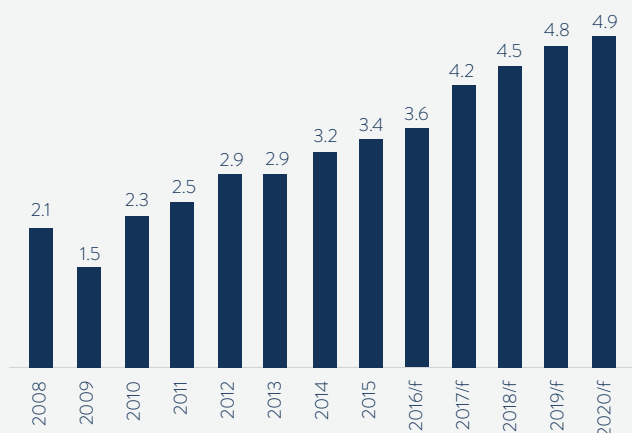
### From a managerial standpoint, how does one best support unimpeded improvement of the processes, objectives and products?

The “Plan, Do, Check, Act” approach, otherwise known as the PDCA cycle, helps manage these endeavors. Often insufficient time is allocated to planning, and subsequently potential process interruptions are not adequately predicted. From my experience, sufficient planning is paramount to preventing complications and saving time.

### Notwithstanding these prime considerations and planning methods, are there any other industry features that can delineate success or failure for a company?

Capacity planning for services is a critical factor. Whereas capacity planning for products relates to the storing of goods, capacity planning for services revolves around time as a commodity, time as the end product. Given the nature of logistics, demand for our services is directly affected by clients' behavior and can be requested erratically, therefore some parameters cannot be established in advance. Finally, location and geographical proximity to clients is paramount. Qualities that must be intrinsic to a service provider but not exclusive to the automotive industry are trustworthiness, sensitivity to clients' needs, competent employees, and an accessible, credible organization. —

Mexico: Light Vehicle Production, 2008-2020  
(millions of units)



/f: Forecast for the year SOURCE: AMIA

# Local R&D Investment and the Use of Partnerships as a Means to Progress

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Over the years, quality and customer requirements have become increasingly significant to the automotive industry. Engines and machines are presently being manufactured differently to comply with industry requirements to be more fuel efficient and deliver more power, and companies must strive to keep up with new demands and trends or be left behind. There is the constant need to continuously upgrade labs and acquire new equipment to meet the requirements of the automotive industry, as well as for the staff to undergo specialized training to effectively operate this new equipment.

The challenge remains, however, that R&D in Mexico comprises only a fraction of the government's budget, and thus, progress in the field remains dependent on the whim of large OEMs and Tier 1s who provide the majority of funds for R&D centers. There is presently intense lobbying to reinstate a previously repealed fiscal incentive of up to 30% in income tax deductions for companies who invest in R&D; until then, Mexican companies are in the mean time seeking partnerships with foreign companies and government

entities to ensure an efficient transfer of knowledge and technology, coupled with their own personal investments into the companies' innovations in order to stay afloat in such a competitive industry.

"In the past, we followed the trends of the market," argued Homero Garcia Castillo, executive director of Lubricantes de America (Lubral), "but to stay competitive, and in line with Lubral's mission to strive for innovation on the mechanical, environmental and financial levels, we eventually decided to establish an R&D department dedicated to innovations in the industry, such as product performance and new applications with equipment acquired by ourselves and in a venture with the government, which has allowed Lubral to develop new specialized chemical lubricants for the automotive industry using nanotechnology."

"EVCO is working with government agencies and private companies that specialize in innovation and through this, we want to offer more value added services to the industry. We invest heavily in nanotechnology R&D in order to find ways to reduce the weight of plastic parts, as weight has be-



Image: Courtesy of FCA

come one of the most crucial aspects in the automotive industry as it relates to energy and fuel efficiency. As such, we are working with the CIIDIT and are currently in the first phase of the process of decreasing the weight of plastic parts,” stated Humberto Garza, president of EVCO Plastics de Mexico, who through an investment of US \$10 million for innovation, have been able to increase their production capacity by 45% and 35% in their Monterrey and Juarez plants respectively. “We keep developing lighter and more affordable tools with the same durability and that can keep up with the life of the product, while also focusing on expanding capabilities to new processes such as vacuum metalizing,” explained Carlos Gonzalez, business development manager of EVCO Plastics de Mexico.

C&S Mecatronics, a local supplier, actively looks to partner with companies that have clear goals of cost reduction, and has had the opportunity to work with companies like Bosch, Magna Closures, Nemak, and Metalsa among others, who, according to Cuauhtémoc Salas, director of C&S Mecatronics: “They have shown us economical work stations that reduce time and are operator-friendly, as well as how to use these stations effectively through better communication between workers at the stations, and thus we now incorporate these techniques to make our process more efficient.”

The theme of cost reduction remains constant among industry players, as Consultores CPM has also solidified its presence

as a training, consulting, and machining arm in the local automotive sphere. “CPM aims to facilitate the transfer and integration of technology development and manufacturing processes to help customers achieve better quality and to be more competitive at a lower cost,” stated Victor Vasquez, general manager of Consultores CPM who are also an example of companies that have partnered with foreign players to increase their value-addition. “CPM was looking for reliable shops that we could partner with to be able to provide an integral solution for our customers, including tooling, mold design and manufacturing,” continued Vasquez. “We discovered how difficult it is to get supplies for standard parts and meet deadlines, not to mention the lack of infrastructure needed to be able to test the tooling before we ship it to customers. Eventually, we found a company based in Wisconsin called Bestech Tool Corporation, which is a progressive die manufacturer with reasonable prices and high quality production. CPM has done several projects with them and they have proved extremely reliable. We have never had to correct the tooling after production is launched.”

German OEM Daimler, headquartered in Mexico City, but with its manufacturing plant in Nuevo León, is an example of a company trying to progress from simply manufacturing buses into a company that is adding value through its innovation and international experience. “Hardware and software play a role in the automotive industry and while Daimler already has good

vehicles, we are providing mobility solutions to the market. We have BRT experience in various places in the world such as Istanbul and Santiago de Chile. What we are doing in Mexico is to collaborate with our Brazilian and German colleagues, who are highly experienced in BRT, to come up with a proposal for mobility solution, specific to a given city,” explained Jan Hegner, CEO of Daimler Buses de Mexico.

American Trim, on the other hand, significantly invests in R&D and has worked on substantial projects with automotive stakeholders such as GM, as well as collaborating with schools, universities, and the government on critical research projects. Marcelo Gonzalez, general manager of American Trim—whose recent notable projects have been in regards to Physical Vapor Deposition (PVD) and High Velocity Metal Forming (HVMF), encompassing experimentation with forming metal through electromagnetism, and power through Fuel Cell technology—concluded: “American Trim is optimistic about the government of Nuevo León’s efforts as it is already inspiring both workers and companies. The aim of the government is to encourage the OEMs to bring in their best research scientists from Germany, Japan and the United States to work with and further develop Mexican talent. As such, companies are realizing that Monterrey, Nuevo León and Mexico are much more than just a place for cheap labor, and many can see that there is a great deal of R&D potential available in Monterrey that can be developed for their benefit.” —

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# Leopoldo Cedillo

CEO  
METALSA



**Can you tell us about steps taken in creating the company and how it has evolved now that Metalsa is celebrating its 60th anniversary?**

Metalsa was created 1956, when the borders between Mexico and the United States were closed, and thus, no competition existed. There were regulations on what percentage of a company could be foreign-owned. In the 1980's, Metalsa realized it was not going to be sustainable when the borders were to open and we started working with Japanese tools to improve the quality of our products. When the borders did open in 1994, only five or six of the hundreds of the Mexican automotive companies that existed survived by themselves; Metalsa being one of them.

**As a primary manufacturer of chassis frames for pick up trucks, can you further describe what Metalsa offers to the industry?**

We produce half a million chassis frames annually solely out of the Monterrey plant and we are one of five companies in the world whose chassis frames include over 200 components with a tolerance level of plus or minus 2 millimeters. We also work in welding and manufacture light duty frames, space frames, safety systems, body structures, suspension structures, transmission modules, and side rails for commercial vehicles.

**Metalsa currently has many facilities outside Mexico—in the United States, Germany, India, Brazil, Argentina, Australia, the United Kingdom, South Africa, Turkey and China, among others. What is it about the company that has allowed it to continue thriving despite the economic crisis experienced within the automotive sector?**

The biggest asset Metalsa has is its culture. Our model helps us to be extremely flexible which enables us to react quickly to new challenges. We do not use c-level job classification; everyone who has people responsibility is a “coordinator,” no managers, no VPs, no CEO's titles, reserved parking lot for the people who have been more than 20 years with us - a people caring philosophy that has helped us to have an environment of trust and equality. As a result, the typical corporate politics associated with power struggles do not take time away from what is important: results, the product and innovating to stay ahead of the game.

What is generally known as the human resources department is the human development department here, as Metalsa's philosophy insists that people are not resources but individuals who deserve an opportunity to be developed professionally. During the crisis within the automotive sector in 2009, it was evident, even after cutting our wages, that people had to be let-go. However, we turned our human development department into a labor agency, and managed to place 95% of the Metalsa employees that had to be let go in new jobs. This sort of corporate culture and engagement within Metalsa has created an environment of commitment and excellent performance.

**Are there any unique additions Metalsa brings to Mexico's automotive industry?**

Ultimately, customers demand a product that will enable them to carry their load and be lightweight in itself. Metalsa has done extensive research and development of new ways to weld together lighter materials without increasing the cost of the products, mainly through adhesives. We

have explored Tailor Tempered technology, which is a technique related to hot stamping, that allows for different resistance levels depending on the way the product is cooled. This keeps the weight low and allows for greater or less resistance based on the part.

**Is there anything new Metalsa is currently working on in the test center?**

We are working on perfecting an electric pick-up truck. It was completely designed by Metalsa, the IDIADA Tech Center in Spain, and CONACYT, including the engine, and we managed to achieve our goal of producing the vehicle without increasing its weight. Given the weight of the batteries needed in electric cars, this was incredibly difficult. Metalsa has many developmental projects underway to prepare for the changes that will come within the next ten years.

**How do you see the future of the automotive industry in Monterrey?**

Monterrey is growing exponentially as a hub for the industry. Its inexpensive work force; now, it is being tapped into for the intellect associated with the region. Monterrey is home to terrific universities and the government has proven to be supportive of finding ways for companies to work with universities for mutual growth. There are a lot of good things happening here in terms of research and development, and the engineering costs are low compared to other regions. Monterrey is going to bloom. —

# Dr. Victor H. Vazquez Lasso

Director General  
**CONSULTORES CPM**



## Having started in 1999, can you provide a brief history of Consultores CPM?

Initially, CPM only offered forging capabilities for companies. However, after the first year, CPM expanded services providing casting and stamping services, which are in greater demand. We approached Engineering Systems International (ESI) with a business case study on how they could improve penetration into the Mexican market using CPM's influence. Once contracted, ESI's software platform helped us grow our professional reputation. After eight years in the market, CPM expanded its services from providing engineering services, design, simulation and tooling correction to additionally offering training from our engineers. Many companies were interested in this because, though they oftentimes expect their engineers to learn everything on the job, there are times where more formal explanation is necessary. Since 1999, CPM has had steady growth. Initially, we were three employees and today we are a team of 14.

## Specialized in engineering services, can you explain the diversity and size of your software/product offerings?

CPM offers a large range of services—from complete project analysis and product performance and failure analysis to injection molding, sheet metal forming, casting and bulk forming. We aim to solidify ourselves as a developer of technology products and processes to provide support to our customers based on knowledge and robust methodologies. In terms of software, CPM represents and distributes Deform, Procast/Quikcast, Pamstamp, Sysweld, Weldplanner and Cadmould-F.

## What is Industrial Consultores CPM's

## current and intended involvement in the automotive industry?

The automotive industry forms about 90% of CPM's overall business and evidently provides tremendous opportunity for us. Our future plans are based on the company's continued involvement in this sector, as it continues to expand steadily within Mexico.

## Can you describe both Consultores CPM's inspection and testing measurements, and provide a case study?

Testing and inspection measurements form a large part of CPM's services. We offer static analysis, instability analysis, fall tests, analysis of pressure recipients, analysis of mechanical ensembles, analysis of natural frequencies and forced frequencies, stable and transient thermal analysis, fatigue testing, non-linear analysis and fluid flow analysis. Our employees are extremely trained, many with PhDs in materials, so we can offer feedback and solutions that will change our customer's productivity and products.

## In what ways does Consultores CPM hope to grow over the next five years?

Next year, CPM will try to open an office in the US. We have capable engineers and competitive wages, so hopefully the company will be able to provide drafting and modeling services there. Next year we also want to invest in our own shop with at least one press and machining equipment to make tools and devices so that we do not have to subcontract to make prototypes, a very popular demand.

In the next three to five years, CPM hopes to open more offices in Mexico, especially in the North West area of the country and in Puebla, given the automotive industry is growing rapidly there. —

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# Humberto J Garza & Carlos E González

HG: President

CG: Business Development Director

**EVCO PLASTICS DE MÉXICO**



HG



CG

## Can you provide a brief history of EVCO Plastics and its operations in Mexico since 2000?

HG: The original company, Inyección de Plásticos Regionmontanos (IPR), was founded in 1995 as a small Mexican company specializing in plastic injection molding. We started very small with only three to five operators, two machines and one shift. In 1999, we were introduced to an American plastic molder company, EVCO Plastics, that wanted to expand their operations into Monterrey Mexico, but required a local partner. The two companies then started a business relationship, which entailed local production for EVCO, and after a year of success the relationship transformed into a joint venture, resulting in the establishment of EVCO Plastics de México in 2000. The company currently has 610 employees in three separate plants in Mexico, with 84 injection molding machines from 50 tons to 3000 tons, of which two are located in Monterrey and the third in Juárez.

## Does EVCO Plastics plan to move its Chinese production operations to Mexico?

HG: EVCO started moving production to Mexico in 2008 during the American economic crisis. The crisis caused Chinese labor and tax costs to increase rapidly resulting in Mexico gaining competitiveness in the market. Importing parts from China meant that there were prolonged lead times on shipping containers and inventory; as companies were focused on cutting costs, they required local suppliers to have inventory on hand for speedy delivery times.

## What is the capability of both plants in Monterrey in terms of output?

HG: EVCO is diversified across markets.

The main industries in which we operate are automotive, electronics, industrial, home appliances, medical, and consumer products. Over the last five to seven years, the company has mostly grown in the automotive sector, with automotive sales increasing from 10% in 2008, to a total of 27% in 2016. We expect automotive sales to rise to 30% to 35%, and with an increase in our plant's capacity, as much as 50% growth is expected. It is, however, EVCO's business strategy to be diversified over different sectors in order to reach a broad market.

## What differentiating processes and products does EVCO offer to the automotive industry?

CG: The process of plastic injection molding is quite common due to its simplistic nature. EVCO obtains advantages mostly by the services provided in conjunction with its products. These include delivery, distribution, and other value added services such as decoration, assemblies, vacuum metallizing and painting. We have a wide variety of machine sizes, ranging from 15-ton to 3,000-ton machines and we offer metal-to-plastic conversion. We apply our expertise in tooling development as to create a product at the lowest possible cost. We can replace heavy and expensive metal parts with plastic parts that are more affordable, equivalent in strength, and have remarkable endurance in high temperature environments.

## What is your client base in the automotive industry?

HG: Most of our customers are international players and EVCO in Mexico has a direct relationship with these customers. Final assembly of vehicles is mostly done at Mexi-

can plants from where they are then shipped to OEMs. Most of our automotive customers are Tier 1 companies, and we sometimes also sell products to OEMs, such as Polaris.

## Can you provide insight into technological and material advancements seen in the plastic injection molding market?

We are working on perfecting an electric pick-up truck. It was completely designed by Metalsa, the IDIADA Tech Center in Spain, and CONACYT, including the engine, and we managed to achieve our goal of producing the vehicle without increasing its weight. Given the weight of the batteries needed in electric cars, this was incredibly difficult. Metalsa has many developmental projects underway to prepare for the changes that will come within the next ten years.

## Do you have a final message for our international readers about EVCO and the automotive industry?

HG: A key decision for EVCO was to join the Automotive Cluster of Nuevo Leon (CLAUT). Through a system of networks including the government, academic institutions and the private sector, the cluster introduced us to many new opportunities. As a competitive strategy, we are implementing the TPS (Toyota Production System) into our company. By being a member of the cluster, we have direct access to TSSC (Toyota Supplier Support Center) whom is assisting us in the process of implementing the system. The Automotive Cluster (CLAUT) has three major goals for our industry: Growth, Competitiveness and Collaboration among all members Private Sector, Academy and Government. I think this Institution is doing a great job. —



**Please provide a brief history of NPS and the company's presence in Mexico.**

NPS was founded in 1906 as a steel service center, and we have been significantly growing over the years. Our main office is in Houston, Texas, and we have six plants in the United States. Since the establishment of our facility in Mexico in 1991, demand from our customers has inspired the expansion of our processes and product line. NPS attained machines to fabricate sheet metal and in 2007 we acquired stamping capabilities.

In 2007, we had sales revenue of \$70 million; we have since grown to a sales revenue of \$140 million in 2015. This success was realized through attaining new customers as both a Tier 1 and Tier 2 supplier. Eighty percent of NPS' production for the automotive sector is as a Tier 2 company, supplying to major clients such as Magna and Metalsa. We also serve as a Tier 1 for Chrysler.

In Mexico, NPS has a production facility which consists of two buildings, both being about 12,000 sq. meters. In the one building we have a steel service center with slitting and leveling capabilities. We also have presses with 200 to 2,000 ton capacity. NPS has plans to expand our presence in Mexico and establish a manufacturing plant in San Luis Potosí.

**What are the strategic advantages of operating in the Northeast region of Mexico?**

## Miguel Reyes



Automotive Sales Director  
**NP STEEL S.A. DE C.V.**  
**MEXICO DIVISION (NPS)**

As NPS is shipping materials to companies across the border, it is a great advantage that we are located close to the United States. Most of our customers are also located in the Northeast, and we decided to establish our facilities in Monterrey as to give us a logistical advantage.

With the growth that NPS has experienced over the years, we are currently shipping products to the south of Mexico. The idea with establishing a facility in San Luis Potosí is to bring our business to the south and open more capacity and decrease logistical costs for our clients.—

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## Noé Beltrán Lozano

Director  
FALCCOS

### As a purely Mexican supplier, could you give a brief history of FALCCOS and its activity in Monterrey?

FALCCOS de Mexico was founded six years ago with the main goal of being involved in the automotive and home appliances industries. Initially, we began making components for molds with the objective of making a diverse range of industrial tooling, now this company is named FALCCOS Metal Mold. FALCCOS de Mexico has two additional subdivisions: FALCCOS Plastic, S.A. de C.V., which was founded two years ago to produce plastic components and assemblies for the industrial, home appliances, and automotive industries, such as the German Tier 1 AZ Components and Rebel Technical Solutions, S.A. de C.V., which commercial-

ize industrial products. Presently we are a local Mexican company, but believe that we are in the right moment to expand and find new commercial relationships all over the world as we want to be an integral solution for our clients—from the initial design to the final distribution of products.

Currently we are designing and producing sixteen molds in order to produce the plastic components for FICOSA North America in our plastic plant, meeting their specifications with the highest standards of quality as we work on achieving the ISO/TS16949 certification. FALCCOS continues to invest in new equipment, including software, to keep advancing at the same growth rate as our clients. This year in the molding business, we are going to invest in a laser welding machine, another EDM Machine, two High speed CNC Machines, and a software that simulates die casting and plastic molding to add to our thirteen injection machines that range from 85 to 700 tons.

### How would you assess the availability of human capital in the Northeast? Do you think the triple-helix model of government, academia and private sector collaboration is fully functional?

This area is plentiful in skill, and FALCCOS has a training plan for new employees so they can keep up with our high standards. The expertise of a worker all depends on their perfection of basic training and means of integration. Supervisors and technicians are provided by private schools that offer courses in our realm of business. ProMéxico and CLAUT offer a great deal of support to many businesses, but the most important thing is to be in the right place at the right time when the opportunities come.

On the academic side, there are ways to get involved, but plans for improvement should be put into place. For example, we do not have access to plastic injection schools. I think CLAUT's model is truly great as an overarching process, but at the same time, there could be more specialized training for the specific needs of the area. Whenever a new company is born, it has many barriers to break into the automotive sector, even more as a small company. But opportunities are always present, and our first automotive customer was Nemark, who opened its doors and gave us a great opportunity to supply components for molds when their providers could not give them what they needed. Since that breakthrough, FALCCOS continues to add value to our clients by focusing on customer service and results; that is what has helped us increase our presence in the automotive sector.

### What are some of the key priorities and strategies for FALCCOS in the coming three to five years?

Mexico is getting stronger as an automotive supplier and FALCCOS will be a group of highly competitive companies in the automotive and home appliances industries with the best manufacturing practices that allow us to be the best option for our customers. Our main focus is continuing to grow through the certification processes of our businesses and internationalization.

For example, we also have had an incredible opportunity to go to Japan to study how to better integrate the five S's model into our operations, based on the principles of: Sorting, Setting in order, Shining, Standardizing and Sustaining. Japanese organizations are working to certify businesses in Mexico in this practice, which may sound like a basic concept, but it is important to live out that culture.

FDI in Mexico by automaker, 2007-2016  
(millions of US dollars)

COMPANY	2007-11	201	2013	2014	2015	2017	ACCUMULATED
Daimler Trucks	871						871
General Motors	4,910	420	691	5,000			11,021
Volkswagen	1,603		720		1,000		3,323
Ford	3,000	1,300			2,500		8,400
Fiat/Chrysler	550		1,264			1,600	1,814
Nissan	600	2,000					2,600
Honda	500		470				1,270
Mazda		1,300	120	100			720
Audi							1,300
BMW				1,000			1,000
Mercedes Benz-Infiniti				1,240			1,240
KIA Motors							1,000
Toyota					1000		1,000
TOTAL	12,834	5,020	3,265	8,340	4,500	1,600	35,559

SOURCE: ProMéxico



# Raúl López

Mexico Managing Director  
**MPG CASTING TECHNOLOGIES**

## Can you give a brief history of MPG Casting Technologies in Mexico and your activities since 2011?

NovoCast and Teknik, which are both situated in Nuevo León were acquired by Grede in 2011. NovoCast is an automotive foundry, and Teknik is a foundry that is dedicated to producing castings for the automotive, truck, agricultural, Industrial and construction industries. In 2014 Grede was consolidated with HHI Holdings and Metaldyne to form MPG (Metaldyne Performance Group), which went on to be listed on the New York Stock exchange that same year. After that MPG started the process of becoming one company that provides solutions for forging, casting, machining and assembly. In 2015 MPG Casting Technologies decided to merge with and relocate the Teknik facility, and since then NovoCast has had two production lines. The older line serves the high volume automotive market through producing castings for light trucks, motor vehicles, and some industrial trucks. The newly added Teknik production line is dedicated to produc-

ing castings for the lower volume automotive, truck, agricultural, Industrial and construction industries. We have an annual capacity of 80,000 metric tons of castings and serve most of the large companies and OEMs in the automotive market. Our diverse group of companies enables MPG Casting Technologies to offer assemblies and more complex machined components..

## Can you elaborate on MPG Casting Technologies' logistics consulting services?

Since MPG Casting Technologies is a worldwide company with operations in many regions, we are now able to provide the same castings of the same components for customers in different locations. This provides benefits for the supply chain, as customers now save time and money by being able to buy products from a single and nearby facility. MPG Casting Technologies has twelve facilities between Mexico and North America.

## What innovations does MPG Casting Technologies have in terms of technological advancements and lean production?

MPG Casting Technologies collaborates with customers from the original design of a product its final delivery. One of the key factors in the casting industry is the weight of products. The industry's gradual shift towards aluminum poses some risk, as it can only be used for certain components. Where it is possible, we reduce weight without compensating the integrity of our steel and materials. MPG Casting Technologies has a patent and technical agreement with a German company to produce a metal alloy light enough to compete with aluminum. Two years ago, we launched our first project using the alloy, which will provide a lighter casting with the same mechanical and chemical aspects.

Lean manufacturing has always been one of our core values, and we have been able to add value to our business, by having good systems in place. We have also ensured that in the three years, 85% of our employees have attended a Kaizen continuous improvement program.

## What gaps are still present in the supply chain?

One core issue is that some materials are still imported at high quantities, and another problem is that Mexico does not produce enough

scrap metal, one of our raw materials. The local supply chain still has to increase the production of scrap and reduce imports of raw materials. 100% of MPG Casting Technologies' scrap resources come from Mexico, but the general levels of scrap production are too low for the entire country.

## Do you work with other stakeholders in the automotive industry?

MPG Casting Technologies is part of CLAUT and INA, which connects us to all the main players in the industry. We have several programs with the Autonomous University of Nuevo León and other Technical schools, where the top students are given internships and training programs for two years, with a chance of a full time position. MPG Casting Technologies also works with the universities to build interest in working in local foundries. In the coming ten years the problem for the need of labor in technical fields will be a challenge but at the same time our expectation is that will be solved since many universities are already producing results.

## Why is Monterrey a strategic location for MPG Casting Technologies and the automotive industry in general?

The Northeast of Mexico has a long history of industrial culture, compared to the central and southern areas of the country that have, for the past five years, experienced massive and continued growth. The age and type of universities and academic institutions in the northern region, moreover, support the growth of its industries, while the experience and knowledge of the workforce are at higher levels than in other regions. Additionally, favorable government policies and infrastructural developments have assisted the automotive industry to grow, with the cherry-on-top being the region's shared border with the United States as one of its main advantages.

## Do you have a final message for our international readers and the automotive community?

Mexico is the perfect location for growth, taking into account that it is a stable country. Mexico provides various benefits that include a close proximity to some of the world's largest markets, the quality of work is high, and history shows that MPG Casting Technologies has been very successful in Mexico. —



# Héctor de Hoyos Muñoz

Director Ramos Arizpe Complex  
**GENERAL MOTORS (GM)**



## Can you provide an introduction to General Motors and its role in the automotive industry in Mexico?

General Motors de México has nearly 81 years of presence in Mexico. We have 4 Manufacturing Complexes located in Guanajuato, Coahuila, San Luis Potosí and Estado de Mexico, in addition to a Regional Engineering Center, Customer Care, Aftersales and Quality in Toluca. We generate over 15,000 direct jobs. Our operation comprises the production of vehicles and components in Mexico, as well as the commercialization in countries of Central America and Caribbean.

GM has the most complete portfolio in the industry in Mexico, with more than 40 models in 4 brands (Chevrolet, Buick, GMC and Cadillac) available for every taste and need. More than 25 models offer OnStar, the exclusive GM system that provides Emergency, Security, Navigation, Diagnostic and Connectivity services to drivers and passengers. As far as the role of the industry in the Northeastern of Mexico, GM is a pioneer in the automotive development of the region. We established our operation in Ramos Arizpe in 1980 and were a leader in helping create a local supply chain in Mexico.

GM's presence in Mexico in Coahuila, Guanajuato, San Luis Potosí and other locations, promoted economic growth through the development of important automotive clusters and the arrival of other automakers to the country, which has reflected in a strong economic impact, jobs and industrial transformation.

**Part of your supply chain includes local Tier 1s like Grupo Bocar, Vitro, Metalsa, and Nematik. How important is it to build a local supply chain?**

A strong, local supply chain is important for the company, since it benefits our cost structure. GM has consistently increased the percentage of Mexico-sourced parts that are used in our vehicles built in the country.

## With the increasing demand for vehicles to be more lightweight and efficient, how do you envision the future for vehicles in the next five to ten years? How much of each vehicle will be made of newer materials such as plastic or aluminum?

Vehicle mass efficiency is an important part of GM's comprehensive strategy to give customers better fuel economy and driving performance, uncompromised safety, more space, and a lower cost of ownership.

At GM, we believe that there's no single solution or material for reducing the weight of a vehicle. It is about the right mix of different materials throughout the vehicle applied in a smart way, including high-strength steel, aluminum, composites and other materials. Enabling our light-weight strategy are new joining technologies, such as GM's industry-first and patented aluminum-to-steel welding.

A good example is Cadillac's all new CT6, where our mixed material approach saved almost 100 kg compared to a predominately steel construction.

## With your long-term experience, what future do you see for the automotive industry in this region?

Mexico's automotive industry will continue growing, in Mexico, which will demand a wider range of suppliers, additional trained personnel and building the infrastructure. Mexico has become an important destination for the production of vehicles not only because of its qualified labor, but also its strategic location for the shipment of finished

products to different countries.

## In 2014, General Motors México announced an ambitious 5 years US\$ 5 billion expansion program. Could you provide more information about this, especially regarding Northeastern Mexico?

In December 2014, General Motors announced an investment for US\$ 5 billion USD in Mexico for the 2013-2018 period, which would be used to modernize and expand its manufacturing facilities in Toluca, Ramos Arizpe, Silao and San Luis Potosí.

To this day, US\$ 1.4 billion have been invested in two projects:

- A new engine plant called SGE (Small Gas Engine) in Toluca to produce efficient engines that will drive the new vehicles generations.
- A new 8-speed transmissions plant at Silao Complex, as well as other improvements in facilities.

Out of the remaining US\$ 3.6 billion, during the first quarter of 2015, we announced the investment of US\$ 350 million for Ramos Arizpe Complex to produce the next generation of Chevrolet Cruze, and US\$ 87 million to expand the capacity of the SLP Stamping Plant. More details on the deployment of this investment will be announced in the future.

## For GBR readers, domestic and international, do you have a final message about General Motors México and its role in the North American automotive industry?

After nearly 81 years in Mexico, we are one of the three major auto producers and exporters in the market. In 2015, we celebrated the production of 690,000 vehicles, more than 990,000 engines, and 1.2 million transmissions, positioning us as a large and important vehicle producer in the global General Motors family. —

# Ing. José E. Celestino Ontiveros & Ing. Cuauhtémoc Salas Fuentes

JCO: Sales Manager CSF: Director

**C&S MECATRONICS TECHNOLOGIES, S.A. DE C.V.**



JCO



CSF

## Can you provide a brief history of C&S Mecatronics in the automotive industry?

C&S Mecatronics Technologies was founded in 2004, and our business with FICOSA facilitated our entrance into the automotive industry. Together we developed a number of projects, specifically in emergency brakes and gear sticks. After 2009, we expanded as a large mechatronics company. We noticed that in spite of crises in car OEMs, companies that produce auto parts tend to withstand, because the constant updates in car models guarantees that new parts are always needed.

## What is your regular production process, from design all the way to manufacturing?

When C&S Mecatronics meets with a client, we first establish a timeline and a commitment. Their machine is developed through a control design processes, which the engineering department uses to design exactly the machine's characteristics and functions. From there, the mechanical engineering department tests the designs to detect possible defects. The design control department documents the amount of sensors, pistons, and what other electronics are needed, so the controls can be designed and made. After this, the fabrication process can begin. Once assembled, we use computer programs to ensure every component functions correctly. Once the outcome is approved by the client, we take the machine to the plant for final tests with line operators. A manual is then issued to the customer, so they can service it if it has a problem.

## Is it hard to find the talent you need in this workforce to perform these operations?

Finding the appropriate talent is always a challenge, and we ensure employees we discover are trained by local universities in Nuevo León—such as Tecnológico de Monterrey, Universidad Autónoma de Nuevo León, and La Universidad Tecnológica de Escobedo. We emphasize training, so employees imbibe our work philosophy, most especially if they have previously worked for other businesses.

## What were your experiences as a new entrant the automotive industry, such as certification and obtaining international clients?

Typically, the companies we partner with have clear goals of cost reduction, the rationale behind looking towards investing in other

countries. C&S Mecatronics earned its opportunities because of our impressive value for a lower cost. With more experience, our reputation spread within the industry and more companies began to trust us. Obtaining clients gets easier as word-of-mouth spreads. Although companies all around Mexico have contacted us, our strategy is to concentrate ourselves in Nuevo León, rather than open other branches.

## What plans does C&S Mecatronics have for the near future?

Our plan is to continue specializing in automotive industry systems assemblies, to obtain more clients we can serve, and develop stronger design and fabrication teams. We do all this with the aim of solidifying enduring relationships with our clients. —

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**C & S MECATRONICS**  
TECHNOLOGIES, S.A. DE C.V.

*¡ Si lo imaginas, lo hacemos !*

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- ✓ Hardware design
- ✓ PLC Programming

**MANUFACTURING**

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- ✓ Assy work station
- ✓ Functional test station
- ✓ Poka yokes
- ✓ Fixtures
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- ✓ Robotics cell
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- ✓ Insulation noise cabin
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# Central / South



"The overall business climate in Central Mexico is thriving, as more sophisticated, value-added manufacturing in technologically-advanced industries, as well as rising income and pay, have all contributed to Mexico's growing economy and a more favorable business environment. The Central Mexico is also establishing itself as a specialist in exporting luxury vehicles to the world, which is anticipated to be the fastest-growing segment over the next five years."

Eugenio Madero,  
President,  
Rassini



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• Tlalnepantla

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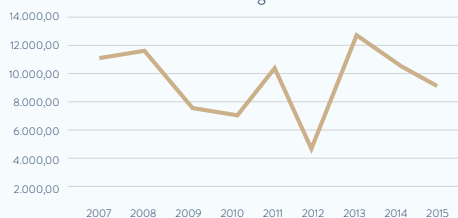
Automotive exports for the Southern/Central region 2014: 26,534,037,000



The 101 Tier 1 supplier plants in this region manufacture seats, ac systems, hydraulic bottle jacks, interiors, motor parts, electric systems, stamping, and suspension

Source: CIES with INEGI

South / Central Direct Foreign Investment 2007-2015



Source: CIES with INEGI

21%

The southern/ central region constitutes for 21% of the exports for the automotive industry as of 2014

Source: CIES with INEGI

# The Historically Opportune Automotive Destination

The Ford Motor Company established the first automotive plant in Mexico in 1925, incorporated with a capital of \$250,000. Located in San Lazaro, Mexico City, Ford's first plant was a rented warehouse big enough to fit the 250 employees needed to make a total of 50 vehicles a day. Using solely U.S. made parts, the factory mostly produced Model As, the replacement of the Model T circa 1928. Employee turnover was extremely low, as the company paid \$3 a day in comparison to the average \$1.25 a day wage at the time. It was not until 1962 that Ford moved its operations to Estado de Mexico for larger and cheaper space to run its operations.

In today's business environment, land prices and tenure of employees continue to draw attention to the Central/Southern region of Mexico. Inevitable rises in land prices and labor costs due to the increased prosperity experienced in Nuevo León have hiked production costs of the Northeastern Mexican region, making the southern regions of Bajío and Central/Southern Mexico much cheaper and attractive by comparison, and, at times, more competitive, especially when con-

sidering their higher availability of human and intellectual capital, as well as natural resources, such as water.

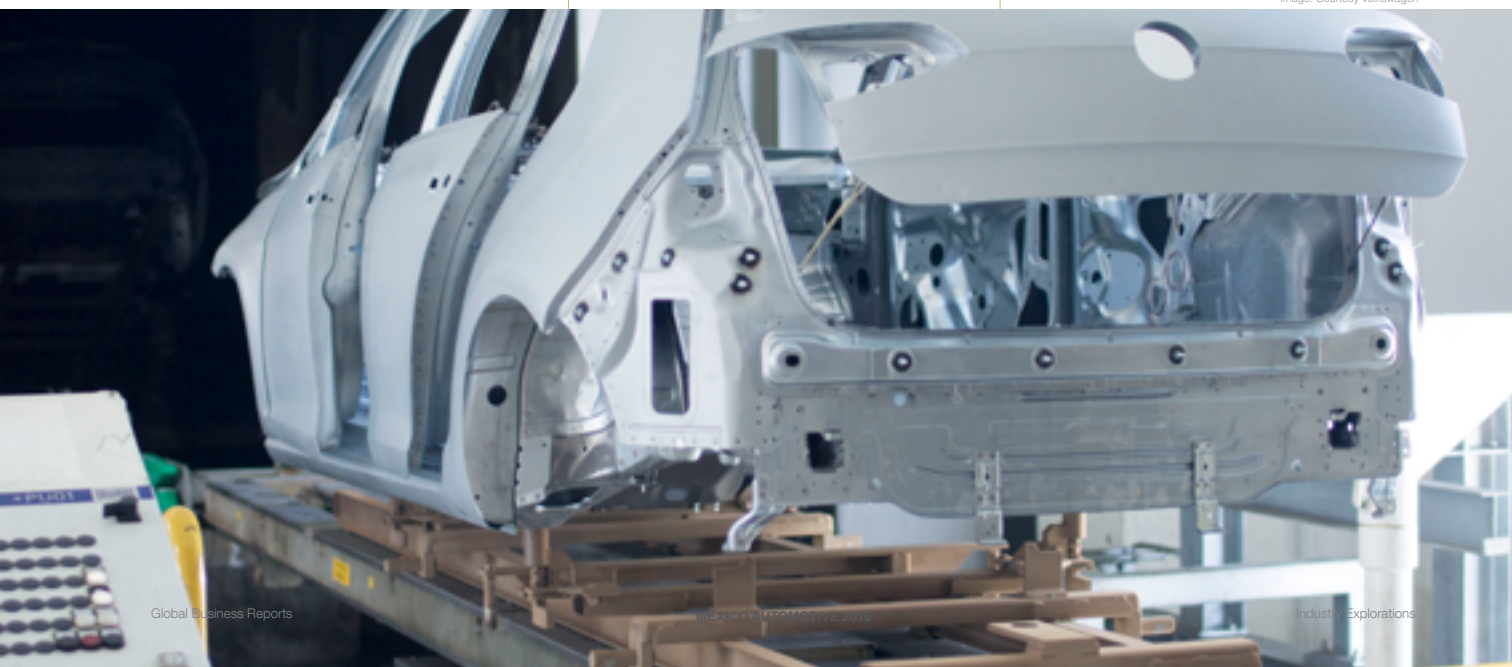
But, when comparing Central Mexico to the Bajío region, where the infrastructure and skilled labor pool is around the same, Alberto Piñones, general operations director of Hitachi Mexico, argued: "The advantage of operating in Central Mexico is that there is less competition for labor as there are more human resources available in the area, given that the State of Mexico has many universities and technical centers that we are linked to, which produce a sufficient amount of talented mechanical and electrical engineers."

The employee turnover in Queretaro compared to the State of Mexico, moreover, is more than double—where in Queretaro turnover is about 5% to 8% monthly and in the State of Mexico it is only about 1% to 2% monthly.

Mexico's most southern automotive region is comprised of Puebla, home of Volkswagen's best plant outside of Germany in terms of knowledge transfer and skilled workforce—and, most recently, of Audi, who will inaugurate its first plant,

orchestrating around 180 automotive suppliers and creating 4,200 new jobs, to continue its international production strategy where the German company will manufacture the Audi Q5 SUV, making it the first premium car to be made in Mexico, by the end of 2016. It also includes the state of Tlaxcala, which, in the last five years, has attracted over MXN \$4,000 million of investment through twenty new automotive auto parts companies setting up their operations, bringing the total to fifty one automotive companies in Mexico's smallest state; as well as Mexico City and Mexico State (Estado de Mexico).

In the past, Mexico State had captured the largest amount of automotive FDI, and thus currently has the country's largest number (230) of suppliers of auto parts and components. Coupled with a plethora of OEMs such as General Motors, Ford, Nissan, Volvo Trucks, Daimler, Chrysler, BMW, and Mexico's own Mastretta, Mexico State contributes to more than 14% of the national manufacturing GDP; while 23% of the state's exports derive from the automotive sector alone. —







# Elisa Crespo

General Director  
CLAUT ESTADO DE MEXICO

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## Could you please give a brief introduction to CLAUT in Estado de Mexico?

The CLAUT has been around for three years, and it all started as an initiative that came from private businesses to share the trending of best practices. The Cluster has been successful in establishing a work agenda in common with transversal topics making us not only very operative, but also able to yield results in the short term—especially in labor, innovation and technology development, as well as the development of suppliers with regards to energy efficiency, which in turn becomes crucial as Estado de Mexico possesses significant technological value since it is the region where 30-40% of the Tier 1s are established. As such, there are several innovation centers in this region and all are involved in this venture, coupled by the efforts of the technical and polytechnic schools which have developed government supported programs, giving rise to a tangible triple-helix model for the benefit of the automotive industry.

The focus, delineated by the Secretary of the Economy, is to strengthen the internal market of companies, meaning boosting micro, small and medium enterprises. Our collaboration scheme is meant to specifically strengthen and empower local, Mexican Tier 2 and Tier 3 companies.

In the automotive industry, car models, technology and production agendas change every three to four years, therefore, the Cluster helps these companies create business plans and developmental maps. We want to help businesses know that it is not all about acquiring certifications, but it is more about the industrial revolution 4.0. These companies need big investments, as such, being transparent and responsible, we present steps for them to develop their businesses.

## What kind of companies make up the Estado de Mexico Cluster?

The members of the cluster come from all aspects of the value chain, including OEMs and also Tier 1-3s. We have contractors and technical development companies as well who are involved in atomization and who are part of the chain of production, but are not so much involved in the transformation business, such as our partnerships with big names such as Deloitte, The International Young Foundation, and with the financing unit of the

World Bank. The main focus of the cluster is active participation and integration from all accounts of big to small companies as well as well funded companies to start-ups.

## What are some of the competitive advantages the Cluster offers to its members?

The first is the scheme, previously mentioned, of inter-cluster collaboration. The Estado de Mexico actually possesses more natural resources than up North, which becomes key since the automotive sector is an industry that uses a lot of water, and the valley has it. Additionally, we have a large population of graduated technicians from prestigious schools that are in line with many Centers of Innovation, yielding a prominence of high-value, high-quality technological developments in this region.

## What are the priorities for the Cluster for the next three to five years?

One of the principal goals is to continue giving the Cluster institutionalization. Though the Cluster is already recognized by the European Union, giving us congruence, we need to keep maintaining our identity as a non-political organization because it assures the permanence of the programs.

We also want to keep being the bridge for OEMs, as well as be the impulse for local businessmen so they join the supply chain and fill the gap of parts and components, which is one of the great opportunities for Mexico during this boom time. We also want to continue with this virtuous cycle that we have created with both public and private institutions as well as maintaining a closer-knit relationships between the government, academic institutions, and the industry.

## Could you provide a final message for our readers?

There have never been such great opportunities to make the country and businesses stronger as there are now, and this presidency has been key in allowing business to flourish. We are adapting to generational changes as we give younger generations opportunities. This industry is going to be passed down to an interesting generation who is more integrated and conscious of the environment; that is where our responsibility comes in. —

# BMW Moves Toward More Sustainable Production

*Written in collaboration with GBR by Ing. Carlos Gutierrez,  
Director of Government Relations, BMW Group Mexico*

In 1997 BMW set an ambitious goal to reduce 50% of the gasses emitted from their vehicles by 2020 through increasing the number of vehicles that use alternative fuel sources to their fleet.

Evolution means that machines and vehicles become more efficient and more powerful; When it comes to revolution, society must change its concept of transport technology; The fusion of these two concepts lies in electric energy.

Mobility must be intelligent. Electric vehicles have zero gas emissions, and by the year 2030 BMW hopes that the world will be running on electric, safe, and efficient transportation. The ConnectedDrive system that is under development uses laser, radar, ultrasound, and cameras to allow for a 360 degree view around the vehicle so cars can drive with little assistance. The latest research shows that these automated vehicles are capable of traveling at speeds of up to 130 kilometers per hour on the highway. A challenge that is being undertaken by innovators at BMW is programming vehicles to follow non-delineated paths and choose its driving style.

BMW is working with authorities in Mexico City, Monterrey, and Guadalajara to establish centers for intelligent transport, which means that a person's commute to work can be planned by mapping out the most efficient route possible. For example, this could advise citizens to take the subway then picking up a rental bicycle to use from the station, calculated in real time corresponding with the train schedules and bike accessibility. A new cell phone application called Enlighten tells drivers when the next spotlight will change, and based on the speed of the car, and other factors, provides a suggestion of whether to stop or continue through the spotlight.

Other cell phone applications are currently being developed in some European countries where individuals can find a car on

a street, take it to a destination, and leave it there for the next driver to use. The app shows where the nearest available vehicle is. Combined with the intelligent centers BMW is developing, vehicles will start moving without polluting. The goal is for cars to be a positive contribution to society and sharing transport is an important step to increase mobility and reduce environmental stress, and Mexico City and Toluca are great places to start.

## **Sustainable Production of Sustainable Vehicles**

BMW is looking at every stage of the production process in order to produce electric vehicles with sustainable mobility. This means that from the developmental stage, they look for ideal materials that are being produced in a sustainable way. An electric vehicle saves 40% more energy in its production than other kind of vehicles. BMW's paint shop was initially consuming around 100 gallons per minute of water, and when the team of paint shop engineers and members of the supplier network set out to reduce this amount by 10%, they actually ended up cutting their water consumption down by 30% percent. This single element in the grand overall production scheme is now able to save around 9.5 million gallons of water per year and reduce the demand that is placed on wastewater facilities as well as the burden placed on the environment.

BMW's plants around the world are running on renewable resources and the plan is to implement such techniques at the new plant in San Luis Potosi. The plant in San Luis Potosi will have a body shop, paint shop, and assembly department, and will run on 100% CO2-free electricity as most of the electricity will come from a solar cell on the plant's grounds. At the groundbreaking ceremony in June 2016, Board of Manage-

ment member for Production Oliver Zipse shared some of the unique characteristics of the new plant: "All of the BMW Group's knowledge and capabilities will be on display at our new location in Mexico. The production system being established there will be a leader in productivity and sustainability, thanks to the use of innovative technologies." The company has also developed ways to implement recycling in their car interiors; for example, the dashboard and textiles in the V3 is made of 100% natural recycled fibers.

## **Answering Consumer Concerns about Electric Vehicles**

Consumers who are thinking about the possibility of purchasing an electric vehicle are left with question of where they may be able to charge, and the fear of a sky-high electricity bill, and these are holding some of them back from taking the final purchasing step. BMW, through a partnership with Schneider Electric and General Electric, have set the goal of establishing charging stations around Mexico. Right now there are 148 strategically placed electric charging stations in the country. Some are designed so vehicles can become fully charged in merely thirty minutes. The process is consumer friendly as BMW ConnectedDrive and the app BMW iRemote allow users to see where the nearest charging station is as well as acquire information about the vehicle's power supply.

On a full battery, the car can go up to 160 kilometers and then be connected to the charger people can have installed at their homes, set at a reduced energy rate. The charging station would be separate from the meter. With this technology having breached the Mexican market, BMW currently buys US \$ 2.5 million worth of products from Mexican suppliers to develop these eco-vehicles. —



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# The Rise of Design Centers for Innovative and Integrative Solutions

Various factors contribute to Mexico's local supply chain not being able, at times, to be up to the quality and level of design and engineering that the OEMs require, which further increases the gap between the foreign assembly plants and the Mexican supplier base. To reduce this gap, private and public educational institutions are tackling these issues by creating design centers that create the much needed link and network between the OEMs and the local suppliers.

"These centers," explained Emilio Munguía Ponce, director of Mexico State's branch of the Center for Advanced Technology (CIATEQ), "help the supporting industries grow in such a manner that they can satisfactorily provide services and products to the assembly plants through R&D and innovation capabilities as we help them in the design and engineering process, as well as reaching for certifications which will open up doors for them across industries."

Some OEMs, already have their own centers of design in Mexico, (two from General Motors, two from Nissan, while Ford, FCA, and Volkswagen record one each) but these are quite limited in their scope of activity as they are either resolving local issues only [for example how cars in Mexico were having braking malfunctions due to the difficult topography, combined with the traffic density, of Mexico's metropolitan areas in comparison to the flat-lands of the United States and Germany] or, these centers depend upon the engineering, research, innovation and design centers that are located at the company's country of origin. And, thus, designs are simply sent down to Mexico for manufacturing in the traditional maquiladora way.

According to Dr. Alejandro Rojo, director of the Centro de Investigación en Mecánica Automotriz (CIMA) on behalf of Tec de Monterrey, Bosch Mexico is an example where the German headquarters was not allowing the Toluca plant to develop or make technological developments as these were handled at the R&D centers in Germany. Unsupported by their home base, Bosch Mexico came to CIMA, through their own local financing, looking to develop a project where the overheating of one of their stellar products—school bus engines—needed to be resolved. After three months' work, CIMA and Bosch Mexico were able to configure the materials and structure of the engine in order to be able to reduce the temperature by exactly the desired 9° C that was needed for the product to function. Bosch's design centers in Germany and on the global scale had been unable to crack the case all along, but through the help of CIMA, Bosch Mexico had a breakthrough in design and innovation.

As such, Mexico's metropolitan area and its research institutions, including CIMA, CIATEQ and Universidad Nacional Autónoma de





Image: Courtesy of ISGO Manufacturing

México (UNAM)'s Centro de Diseño Mecánico e Innovación Tecnológica (CDMIT), have been at the forefront of raising Mexico from simply a manufacturing country to one that is capable of succeeding in advanced and complex engineering and design projects, and is actively getting the attention of American and German companies, such as Henkel.

The State of Mexico and Mexico City have arguably the country's best and most prestigious universities and technical centers that link up directly with companies through the triple-helix model, which yields a sufficient amount of talented mechanical and electrical engineers, unlike the Northeast region which suffers from a lack thereof.

"The feedback from employers (OEMs and Tier 1s) has been quite positive with regards to the technical (manufacturing and design) training of recent graduates of schools in Mexico," argued Adrian Espinoza Bautista, director general for the CDMIT. "What the students seem to lack are social abilities such as English fluency, speaking in public, decision-making and leading. CDMIT prides itself in instilling these notions in our students through their direct engagements as they speak directly with the businessmen, go into negotiations and have to ultimately present and demonstrate results. This, coupled by our strong emphasis on design, allows our students to enter the workforce at a much higher level than the rest, who usually graduate and just end up taking an entry level position."

With a common goal of transforming Mexico's manufacturing industry, Espinoza concluded: "Mexico is no longer, and can no longer be seen as a simple hub for manufacturing, which is how the automotive industry started here. Mexico is taking substantial steps to prove that it can be a hub of design, and companies should reach out more to universities and have more trust in them, as for universities, teaching, creating, diffusing and applying knowledge is their core business."

A successful case study is the CIMA collaborating with Macimex, a 100% owned Mexican company who approached CIMA in 2009 as they were very worried that the increasing trend and rise of electric vehicles would slowly drive them out of business, given the fact that Macimex creates parts for combustion engines which would clearly not be found in electric vehicle motors. "CIMA showed Macimex how to transform the company that was 100% manufacturing to a company that has engineering and technological design within their installations," said CIMA's Rojo. "As such, we saw that we could take companies to a new level which was incubating design and engineering centers. And so, one of the CIMA's main core businesses now is taking manufacturing companies and helping them have a design and engineering center so they can attend to the necessities of their product from origin and conceptualization, to prototyping and pitching, so they can win the projects to carry out the manufacturing."

Rassini, on the other hand, has bolstered its position as a leader in technology through collaborative efforts with academic institutions across the globe. In Mexico, the company has partnered with the UNAM and Benemérita Universidad Autónoma de Puebla centered on science and technology-based research agreements with materials and equipment training. "Staying committed to a socially and environmentally responsible business model, we offer extensive, ongoing training and development programs to our employees and region to ensure that local talent is capable of developing world class content," stated Eugenio Madero, president of Rassini.

The use of the latest technology in design tools and advanced engineering at manufacturing facilities has allowed Rassini to incorporate Ferritic Nitro Carburizing anticorrosive treatment to brake rotors improving the life of the rotor, while reducing noise and vibration as well as help OEMs meet CAFE and CO2 requirements. "We're currently developing new solutions that will support future vehicle generations," continued Madero, "such as fully recyclable chassis components made of thermoplastics and high-performing, lightweight brakes for electric cars. In addition to setting new engineering standards for the industry, Rassini's new processes and technology solutions have allowed us to reduce our product development time by as much as 60% in some instances, which ultimately reduces costs." —



## Dr. Jan Hegner

CEO  
DAIMLER BUSES MÉXICO

### Can you give a brief introduction to Daimler and the company's operations in Mexico?

Daimler has been operating in Mexico for more than 30 years. The company started by only supplying engines, and then also started to manufacture medium and heavy-duty vehicles. Today, Daimler's offer for the country includes trucks and buses, but also light vehicles. Composed of more than 7,500 employees, Daimler in Mexico continually works to maintain its leadership in the Mexican market for buses, trucks, tractors, vans and luxury cars as well as being the first choice provider of financial services for dealers and customers. We have various manufacturing facilities in Mexico, which include our plant in García, Nuevo León that is dedicated exclusively to buses; truck plants in Santiago, Estado de México and Saltillo, Coahuila, and we are establishing another for the car manufacturing in Aguascalientes. Our local facilities enable us to control the manufacturing process quality and that's

reassuring for the customer. Our aim is to offer our full scope of services to the Mexican market.

### How would you assess the Mexican bus industry and its potential to keep growing?

The bus industry is and has been important in Mexico for the past three decades. Daimler has been leader of the market for the last 15 years and is still innovating with a whole scope of products and solutions for the problematic of the present. Daimler is optimistic for the future of the bus industry in Mexico. Everywhere in the country there is the necessity to improve the public transport, Bus Rapid Transits (BRT) is one of the concepts that could help. We have BRT experience in various places such as Istanbul and Santiago de Chile. What we are doing in Mexico is to collaborate with our Brazilian and German colleagues, who are highly experienced in BRT, to come up with a proposal for mobility solutions specific to a given city. It is not just about selling products (buses), it is about delivering solutions.

### Mexico is seen as an exporting country, but Daimler wants to increase its local presence. How can the local market be revitalized?

We have seen considerable stability in the market over the last few years, even if some local and federal issues such as security or the current low oil prices may hinder the unleashing of the potential of Mexico. The key for Daimler is to adapt to the framework and to the customer. Formerly we would deliver vehicles; today, we not only deliver vehicles and mobility solutions (in local currency), we also offer the best Total Cost of Ownership (residual value), and the financing support from Daimler Financial Services, that ultimately gives us the competitive edge in the market.

### What is Daimler's strategy and goals for the next three to five years?

Daimler's aim is to continue to move our business forward. In terms of our car division, we are investing in Aguascalientes, with other companies, which will be up and running within the next three years. For the commercial vehicles we have preparations ahead to manufacture our products with technology EURO VI, pres-

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Composed of more than 7,500 employees, Daimler in Mexico continually works to maintain its leadership in the Mexican market for buses, trucks, tractors, vans and luxury cars as well as being the first choice provider of financial services for dealers and customers.

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ent in Europe now, but expected in Mexico for 2018 or 2019. We have to be ready by the time the new law and emission standards are declared.

There is also an expectation to increase the natural gas-powered vehicles along with an expected increase of infrastructure needed for the development of this segment.

Between 2016 and 2017, Daimler Buses Mexico will introduce both passive safety features, such as sensors and radars, but also more advanced and active systems that will react to ensure safety with the highest precision. Our strategy is to continuously upgrade safety, fuel efficiency, TCO and connectivity of both passenger vehicles and commercial vehicles.

Our aim is also to keep educating the entire system such as our employees, the dealers and the end users on the EURO V after-sales services.

Within the next three to five years, we will also continuously add to our product portfolio as to offer flexibility to understand and provide the best products for our customer's requirements.

We will be focusing on maintenance and after-sales to accompany our customers in every situation.

In addition, the world's biggest bus manufacturer, Daimler Buses, is systematically extending its technological leadership. The Mercedes-Benz Future Bus with CityPilot has driven autonomously for the first time on a route of approximately 20 kilometers in Amsterdam. —



## Francisco Maciel

Director of Finance and  
Country Director of Mexico  
**FAURECIA**

### Can you give a brief overview of Faurecia and how the company has evolved in Mexico?

Faurecia started operations in Mexico in 1997 as a joint venture with a Mexican company. Our first activity in the country was introducing our interior system to our customer, VW Mexico. After three to four years, the company significantly started to grow and we attained new business in the seating and emission control technology markets. Today we are a major player in the global automotive industry and a leader in our areas of business.

In 2010, Faurecia had 3,500 employees in Mexico, and we have grown to currently employ 9,000 people. We have 14 manufacturing plants spread across all the automotive clusters in Mexico, and in 2013, we started R&D activities for our seating business—in addition we have R&D activities related to interior systems.

### What is Faurecia's focus in the Northeast region in Mexico and what invest-

### ment will the company make in this area?

Faurecia's exhaust systems plant in Hermosillo is one of the oldest plants in Mexico, and we service Ford from this facility. We also have two plants in Coahuila, one dedicated to interiors and one dedicated to seating.

### The move to Mexico was made through a joint venture with a Mexican company. Are joint ventures across the country part of Faurecia's expansion strategy for a larger footprint in Mexico?

The decision to expand our operations to Mexico was made based on our client's request to be closer to them. It is not Faurecia's standard to start operations with a JV, but at that time in Mexico, it was necessary. Faurecia had very little experience in the Mexican market and we decided to establish our business together with a company that had knowledge of the country and knew the local rules and procedures. The Mexican company had experience in injection plastic parts, which is very relevant for interior systems.

### What has Faurecia's main driver of growth been over the past years?

Faurecia was able to grow over the years as we started to transfer more and more of our activities to Mexico. We followed the growth of the country and the trajectory of the industry, taking advantage of all the opportunities Mexico had to offer. We were one of the first industry players to implement a manufacturing plant in Mexico, which is what initially set us up for significant growth.

### With a global perspective, how do you view Mexico as an automotive destination?

The automotive industry in Mexico has grown significantly over the years, and I believe that Mexico still has impressive potential. Mexico has an industrial mindset, which is key for growth activity, and the industrialization of the country is mature enough to support the automotive sector's growth.

The challenge is that the supply chain for the automotive industry has not yet completely been localized, which is something that is critical for sustainable development.

### How do you compare the supply chain in the Northeast region to other regions in the country?

The supply chain in the Northeast of Mexico does not significantly differ from other regions in the country. The Northeast region may have a logistical advantage, as we are closest to the US. The main challenge in the Northeast region is the competitiveness of the market, as it is very industrial and we have to work to attain and retain good professionals.

### A majority of Faurecia's employees in Mexico are local nationals, with the remaining few being foreigners who can transfer international knowledge. Can you elaborate on the process of information transfer within the company?

Faurecia employs about 9,000 employees, of which only 55 are not Mexican. Within our R&D plants, 10% of our employees are foreign nationals as they are key in our R&D activities. We attain senior professionals with knowledge and experience to build and develop their own teams and teach them through transferring their knowledge.

### How important is Mexico to the overall operations of the company?

All of North America is very important to the company's global operations and North America contributes about 28% to the total sales of the company. Mexico's operations are also significant and we are a big supplier to our plants in the United States as well as Tier 1 companies.

### What is Faurecia's vision and strategy for the next five years?

Faurecia's strategy is to follow our customers and the growth of the industry. We made an important expansion to our plant in Querétaro and, in 2016, we are establishing three new plants, two in San Luis Potosí and one in San Jose Chiapa in Puebla. All this preparation is to support our customers with their development in Mexico. —



# Alberto Piñones

General operations Director

**HITACHI AUTOMOTIVE SYSTEMS  
MÉXICO, S.A. DE CV**



## Can you give a brief overview of Hitachi in Mexico, and elaborate on some milestones the company has achieved?

In 2015, Hitachi merged all of its different facilities in Mexico. This was a primary integration between Hitachi Automotive Systems of Querétaro, which is mainly dedicated to the manufacturing of brake calipers and suspension systems, and Hitachi Automotive Systems of Mexico. The merger resulted in all facilities being under one umbrella and the company now being Hitachi Automotive Systems of Mexico. The purpose of the integration was to offer better services to our customers while integrating and optimizing our internal services.

## What is the scope of Hitachi's client base and what was the vision behind establishing facilities in Mexico?

Hitachi's main clients are OEMs. We are very dedicated to supplying to the Japanese manufacturers and we are also serving American and European manufacturers.

Hitachi in Mexico forms part of our American headquarters which is based in Farmington, but we have sub-headquarters in Mexico to serve the Latin American region's needs. The vision behind establishing facilities in Mexico was to take advantage of the free trade agreements, connections and infrastructures available in the country. The decision was also driven by the need to serve the North American markets as well as the entire Latin American region. From our Mexican facilities we are shipping products not only to the local market, but also many global countries.

## Hitachi covers three different regions in Mexico. What is the advantage of operating in the Estado de Mexico region compared to other regions such as Querétaro?

As many other regions, Estado de Mexico has a very good infrastructure. The advantage of operating in Estado de Mexico is that there is less competition for labor as there are more human resources available in the area. Estado de Mexico has many universities and technical centers that we are linked to and which produce a sufficient amount of talented mechanical and electrical engineers.

Our two facilities in Querétaro are more focused on brakes, suspension and ECU (Engine Control Unit). In Lerma the three facilities in are mainly focused on the manufacturing of water pumps, oil pumps, balancers, machining pistons, and electronic components. The plan is to continue growing within the region.

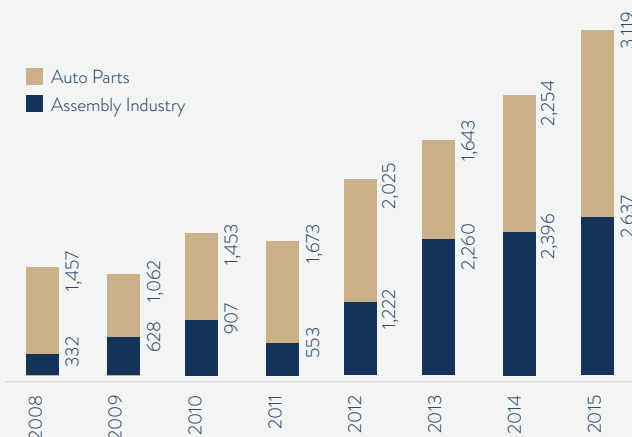
## With the plan to grow, do you foresee any challenges with regards to human capital?

The challenges will be to employ more talented engineers as well as workers on the mid-management level. On a management level, there is a significant amount of competition for talented employees and employee retention might be difficult.

## Do you have a final message for the international automotive community?

Hitachi will still be operating in Mexico for many years and our aim is to continuously expand our presence in the country. Our strategy is to expand our facilities and increase our capacities and supply not only to the Americas, but to all markets in the world. Hitachi believes that the Mexican government and universities are very well aligned with our growth strategy and they are very supportive to the growth of the automotive industry. —

Mexico: FDI received in the automotive industry, 2008-2015 (millions of units)



SOURCE: ProMexico with information from the Ministry of Economics RNIE

# Eugenio Madero

President

**RASSINI, S.A. DE C.V.**



## Could you give a brief history of your operations and role in Mexico's automotive industry?

Rassini started in 1979 when our current Chairman of de Board, Mr. Antonio Madero, bought Minas de Sanluis, whose strong cash flow in subsequent years was used for the acquisition of Rassini. In 1985, Mexico joined the GATT (now the World Trade Organization), and Mr. Madero began to prepare for future opportunities as the North American Free Trade Agreement (NAFTA) was being negotiated. This included the acquisition of Grupo Rassini in 1989 to help ensure that SANLUIS Corporación would be poised to capitalize on the benefits of NAFTA once it was signed in 1994. Mr. Madero had an international vision for the new company, SANLUIS Rassini, and streamlined the businesses to focus on the automotive industry.

Similar to his vision for Rassini in a post-NAFTA environment, Mr. Madero identified significant potential in Brazil years before it emerged as a high-growth economy. In 1996, he acquired Industrias Fabrini, the leading producer of suspensions for heavy trucks and light vehicles in that country and created a strategic alliance with NHK Spring from Japan, merging their Brazilian company into Fabrini to form RNA Automotriz.

Rassini's success as a competitive international business is the result of high-quality talent, our steadfast commitment to customer satisfaction, a commitment to technological innovation and consistently providing excellent product quality and service. Brake and suspension systems are among the most important components in any vehicle, critical to overall safety and performance.

Rassini has a large customer base with long relationships, including General Motors, Ford Motor Co., FCA, Nissan, Volkswagen, Toyota, MAN, Daimler, Scania, and Mercedes Benz, among others. We continue to diversify our product portfolio and today, in addition to being the largest designer and manufacturer of leaf springs for light commercial vehicles and the undisputed leader in the NAFTA and Brazilian markets, Rassini is also solidly positioned as a designer and producer of hi-tech brakes.

## What does Rassini do to improve local content and local skills transfer in Mexico, particularly in the Northeast?

We collaborate as much as possible with automakers to ensure local content and investments remain in this region, and we back this up by significantly investing in the expansion of our local facilities. In fact, mirroring our customers' needs, we remain focused on regional versus global growth. As part of our commitment to the Northeast region, we also strive to create a culture that is conducive to individual development so that both the company and employees benefit. We understand that employee development leads to higher productivity. To ensure this development takes place, we offer higher education programs to help employees and their families finish various levels of schooling, ranging from basic areas of education to specialized training in professional skills such as workplace safety.

Finally, we've bolstered our position as a leader in technology through collaborative efforts with academic institutions across the globe. Specifically to Mexico, we've partnered with Universidad Nacio-

nal Autónoma de México and Benemérita Universidad Autónoma de Puebla centered on science and technology-based research agreements and materials science training.

## Rassini played a key role in helping Mexico surpass Brazil as Latin America's number 1 vehicle producer. Could you give us an instance of how you were able to contribute to this?

The overall business climate in Mexico is thriving, as more sophisticated, value-added manufacturing in technologically-advanced industries, as well as rising income and pay, have all contributed to Mexico's growing economy and a more favorable business environment. Mexico is also establishing itself as a specialist in exporting luxury vehicles to the world, which is anticipated to be the fastest-growing segment over the next five years. With a solid and diversified customer list, we are at the forefront of this change. Mexico's openness to international trade agreements and a welcoming foreign investment regime has also enabled the country to compete in the global automotive industry, one of the world's most competitive business sectors.

## How do you see the future for Mexico's automotive sector, particularly in the Northeast?

Rassini continues to actively invest in strategic growth areas. We're positive about the upward trend in our automotive sector as we continue to see pent-up demand and an enhanced product mix. As we continue to grow our relationship with suppliers and OEMs, we remain confident that we may continue to gain market share and be viewed as the preferred supplier and banner of choice. —

# Innovative Solutions for the Environment

“There are, indeed, vast opportunities for design and innovation in Mexico,” argued Manuel Mendoza, director general of American Textil, “The country may seem like a primarily assembly region because of its long history of OEMs establishing their assembly plants here, and our low labor costs are definitely an advantage and perhaps a main sticking point as to why Mexico is considered a manufacturing country, but our access to natural resources is also important. The automotive industry consumes a significant amount of water in treatment plants and we need innovative solutions that prevent water waste, as this not only will reduce cost and energy, but also will safeguard the environment.”

In terms of air emissions, furthermore, “Mexico is ahead of the pack along with Brazil in Latin America. In comparison to the United States and the European Union, however, Mexico is decades behind as regulations are much stricter there, while in Mexico they are very old, or rather, quite easy to comply with,” stated Manuel Ortiz Monasterio, managing partner of ERM, the largest sustainability consulting company in Mexico.

Mexico City is known for its pollution, but what is perhaps most shocking is that it is actually the seventh most polluted city in Mexico, meaning there are five or six industrial cities even more polluted. “Different industries will be held accountable for their supply-chain, however,” argued Monasterio. “The impact of a car, for example, has to do a lot with the impact that the assembly plant actually has. Looking forward, there will be a dire need for as-

sembly plants to understand this and thus try to use their power to influence their suppliers to help reduce their environmental and social impact.”

Ford Mexico, for example, has helped its supply-chain implement environmental management systems, as well as monitoring their use of chemicals, by requiring suppliers to use certain environmentally-friendly chemicals for their products and processes. Similarly, EXEDY’s plant in Japan is 100% solar powered. “This sustainability concept is translated in all of our processes in Mexico. Global warming is imminent, and the automotive industry and its players should all focus on playing a critical role in its prevention given its contribution to the problem. This is why the goal is to make automotive motors even more ecological as to consume less fuel,” argued Roberto Rodríguez, general manager of EXEDY Mexico Aftermarket Sales.

“Managing environmental and social impact, most importantly,” concluded Monasterio, “should not be seen as a cost; it should be seen as an investment, and managing them well has a huge return on investments, as it reduces accident rates, and as a consequence, insurance and social security (I.M.S.S.) rates also reduce significantly, as well as reducing liability for contamination. Managing water also has huge benefits, not only for cost reductions, but also through recycling and reusing, raw materials and waste disposal efficiency will be maximized, not only in the automotive industry but in many other industrial sectors.” —

Image: Courtesy of FCA



# Manuel Ortiz Monasterio

Managing Partner

**ENVIRONMENTAL  
RESOURCES MANAGEMENT  
(ERM)**



**Can you please provide us with a brief introduction into ERM and its role in the automotive industry?**

ERM is the largest sustainability consulting company in Mexico, with over twenty-five years of experience and seventy five full-time consultants. We have had a strong presence in the automotive sector since the early years of the company as other sectors in which ERM was very strong elsewhere (e.g. O&G and Power) were, at the time and until recently, mostly controlled by the state-owned companies. At the same time as Mexico has become a major vehicle manufacturer and more automotive manufacturers and supply companies come into the country across the supply chain (Tier 1s, Tier 2s and Tier 3s) we are looking to grow even further our involvement in the automotive industry.

**What are some of the products and services ERM provides its clients?**

Rather than specific products or services, ERM aims to provide solutions to support the automotive industry with dealing with the challenges that they face (e.g. climate change, increased regulations and enforcement, increased pressure from stakeholders, NGOs or media, water resources availability; or harnessing an ever-growing amount of EHS related data generated, managing their supply chain performance, among others) by putting together a set of services (assessments, audits, modelling, GIS, information solutions, sampling & analysis, etc.) that will fully meet their needs in a tailor-made fashion, helping them manage their environmental, health & safety and social risks in a sustainable way and throughout the life-cycle of their operations.

For example, ERM works for the automotive industry during the planning phase in envi-

ronmental site assessment where we analyze the potential liabilities of the prospective industrial properties, we help clients understand the federal and state regulatory context, and with obtaining all sorts of environmental permits. During the operational phase we help them implement integrated sustainability management systems, build a safety culture beyond compliance that will actually help improve performance, or support them with their waste management strategy to ensure that they use options that will not end up being a problem in the future. Finally, when there is the need to divest or close a facility we support with permit closure, contamination investigation and remediation, or decontamination and demolition of industrial facilities.

**How would you assess Mexico in terms of its environmental regulations, especially within the automotive industry?**

Initial permitting (i.e. through environmental impact assessment) is pretty much the same as elsewhere, except for the fact that there is no social impact assessment required for the automotive sector.

Other permitting, such as air emissions is still much less complex than what is found in the U.S. or Europe. Water-related regulations are average in terms of water sourcing and discharge except that storm water is not regulated. Hazardous waste management follows similar rules as in the U.S., and in the last few years regulations relating to special waste have been enacted. Contaminant transfer and release reporting has been evolving to something somewhat similar to our North American counterparts.

Lastly, soil pollution has evolved during the last decade and covers contamination mainly relating to hydrocarbons, metals and PCBs,

but does not cover a broad range of volatile or semi-volatile compounds as it is included in the U.S. or Europe; groundwater pollution is still a pending item in Mexico.

In spite of the differences, slowly but surely, regulations will likely converge to something similar to what our main commercial partners have, driven by requirements and the influence from the financial sector, NGOs or corporations.

**What would be your final message to the automotive industry about sustainability in Mexico?**

Managing environmental and social impact should not be seen as a cost but, rather, as an investment, and managing them well can have a very significant return on investment, not only financially speaking but in many other different ways starting with protecting/enhancing companies reputation and "social license to operate" and in other more concrete ways such as: reducing accident rates, and, as a consequence, paying lower insurance and social security rates, reducing potential liability for contamination, reducing water use and wastewater treatment/discharge costs, reducing energy/material use and waste generation/disposal costs, etc.

The expectations from all stakeholders (neighbors, government, employees, financial institutions, NGOs, etc.) on sustainability performance for all types of industries, including automotive, are high. At the same time, the world is increasingly connected and news on poor performance or environmental incidents or accidents spread rapidly. Therefore, other than the potential benefits described above, aiming, and working towards running sustainable businesses is a very sensible way to achieve long term success. —

# Rodrigo Dromundo

CFO

SAG-MECASA, S.A. DE C.V.



## Could you please provide us with a brief introduction and background into SAG-MECASA?

SAG-MECASA is a joint venture between Mexican-owned Mecanismos Automotrices, S.A. (MECASA) and Austrian SAG. MECASA was founded forty-five years ago by the same entrepreneur who founded ADO, one of the largest private bus companies in Latin America. He struggled to get bus-parts and thus resorted to starting some companies to supply parts for these buses, MECASA being one of them.

In 2008, 60% of the company was sold to SAG, who, similarly to MECASA, was in the fuel tank business for commercial vehicles, but had been around for over 100 years. With the joint venture, SAG-MECASA became the largest fuel tank manufacturer in the world. The company went from crisis numbers several times of having 25 people, producing 24 tanks a day and only

US \$10 million in turnover, yet only seven years later would be comprised of 400 workers, producing 4,000 tanks a week and a turnover of US \$48 million.

## How suitable is Mexico to attend the needs of the truck and bus production industry?

Truck production has moved from the US down to Mexico and that has brought a lot of opportunity. We started with a location in Mexico, but in 2009 we started a plant in Monterrey to supply Daimler Saltillo, where we also supply air tanks for trucks. There are new and exciting opportunities in luxury cars as there is now production in Mexico with Audi and BMW, with some production of Cadillacs and Lincolns. All of these high-end cars demand the use of aluminium for its quality, resistance and low-weight which has become a priority because of fuel economy.

OEMs take quite a big risk to set up a new plant abroad. As such, they bring their own supply of providers and vendors, and they give little opportunities to local suppliers. It is tough for local players to compete because of the preferential treatment on behalf of the OEMs, but Mexican companies are just as apt as any foreign Tier 1, which these OEMs eventually realize after a couple of years when they start to look for cost savings through local component sourcing.

Mexico's competitive advantage comes from the cost-benefit the labor pool provides—companies can find many good, talented workers for 1/4 or 1/5 the cost (US \$8/hour versus US \$40-50/hour in the US). Fuel tank production is actually quite complex; though there may only be around twelve families of products, there are more than 5,000 part numbers as one can customize and interchange these accessories, so there is no way one can use robots for that most of what we do, especially in the welding aspect, which must be done manually at times.

A challenge Mexican companies face in comparison to the foreign companies, furthermore, is that financing costs in Mexico are less than inviting. Even if a company has very good credit, it may get a loan in pesos but with a 7% or 8% annual interest rate, which is most of the times not feasible. If one exports and sources the raw material from abroad, and with various detailed negotiations with EXIM banks, the best rate one might get is 3% while operating in dollars, which is still quite high. So, access to financing is really a barrier of entry for Mexican companies and this is where foreign companies have an important advantage, and why Mexican entrepreneurship is suppressed. —

**SAG MECASA**

**PROGRESS IN ALUMINUM**

SAG-MECASA is a developer and manufacturer of fuel tanks and special aluminium constructions for the NAFTA automotive industry. The product spectrum ranges from aluminium fuel tanks (round and rectangular profiles), steel fuel tanks (round and rectangular profiles), aluminium tanks for buses, aluminium battery boxes to special tanks.

At SAG-MECASA, we know that quality is not a coincidence.

www.sag-mecasa.com  
Mexico Tel: +52 55 1063 9670 +52 81 8028 4904

# Manuel Nieblas & Alberto Torrijos

MN: Manufacturing Industry Leader Partner

AT: Automotive Sector Leader Partner

**DELOITTE MEXICO**

## How important is the automotive sector to Deloitte's industry services?

MN: We do not want to be specialized and confined to a certain sector, but at the same time the automotive sector makes up a very important part of what we do. We have a network of global offices that helps us apply techniques where they are needed. If a client comes to us with a need pertaining to one area of what we offer, in many cases we can provide services for them to accomplish the rest of what they need.

AT: Our international structure is made up of many local teams. We work with subsidiaries worldwide that can help with what we are developing in Mexico. This is what makes our global vision valuable. As a multidisciplinary company, our whole portfolio includes a large amount of services including expatriate services, fiscal issues, taxes, technology development, workforce acquisition, exterior business fields, and processing strategies. We are involved in all levels of the supply chain from OEMs to field partners with logistics services, and auto parts and even dealer associations.

## What have been some of the determining factors that have put Mexico in the spotlight as a destination for automotive companies?

AT: Cost is an important factor. In Mexico, wages average around four dollars an hour. Aside from that, Mexico has one of the highest numbers of trade partners in the world. With its close proximity to US, along with good rail and highway infrastructure, exportation is practical. Finally, Mexico has an enormous amount of talent. It is the country that produces the most engineers in the world.

MN: Technology investment is important. We do not want Mexico to be seen as just a country that deals with assembly, but as one that takes part in development and design. Investments have shown good results, and we want to prove that Mexico will still be valuable to foreign investors even if the price of labor increases.

## What are some of the trends that you are seeing in the domestic market?

MN: It has grown interestingly during the past few years as prices have become more competitive since plants haven't increased their prices. If one analyzes per capita statistics, the consumption of Mexican-made vehicles is low, but in Brazil and Argentina these numbers are high.

MN: One thing people look to are incentives in financing and leasing. In general, Mexico needs to close the gap between the number of vehicles Mexico is producing and the number of for-



MN



AT

“

Technology investment is important. We do not want Mexico to be seen as just a country that deals with assembly, but as one that takes part in development and design. Investments have shown good results, and we want to prove that Mexico will still be valuable to foreign investors even if the price of labor increases.

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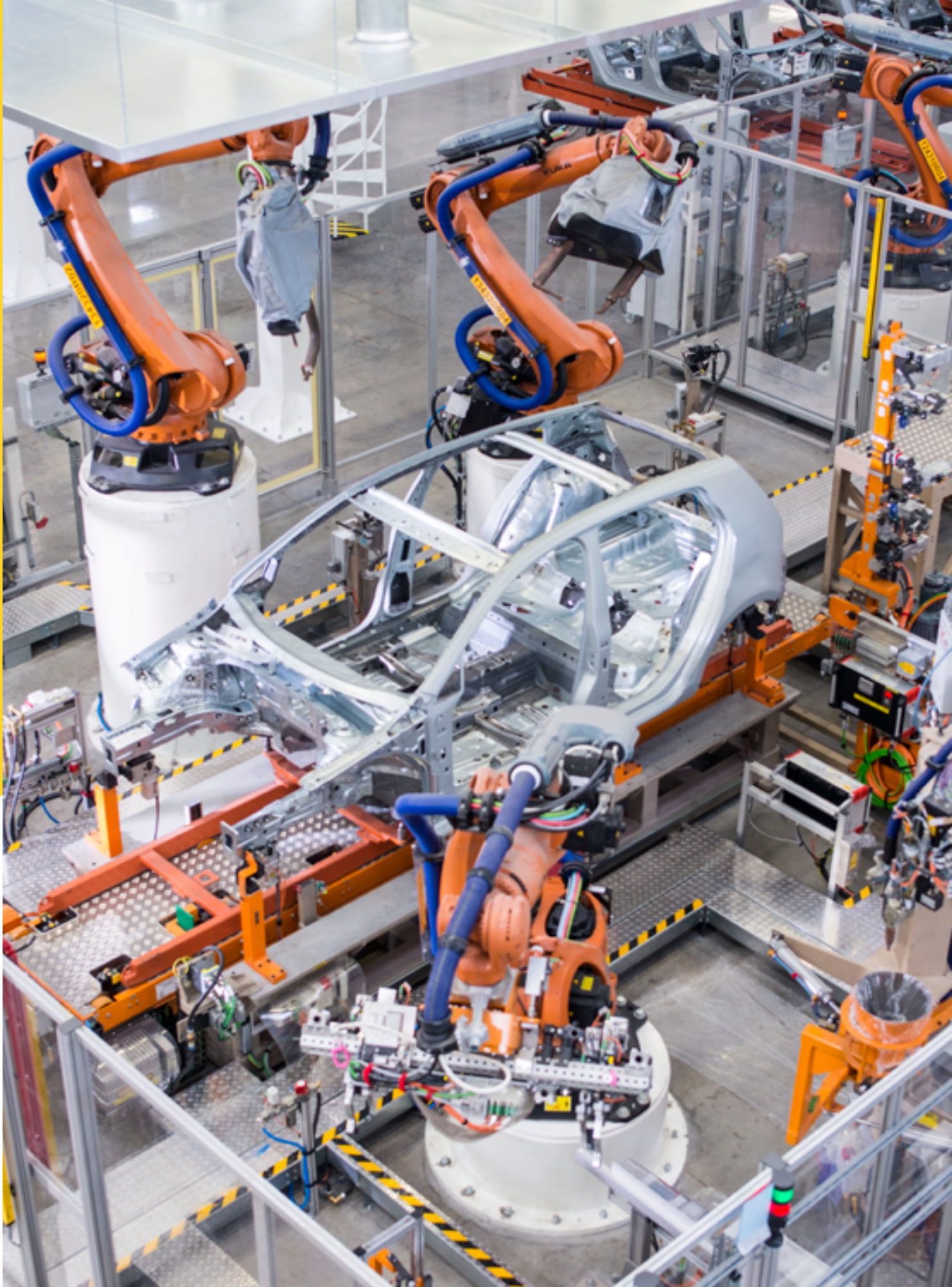
eign used vehicles it is importing. This will help more Mexican vehicles circulate on the streets of Mexico.

## What are some of the challenges present in the Mexican automotive market?

MN: I think one area that begs for attention is industry development. Some companies have invested a lot but others still have yet to do so. Another one is developing local providers, which in my opinion is an extreme need. There are huge amounts of imported parts in each vehicle still. When an assembly plant arrives to Mexico, they have to bring all of their parts into Mexico which increases prices. This would change if local companies were prepared to be suppliers.

AT: Mexican Tier 2 and Tier 3 companies will not risk their own capital. They do not necessarily need foreigners to buy their product, but they need foreign companies to invest in them. Something interesting that is going on in Japan is that larger companies invest in local suppliers and teach them how to get certified. The clusters even get support from banks. Our local businesses need more push and financial support. The automotive industry has already generated more than one million jobs. Just between BMW, Toyota, Honda, and Audi, each one creates between 1,500 and 3,000 new jobs. They expand over time to train their workforce which in itself is an investment. Much work has also been put into universities that are designed to train a specialized workforce to help draw out the talent we have here. —









# The Bajío

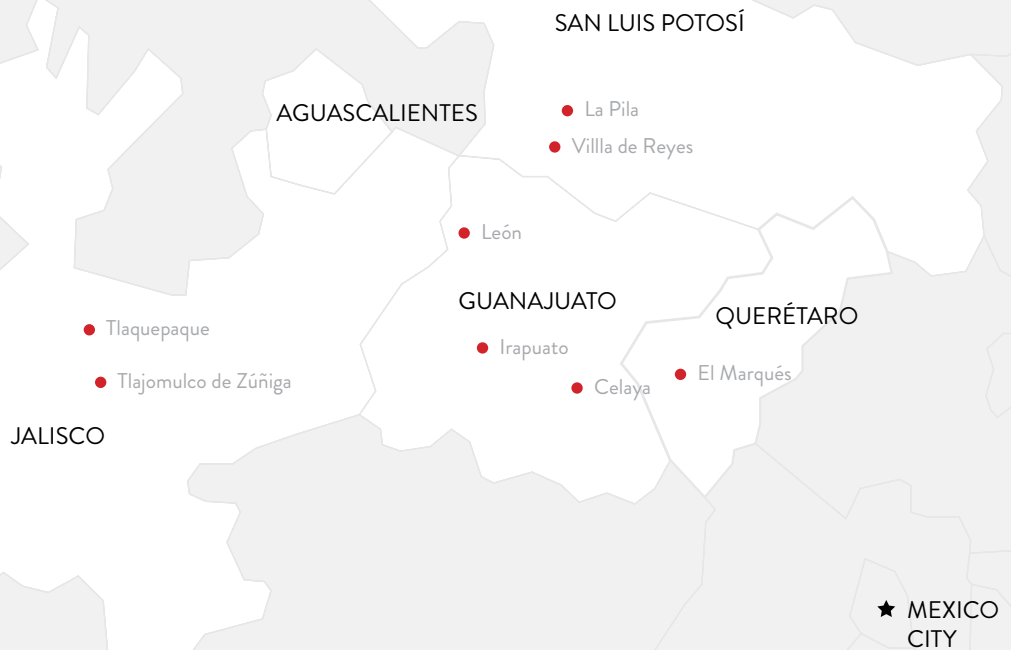


"We do not see ourselves as a local cluster, we are a network of clusters with constant communication with San Luis Potosí, Querétaro, and Aguascalientes, and jointly the four of us represent 60% of the automotive industry of the country, and if you add the fact that we are only one or two hours away by land from each other, our network becomes that much more significant."

Alfredo Arzola,  
General Director  
Guanajuato's Automotive Cluster (CLAUGTO)



Pacific Ocean

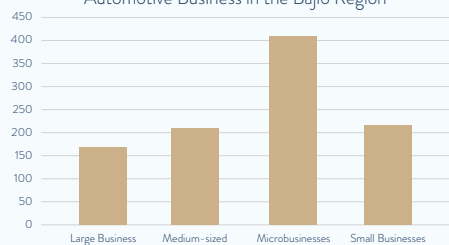


Automotive exports for the Bajío region 2014: 49,251,433,000 USD

**28,1%**

of Mexico's  
autoparts production in 2015  
came from the Bajío region

Automotive Business in the Bajío Region



Source: CIES with INEGI

**16%**

The Bajío region was responsible  
for 16% of Mexico's National  
GDP in 2014

Source: CIES with INEGI

Source: CIES with INEGI



# The Bajío: Location, Location, Location

## *The Bajío Cluster*

The Bajío region, comprised of the neighboring states of Queretaro, San Luis Potosí, Aguascalientes and Guanajuato, represents the “Golden Diamond” of Mexico - a very industrial region with excellent logistics and, without any doubt, it is the region that has had greater dynamism in the last five years, experiencing 20% annual growth in the automotive industry alone—representing great opportunities for any foreign investor looking to be a part of the sector.

The interconnectivity and the highly-skilled population of this region are the main attractors of the Golden Diamond for foreign companies. “The main reason that Yachiyo decided to establish our facility in Guanajuato is because our main customer, Honda, was coming to Bajío, but also the logistical ease and strong infrastructure available, which allows us to ship our products throughout Mexico as well as to other global markets,” argued Roberto Hernandez, plant manager of Yachiyo Mexico Manufacturing.

There are two ports in close proximity to the

region that can be used to receive equipment, small parts and raw materials and to supply finished parts to North America and beyond. TransDevelopment de México initiated its plans for an updated railway bypass around Celaya in order to decrease congestion at the point of intersection of the country’s two largest railroads—Kansas City Southern de México and Ferromex. In March 2012, Honda selected TransDevelopment de México as Development Manager for the inbound and outbound rail facilities, which provides insight as to the potential for future rail projects in Mexico. Due to slow land acquisition and a budget reduction, the Celaya Bypass is not expected to be complete until December 2017 at the earliest.

Presently, quality infrastructure is measured by the quality of roads for automotive companies. Christian Saldaña, plant manager, of German company Fraenkische, said: “Fraenkische explored opportunities to establish our plant in Monterrey and Guanajuato, however, the highway networks lo-

cated in Guanajuato enabling us to travel North, South, East and West, in addition to the Bajío international airport located very close to our plant, which is very beneficial for emergency logistics, were the main reasons that this region was chosen to establish our operations.”

The most interesting dynamic, however, comes from the fact that the industrial players consider this a borderless region. Instead of competing with each other, States actively collaborate with each other, and this effect trickles down to the automotive industry. “We do not see ourselves as a local cluster, we are a network of clusters with constant communication with San Luis Potosí, Queretaro, and Aguascalientes, and jointly the four of us represent 60% of the automotive industry of the country, and if you add the fact that we are only one or two hours away by land from each other, our network becomes that much more significant,” argued Alfredo Arzola, general director of Guanajuato’s Automotive Cluster (CLAUGTO) —

Image: Courtesy of ProMéxico





Image: Courtesy of NISSAN

# Querétaro: The Auto Parts Hub Of Mexico

56

Querétaro is Mexico's bellybutton, being only two-and-a-half hours to Mexico City, two-and-a-quarter to San Luis Potosí, two hours away from Toluca, and forty-five minutes to one-and-a-half hours to Guanajuato's main cities by road, while being less than ten hours from the US border, making the automotive industry in Querétaro one of the most exciting. Thirty percent of all the state's exports come from the automotive industry, made up of 300 companies dedicated to the automotive spare parts industry; where seventy-five are Tier 1, while the rest are Tier 2.

The Querétaro Automotive Cluster (CLAUT-QRO), comprising of fifty-two companies, was born in 2013 with two questions in mind: how, through the cooperation among the parties, could the Querétaro automotive industry become more competitive with regards to productivity and competitiveness? And, how can the Querétaro industry import less spare parts from abroad and source them locally in order to maximize productivity, quality and costs? As such, CLAUT-QRO has consolidated working in two main areas, explained Antonio Herrera, director general of Mexican-owned Tier 1, TREMEC and director general of the Querétaro Automotive Cluster: "one is the development with suppliers and, within this, there is a group of SMEs or sub-suppliers that we have sheltered with quality management processes. The other area which is also very important is helping our human capital to grow, through training for both small and even larger companies." The curious case about Querétaro's automotive industry, however, lies in the fact that the state is purely dedicated to auto parts as it does not have an assembly plant. "Personally, I do not think we

need one," said Herrera. "The Governor of the State of Querétaro is aligned with our vision that it is not a priority to look for an assembly plant. This forces us to look for a good relationship with the Guanajuato and San Luis Potosí clusters because in less than two hours we have seven assembly plants, and thus there is no need to have one here. In fact, the Toyota plant which will be built in a short time will be nearer from Querétaro than it will be from Celaya or Guanajuato. Furthermore, another advantage is the geographic region—we are eight hours away from the border, and four away from the port, meaning we are very well positioned."

Like the Northeast and the Central regions of Mexico, the Bajío is trying to foment its design and innovation by utilizing its geostrategic location and inter-cluster collaborations to drive the automotive industry forward, as Herrera pointed out: "the design decisions are normally taken abroad. These are decisions that sometimes correspond to each multinational company as to where they make their designs; obviously they look for the most competitive and with better quality, so we have a task as a region and as a country or company to demonstrate that we have the intellectual capacity to do so, and one way is by having solid triple-helix models between universities, private sector and government.... But, it is definitely an attractive idea to have local-design from foreign companies. For example, General Electric has its research center here in Querétaro, which demonstrates that we have the capacity, but we have to convince the major automotive players to start doing this here." —



# Ing. Antonio Herrera



President  
**CLAUT QUERÉTARO**  
Director General  
**TREMEC**

## Can you provide us with a brief introduction to the Automotive Cluster of Querétaro?

The cluster was born three years ago with one question in mind: how, through the cooperation among the parties, could we make the Querétaro automotive industry more competitive through productivity and competitiveness. With this in mind, other questions needed addressing, how can we bring less goods or automotive spare parts from abroad and get them from some place near so it can help our productivity, our quality and of course, costs? As such, CLAUT-QRO has consolidated working in two main areas: one is the development with suppliers and, within this, there is a group of SMEs or sub-suppliers that we have sheltered with quality management processes. The other area which is also very important is helping our human capital to grow, through training for both small and even larger companies.

## Can you elaborate on Tremec's line of solid and liquid products and their applicability?

We have transformed our portfolio over the years. We started with solid derivatives in 1989 and in 1989 which increased in 2001. TREMEC also has many liquid products: Phosgene is used in agrochemicals, coatings, sealants, adhesives, plastics, pharmaceuticals and personal care, to name a few industries. One of our key objectives in the last ten years has been to diversify our portfolio, specifically for the products that we want to channel through numerous markets. Nevertheless, if we have a focus initiative we want to look at it from a point of diversification. We have about 50 different products that we produce on a regular basis, and approximately 20 products on an irregular basis.

## What are the competitive advantages of the Querétaro Cluster?

Querétaro does not have an assembly plant and, personally, I do not think we need one. The Governor of the State of Querétaro is aligned with our vision that it is not a priority to look for an assembly plant. This forces us to look for a good relationship with the Guanajuato and San Luis Potosí clusters because in less than two hours we have seven assembly plants, and thus there is no need to have one here. In fact, the Toyota plant which will be built in a short time will be nearer from Querétaro than it will be from Celaya or Guanajuato. Furthermore, another advantage is the geographic region (we are eight hours away from the border,

and four away from the port, meaning we are very well positioned).

So the competitive part of the region has grown quite heavily in the autoparts segment. We have very large autoparts makers in the region, we have labor peace which we have reached through good relations between employers and employees.

## What are the benefits of being a member of the Cluster?

The cluster, in the past two years has doubled in size from 26 members to 52, which means companies are seeing the benefit of joining our cause. Some of these benefits include procurement, such as developing suppliers as well as personnel, and we also give our members legal advice.

The vision is how larger companies can help smaller ones, share experiences and learn from each other. In this development of suppliers, we aim to always have an engineer from one of the larger company actively participate with a small company, thus they can obtain not only a material benefit but technological knowledge as well so they can improve their processes.

## How can Mexico transform itself from a "maquiladora" and manufacturing country into a more advanced country in terms of design and research and development? How do you see Querétaro and its companies in terms of development, innovation and design?

The origin of investments in the autoparts manufacturing business, not only in Querétaro but in many other places, is mostly foreign investment, and as such, the design decisions are normally taken abroad. These are decisions that sometimes correspond to each multinational company as to where they make their designs; obviously they look for the most competitive and with better quality, so we have a task as a region and as a country or company to demonstrate that we have the intellectual capacity to do so, and one way is by having solid triple-helix models between universities, private sector and government.

In the case of Tremec, all the products we sell have been a Mexican concept, designed, proven, manufactured and sold by Mexicans. On the other hand, if Tremec were to sell their design in another country, the design would be made here and then sold somewhere else.

But, it is definitely an attractive idea to have local design from foreign companies. For example, General Electric has its research center here in Querétaro, which demonstrates that we have the capacity, but we have to convince the major automotive players to start doing this here.

## What are the plans and priorities of the cluster for the next three to five years?

The automotive industry in Querétaro is exciting, as 30% of all exports from this state come from the automotive industry made up of 300 companies dedicated to the autoparts industry; 75 are Tier 1, the rest are Tier 2. We want to be a group of companies that grows but that everybody will benefit by belonging to this team called cluster. —





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## San Luis Potosí: A Rise In Demand

San Luis Potosí, unlike Querétaro, currently hosts three OEMs: GM and BMW, active members of the San Luis Potosí Automotive Cluster (CLAUT-SLP), and Ford. “Our members also include Tier 1 companies, which is our biggest target for the future as these companies are the fuel that we need to move forward,” said Hector Soto, director general of CLAUT-SLP. “Tier 1 companies supply components directly to OEMs and are the demand generators.”

OEMs in San Luis Potosí use about 50% to 55% local content, but Tier 1 companies only use 10% to 30% local content, with 30% being an exception. “There is a tremendous opportunity for Mexico to develop and integrate its local supply chain,” continued Soto. “We have to work with all our members in the chain: Tier 1s, Tier 2s and OEMs, so as to allow complete integration.”

And companies are noticing San Luis Potosí as the next place where to establish their operations. Server Industrial Park, originally established in Saltillo, Coahuila, has expanded into San Luis Potosí with a second industrial park, a main factor being that the established presence of GM will now be accompanied by BMW as well as Ford, who has recently invested US \$1.6 billion into a new assembly plant that will begin production in 2018 and create 2,800 jobs by 2020. “There is definitely a boom in the San Luis area, especially as Guanajuato has become overly saturated, as well as it is in the heart of Mexico, meaning the US is only six hours away,

while still being in the perfect location to ship to Central and South America as well,” explained Corina Lira, sales manager for Server Industrial Park.

ISGO as well is in the process of establishing an innovation center in San Luis Potosí. “Facilitated by CONACYT, we are exploring adding natural fibers to some of our plastic parts in automobiles, for cost reduction and light-weighting,” explained Ismael Gómez Charles, general director of ISGO Manufacturing (ISGO).

German company ETO Magnetic followed its customers VW and Audi to Mexico, but due to these customers demanding products to be more logistically accessible, they are now establishing a manufacturing plant in San Luis Potosí, which is expected to be completed by the end of 2016, and the official production will start in 2018. “San Luis Potosí was specifically chosen due to the clients we already have, and as a strategic location to service Tier 1s and OEMs that are operating in and entering the area. Currently, our focus is to bring a first production line to Mexico and we will surely need a local source that has testing and inspection capabilities. We will still import about 50% of our components from Europe, but our second step is to start increasing our localization rate. The third step will be to start implementing engineering capabilities in our Mexican facility and application engineering will be present as soon as two years from official production,” confirmed David Muffler, director of sales of ETO Magnetic. —



# Ing. Héctor Soto

Director

**AUTOMOTIVE CLUSTER OF  
SAN LUIS POTOSÍ**

## Can you give a brief history of the San Luis Potosí Cluster?

The San Luis Potosí Automotive Cluster is an initiative that originated in 2013. The cluster's main purpose is to build bridges and remove any obstacles between members of the industry in order to improve, align, drive, and execute important projects that may benefit third parties and the local community in San Luis Potosí. This is an initiative that was employed by the local government and was lead by the Secretary of Economic Development and players private companies in the automotive industry.

In 2013, two important committees were created, which included a supplier development committee and a human capital development committee, but these initiatives suddenly disappeared later that year. The Secretary of Economic Development Committee in San Luis Potosí successfully landed BMW in 2014 and after the success of the project, the initiatives finally re-launched and we obtained legal authorization to operate as a cluster in September 2015. Since then, the main challenge for the cluster has been to convince the industry of the importance of the initiative.

It is important to have good leadership and find ways to increase the cluster's membership. We currently have 25 members and are confident that we will have between 30 and 35 members by the end of 2016. We aim to build strong relationships with companies and gather day-to-day information on them to be shared within the cluster. We also work towards focusing on specific and relevant companies rather than approaching companies that will not be able to benefit from the initiative.

San Luis Potosí has a very strategic location for logistics and we are strategic partners with our neighbor states. One of the

business models in the state, that especially Japanese companies are following, is establishing manufacturing facilities here and providing components to neighboring states such as Guanajuato and Aguascalientes.

## What are the profiles of your members?

We currently have two OEMs, which include GM and BMW on our member list and we are also approaching Ford with the aim to add a third OEM to the list. Our members also include Tier 1 companies, which is our biggest target for the future as these companies are the fuel that we need to move forward. Tier 1 companies supply components directly to OEMs and are the demand generators. OEMs use an estimate of 50% to 55% local content, but Tier 1 companies only use 10% to 30% local content, with 30% being an exception. "There is a tremendous opportunity for Mexico to develop and integrate its local supply chain. We have to work with all our members in the chain: Tier 1s, Tier 2s and OEMs, so as to allow complete integration. It is not an easy journey to do so as the automotive industry in general is very demanding when it comes to laws and regulations, especially certifications.

## What main strategic advantages does the cluster of and San Luis Potosí hold for its members?

The Cluster works on a triple helix business model where we connect the government, academic institutions and the industry with one another. The cluster also collaborates and creates synergies with other cluster to form strategic partnerships. Another advantage of being part of the cluster is that it is specialized within the automotive industry, and as we employ specialized people within the in-

dustry, we understand the industry very well. We are also able to add value for our members through various networking events at which we give strategic information on industry trends and offer specialized training.

## Which long-term projects are you currently working on?

We are currently working on two important initiatives. One is the rehabilitation of human capital development. We are working with various universities and technical schools to gather information to establish what the human capital development's strategic road map will be, and what key milestones we have to accomplish to get there. The quantity and quality of employees that will be needed is also important. This initiative considers the immediate actions we need to take to mitigate the risks of human capital development.

We have emphasized the importance of information sharing within the industry. With regards to human capital development, we have created a communications platform, which allow members to upload any important information with regards to the industry and then share that with other members through an intranet portal. We are also working on a survey to understand the salary entry level for different companies, which is also available on the platform. Companies are contacting us to become members due to the valuable information sharing platform. We have monthly presentations where different companies present best practices of the industry to the rest of the community and this information is then shared on the platform. —

# Ford Puts Emphasis on Customer Wellness and the Environment

*Speech by Ing. Gustavo Armando Lopez Báez, Ford Motor Company  
at the Cluster Estado de Mexico Innovation & Industry Conference 2016*

Today's generation is growing up in an increasingly environmentally-conscious world. Consumers are now faced with questions about the reduction in the world's fossil fuel supply as well as the impact they have as individuals on the environment. The Ford Company, who has had presence in Mexico for eighty-six years is not shying away from new innovations in order to appeal to a new environmentally, conscious consumer base with its 2017 Fusion Hybrid. The Ford Company takes great pride to have been pioneers not only when it comes to labor but also in technologies which are being used all around the world. Inaction is, at times, the philosophy of many individuals and companies when it comes to dealing with environmental issues as they uphold the axiom, "easier said than done." Ford, with its 113 years of existence, however, continually strives to reduce waste across its global operations. Since the year 2000, the company has invested more than US \$300 million in plant and facility energy-efficiency upgrades. In 2014 alone, Ford invested more than US \$40 million in energy-efficiency projects, and significant energy-related upgrades were included in their global manufacturing system upgrades. All these initiatives combined have made a significant and clear impact on the environment as from the year 2000, Ford has shown a 47% reduction in carbon dioxide emissions.

## Fuel and Transportation Innovation

Ford's plan from 2015 to 2020 involves a critical factor to reduce greenhouse gasses which is to sell hydroelectric vehicles. On average, a tank of gas can go for around 900-950 kilometers per tank of fuel, which is 21 kilometers per liter. As such, Ford will invest US \$ 4.5 million to accelerate the release of thirteen new vehicles, with the aim of maximizing fuel efficiency. Ford has also taken the initiative to replace all chlorofluorocarbon (CFC) refrigerants with hydrofluorocarbons (HFCs), which do not contribute to ozone depletion and have significantly lower global warming impacts. Globally, Ford will reduce its facility CO<sub>2</sub> emissions by 30 percent from 2010 to 2025 on a per-vehicle basis and reduce average energy consumed per vehicle produced by 25% from 2011 to 2018.

Globally, Ford continues to lower non-CO<sub>2</sub> emissions, and has approximately halved the HFC emissions from a typical light-duty vehicle since 2010. Nonetheless, the American car manufacturer remains committed to developing and implementing technologies that will reduce non-CO<sub>2</sub> emissions even further.

Ford is progressively evaluating, developing or have introduced vehicles that use fuels with lower fossil carbon content, biofuels, electricity, compressed natural gas (CNG), liquefied petroleum gas (LPG), and hydrogen. For example, The fuel efficient F-150 won the 2016 Green Truck of the Year award, announced by Green Car Journal at the 2015

San Antonio Auto & Truck Show. Ron Cogan, editor and publisher of Green Car Journal and CarsOfChange.com stated, "Milestone light-weighting through the extensive use of aluminum and high-strength steel, the availability of a powerful and efficient 2.7-liter EcoBoost V6, and a segment-exclusive gaseous fuel prep option that enables the F-150 to run on clean-burning compressed natural gas or propane are all important contributions that raise the bar in environmental performance."

Transportation innovation does not stop with fuel efficiency, however. The Ford Company is continuously looking for newer, more efficient forms of transport in a world with roads that are increasingly more congested. The MoDe:Flex, revealed in 2015, is the Ford Company's third eBike. It folds and stores inside any Ford vehicle where it can be charged while stowed. It connects with a rider's smartphone via the MoDe:Link app, providing a seamless connection between hardware and software. The app assists cyclists with a number of factors from weather conditions and navigation to parking costs and public transportation. It helps identify the most efficient and cost-effective mode of transport for a journey. The bicycle's electric assist system allows cyclists to go further than they would be able to with a conventional bicycle, and separate attachments are available to customize the bicycle for the needs of the user depending on the terrain the bicycle will be on.

## Using Innovation for the Ultimate User Experience

The Ford Company is always innovating with the customer experience in mind, with an emphasis on facilitating the lives of drivers when developing technologies. This could be a contributing factor as to why Ford's customer satisfaction rating increased from 79% in 2014 to 81% in 2015.

Cell phones have facilitated the lives of everyone in a digital age. The danger of using them, however, increases exponentially when operating a vehicle. Over 70% of reported accidents are now involved with cell phone usage. Ford strives to have fully independently-driven vehicles by 2020, but in the meantime, the company wants to make sure its customers keep both hands on the wheel while driving. This is why they have developed a voice activated software, SYNC, that is available in numerous 2015-2017 models. More than 15 million cars produced in the world today have this, and by 2020 the company projects 43 million cars to have SYNC.

Driver health and wellness is a subject that has Ford exploring how wearable devices, including smart watches and fitness bands, can be used to measure indicators of driver stress, such as heart rate, perspiration and skin temperature, in order to estimate driver workload, and, thus, maintain drivers aware of their optimal state when operating a vehicle for the safety of themselves and others. —



# Major Milestones and Investment



"With this new plant in Guanajuato, we definitely want to do some things very differently. It should not just be a kind of copy-paste of what we did in the past. Because of the concept of the plant and because the product is different, we can assemble the parts in a different condition, which means make the lines shorter, which is also quite good in terms of global competitiveness."

Didier Leroy, Executive Vice President, Toyota Motor Corp.

CONCERNING THE DAIMLER AND THE RENAULT-NISSAN ALLIANCE JOINT-VENTURE MANUFACTURING COMPLEX, COMPAS (COOPERATION MANUFACTURING PLANT AGUASCALIENTES):

"This new joint plant will help both partners to serve their respective customers faster and with more flexibility. As Mercedes-Benz' first production location for compact cars in the NAFTA region, it will also significantly enlarge our footprint here."

Markus Schäfer, Member of the Divisional Board, Mercedes-Benz Cars



"Mexico is a global benchmark for quality and efficiency and is a major reason why Daimler and Nissan have decided to produce the next generations of premium compact cars for Mercedes-Benz and Infiniti here in Aguascalientes. What we are celebrating today has also been made possible through our close collaboration and partnership with both the state and Federal governments."

Jose Muñoz, Executive Vice President, Nissan Motor Co., Ltd.  
& Chairman, Management Committee, Nissan North America

"Reaching the five-millionth exported vehicle milestone confirms the outstanding work done by our manufacturing team to produce world-class vehicles. The quality of Mexican labor is reflected in the vehicles we export to over 50 countries. Our exports are driven by our brand promise in terms of quality, design, technology and durability. It is a great responsibility, and we are proud to achieve it."

Airton Cousseau, Managing Director, Nissan Mexico



"Due to the huge presence of vehicle assembly plants, Mexico can become a hub for massive manufacturing for other markets. Honda has been able to reach its goals, including 33% growth while operating in Mexico due to our company's philosophy of trust, loyalty and discipline combined with the quality of Mexico's internal market and the country's relationship with the world."

Hiroshi Shimizu, President, Honda de Mexico

"There have been no other cases of such a swift development as Mazda Mexico, and it is because of the excellence of the supplier base that we have been able to grow and develop in such a fashion. The supply chain is indispensable and we must continue finding ways to jointly form an efficient system of suppliers and providers of which we can feel proud of on a global scale."

-Chiharu Mizutani, President, Mazda



# Guanajuato and Its Integrated Effort For Progress

In contrast with other zones and other states within the region, there is a significantly high availability of personnel in Guanajuato. Guanajuato's automotive industrial core, unlike the other Bajío states, represents fourteen industrial cities with over 100,000 inhabitants each. Overall, the state has 5.5 million inhabitants, of which 2.5 million are younger than 27 years of age, meaning Guanajuato has a very young and active population with high levels of technical professionals. The challenge remains transforming that labor availability into a qualified workforce for the automotive sector.

Guanajuato is the only state in Mexico with six OEMs, of which four assemble vehicles, while two assemble motors and transmissions. Guanajuato's most relevant player, however, is General Motors with its largest plant in Mexico in the city of Silao producing 400,000 units in a single line. Aside from General Motors, Guanajuato also has Mazda, which started producing in its first plant in Mexico two years ago, as well as hosting Honda's second plant in Mexico, which happens to also be Honda's largest in Latin America. Volkswagen has had a key plant since 2012 producing motors, while Ford and Toyota are in the process of establishing production in the state by the end of 2017.

"Today, one out of five cars produced in Mexico is actually from Guanajuato, and the same will be true five years from now when the country will be producing 5 million a year—Guanajuato will then produce around 1 to 1.4 million units per year. This production process in this state is aided by the fact that there are a significant amount of industrial parks dedicated solely to the automotive industry established in key cities of the state with more opening up," delineated Arzola.

New companies that are establishing their operations in Guanajuato are also migrating their R&D development centers from their country of origin, such as Pirelli and American Axle, and are naturally joining the productive processes with the research centers. Distance is one main reason behind the companies' moves, as they find innovation is becoming increasingly difficult being so far away from their manufacturing plants, as it is during the processes or in the products, not the engineer's computer, where unforeseen events come up. "Not all of GKN's locations have a design center," explained Fidel Otake, director general of GKN Driveline Mexico and president of CLAUGTO. "The reasoning behind establishing one in Mexico is because of the growth that was coming and thus it was important to have a technology center in order to support the product development."

Guanajuato, and Mexico as a whole, compete based on location and competitive labor and energy costs. "Nevertheless, this cannot be sustainable in the long term; the price for certain consumables

like power, transportation, etc., will rise at any moment and the time will come when we will have to compete based on efficiency and innovation," argued Arzola. "This is why the CLAUGTO encourages its members in two ways: on one hand, to promote larger companies to develop and reassure innovation processes in Guanajuato. But on the other hand, tomorrow's competitiveness will not come from the competitiveness of larger companies but from its supply chain."

OEMs will constantly innovate in order to remain competitive in the industry. This constant upgrading on behalf of the OEMs naturally forces their Tier 1's to innovate as well. However, the breakdown will come if the local Tier 2 and 3's under the Tier 1 do not have the same vision to keep investing and innovating. In such a case, it becomes difficult for the OEMs or the Tier 1s to take their innovation to the next level when forced to import parts due to a mistrust of the quality and reliance of local suppliers. This will only further the gap between foreign and local players, resulting in the Mexican automotive players lagging further behind. Otake explained: "As a leader in the industry, we must take it upon ourselves to develop suppliers. The fact that GKN is a Tier 1 and 2 means we will keep growing with the industry, however, if we want to continue this growth, we have to make sure that our suppliers keep on growing and are able to keep up with us, especially in absorbing new technologies and know-hows."

As a way to address this, local companies are seeking opportunities to improve and innovate by utilizing the CLAUGTOs networking opportunities. "As a Tier 2, through the CLAUGTO, we enter into the same ecosystem as the OEMs and Tier 1s, so this not only opens doors for us but gives us exposure to the right people in order to make our business grow. In addition, the CLAUGTO offers a lot of training not only on the technical side but also managerial and support as well as certification, contributing to the strengthening of the local companies," said MD Manufacturing's Dorantes. In addition, in Guanajuato there is also a palpable effort on behalf of the government to foment the development of local players and their closeness with the foreign companies, as Guanajuato is the first state in Mexico to have launched a Secretary of Innovation and Higher Level Education that is separate from the Secretary of Economy. "This new ministry is an ally of the CLAUGTO that will allow us to integrate the needs of the industry at the pace of the automotive sector while at the same time promoting the level of university education, and on the other hand to articulate the subject of industrial parks and technological development that will lead to the success of the local, Mexican companies," concluded Arzola, inspired by the successful local integration of the Northeast. —

# Alfredo Aarzola

Executive Director

**CLUSTER AUTOMOTRIZ DE GUANAJUATO AC (CLAUGTO)**



## Could you provide a brief introduction to the Guanajuato cluster?

The Automotive Cluster of Guanajuato was established three years ago and is now comprised of about 80 companies. Currently the state of Guanajuato has six OEMs, of which four assemble vehicles, while two assemble motors and transmissions.

We do not see ourselves as a local cluster, we are a network of clusters with constant communication with San Luis Potosí, Querétaro, and Aguascalientes, and jointly the four of us represent 60% of the automotive industry of the country, and if you add the fact that we are only one or two hours away by land from each other, our network becomes that much more significant.

## Given its strategic location, how significant is Guanajuato to the automotive industry in Mexico?

We are the only State in which there are four assembly companies plus two OEM's operating at the same time. Guanajuato's most relevant player is General Motors with its largest plant in Mexico, here in Silao, producing 400,000 units in a single line. Aside from General Motors, Guanajuato also has Mazda, which started producing in its first plant in Mexico two years ago. We also have Honda's second plant in Mexico - the largest in Latin America. Volkswagen has had a key plant here since 2012 producing motors, while Ford and Toyota are in the works of being established by the end of 2017.

Today we can say that one out of five cars produced in Mexico is actually from Guanajuato; the same will be true five years from now when the country will be producing 5 million a year; Guanajuato will

then produce around 1 to 1.4 million units per year.

## The CLAUGTO is committed to encouraging companies to innovate. To what extent can Guanajuato become a leader in design and innovation in the automotive industry?

New companies that are establishing their operations here are also migrating their R&D development centers from their country of origin, such as Pirelli or American Axle, and are succeeding in naturally joining the productive processes with the research centers. The reason behind this move is that they are finding that being very distant from the manufacturing plant, innovation becomes difficult because in the processes or in the product is where unforeseen events will come up that may not appear conceptually in an engineer's computer at the home base.

Guanajuato, and Mexico as a whole, compete based on our location, and our competitive labor and energy costs. Nevertheless, this cannot be sustainable in the long term; the price for certain consumables like power, energies, transportation, etc., will rise and the time will come when we will have to compete based on efficiency and innovation.

Thus, the CLAUGTO encourages its members in two ways: on one hand, promote larger companies to develop and reassure innovation processes here in Guanajuato, giving support and coverage to these needs through research centers that we already have regionally, but on the other hand, tomorrow's competitiveness will not come from the competitiveness of larger companies but from its supply chain.

For example, OEMs will constantly inno-

vate, and therefore its Tier 1s will innovate as well, as it will most likely have the criterion for new ideas and processes. But if the Tier 2s and Tier 3s under it do not have the same vision, it would be very difficult for the OEMs or the Tier 1s to take their innovation to the next level as they will have to import or interact with foreign suppliers from the mistrust of local suppliers, that will further the gap between foreign and local players and will result in the Mexican automotive players to lag further behind.

## As a final message, what are the Cluster's and Guanajuato's plans for increasing the state's capabilities for R&D and thus increase the competitiveness of the state?

The CLAUGTO's challenge is fomenting the network of local providers that have the intention of improving their processes and can innovate. And as a Cluster, we are developing a project for technological research and development to prove that Guanajuato has the capability for analysis and studies. Major support for these endeavours comes from the fact that Guanajuato is the first state in Mexico to have launched a Secretary of Innovation and Higher Level Education that is separate from the Secretary of Economy. This new ministry is an ally of the cluster that will allow us to integrate the needs of the industry at the pace of the automotive sector while at the same time promoting the level of university education, and on the other hand to articulate the subject of industrial parks and technological development. —





Image: Courtesy of Volkswagen

# Growing Pains: Human Capital Adequacy and Increased Competition

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Though Mexico and its three automotive regions are booming, and will continue growing at very healthy rates for the coming years, the country and its automotive industry are neither devoid of challenges, and these need to be addressed in order for Mexico to progress and become the innovation hub it wants to be, with a prosperous and active local supply that is guided by the hand of the foreign OEMs and Tier 1s. Some of the most poignant challenges include: educational gaps between the skill levels of recent graduates and the automotive industry's actual needs; and, the ability of local companies to compete with the increased presence of potent and preferential treatment imparted to international players.

One of the main challenges, which some analysts may consider as a "good problem" is according to Otake: "Adapting to the great growth the industry and the company is experiencing given the significant influx of OEMs and other manufacturing plants establishing themselves in Mexico. In addition, another challenge that comes with this growth is being able to develop our human capital at the same pace and size that our company is growing—from operators, technicians, manufacturing engineers to even processing areas."

Francisco Godínez Jasso, director of Plus Consultores Integral, said: "One of the weaknesses foreign companies identify in the Mexican workforce is the gap between the university students and what companies demand on a technical aspect."

In light of this need, UNAM actively looks for labs and workshops that are truly more practical for the development of students through the CDMIT. "That will allow the students to think critically and solve complex problems and increase creativity that will yield applied innovation for the industry," opined Godínez.

Mexico prides itself on its academic institutions and graduating the highest amount of engineers in the world per year. "The danger is, however, that these Mexican institutions have not complimented this education with practical experience and knowledge, yielding

a significant lack of concentration on training people on the technical level," argued Agustín Estalayo, plant manager of RPK Mexico. "The government and the private sector should focus on training the labor force on a technical level, and people should be trained through application within the industry from a young age. They first have to acquire technical skills in the field and if they later want to improve their education level, they can then go to a university." "A possible solution," offered Godínez, "is implementing a dual-education model, as Volkswagen has, where the student is formed and trained by spending 70% of their time at the plant, while only 30% in the classroom. The percentages are varied, depending on the university, but the goal is to have the student receive a salary and be a contributing member to the company while still studying. There needs to be a heavier involvement on behalf of the government for this, as well as the willingness from the universities and the outreach of the private sector in order to properly carry out the triple-helix model."

Another crucial aspect of training the workforce is English fluency, as the executive director of MD Manufacturing pointed out: "Mexico has a vast number of engineers. The problem is, however, that they may not know how to handle new technology, especially when those who come to launch the new products are foreigners—could be Japanese, German, or Americans—and the average Mexican laborer may lag to catch on, as everything is in English, given that it is an English-dominated industry."

"Mexico needs to shift paradigm from a country known for its maquilas to one known for its innovation and design. To do so," concluded Godínez, "both public and private university curriculums need to be revamped and buttressed by acquiring relevant equipment and machinery that are found in automotive companies in order for students to get appropriate hands-on training and experience throughout their university years." —



## Francisco J. Godinez Jasso

Director

**PLUS INTEGRAL  
CONSULTORES**

### Can you please provide us with a brief introduction into Plus Integral Consultores?

Plus Integral Consultores was formed in 1990 with the goal of helping companies implement new standards and processes that could benefit them through leaner manufacturing and process optimizations. We are the only company in Mexico certified in ISO 9001-2008 in our range of six different consulting services, including operational optimization and productivity, quality management on ISO systems, corporate governance, human capital development, HSE and Information Technologies, with the automotive industry accounting for around 90% of our business. In terms of the services catered to some of these automotive clients, we provide audits and preparations for certifications and improvement projects in manufacturing advanced systems for those companies that want to be suppliers to the OEMs, as well as consulting human capital development.

**In your experience with working with foreign companies, what are some of the**

### challenges that these companies identify when setting up operations in Mexico?

One of the weaknesses foreign companies identify in the Mexican workforce, however, is the gap between the university students and what companies demand on a technical aspect. This is a big opportunity for us, as companies require training for their personnel to increase their knowledge. Besides our own consulting capacities, a possible solution, as Volkswagen has demonstrated, is implementing a dual-education where the student is formed and trained by spending 70% of their time at the plant, while only 30% in the classroom. The percentages are varied, depending on the university, but the goal is to have the student receive a salary and be a contributing member to the company while still studying.

### What are some concrete steps the Mexican automotive industry can take to form design and innovation?

Mexico needs to shift its paradigm from being a country known for its factories to one known for its innovation and design. To do so, both public and private university curriculums need to be revamped and buttressed by acquiring relevant equipment and machinery that are found in automotive companies in order for students to get appropriate hands-on training and experience throughout their university years. Thus, there needs to be a heavier involvement on behalf of the government for this, as well as the willingness from the universities and the outreach of the private sector in order to properly carry out the triple-helix model.

### What are some of Plus Integral Consultores' key plans and priorities for the medium-to-short term?

Plus Integral Consultores wants to keep growing and developing our consulting group, especially in new and more advanced areas such as aerospace, which is similar to the automotive industry but with even stricter and more demanding standards and qualifications. We also want to have innovative tools for the market, as we are not a low-cost company, but one that gives differentiated solutions and products by applying design-thinking based around the needs and want of people as well as prototyping that will allow us to guide and coach our clients to step away, precisely from simple manufacturing into design and technological innovation. —



We are a consultancy firm, members of Leiten Group, and certified for ISO: 9001-2008. We have over 25 years of experience providing quality services for the improvement of transnational, large, medium and small enterprises. Our company works with the most qualified consultants, who have extensive knowledge and experience in automotive, food, commerce, government, services, manufacturing and medical sectors.

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Image: Courtesy of ProMéxico

# Leveling the Playing Field

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With new OEMs such as Audi, Hyundai, BMW and Kia investing and setting up their facilities in Mexico, it comes as no surprise that the automotive industry is booming. Mexico will soon climb up the ladder in global production ranks once Mazda, Honda, Nissan and Toyota also start to scale up their production. A question that remains, however, is what does this mean for Mexico, its local players and its human capital?

Though the influx of OEMs is seemingly great for the country, the reality is, however, that these new players invite and bring their own providers to set up their operations in Mexico as well, which in turn limits the opportunities for local providers as these newcomers win market share, edging out Mexican players. The challenge then becomes how can Mexican companies compete in an industry based on trust and seemingly, previously established relationships? A possible answer industry analysts give is to boost innovation and design within Mexico and Mexican companies.

From the starting line, however, Mexico is hampered by the fact that research and development (R&D) investment in Mexico is still one of the lowest in the developed world, where the public sector investment is a meager 0.6% of GDP, whereas countries with similar GDPs, such as South Korea, invest at least 4.1% of their GDP into R&D. Industry players may argue, moreover, that the private sector (mainly foreign OEMs and Tier 1s) has not taken a leading role in fomenting the local supply chain through R&D investments to transform it from being a manufacturing country to one of innovation and design.

OEMs take quite a big risk when setting up a new plant abroad. As such, they bring their own supply of providers and vendors, and they give little opportunities to local suppliers in the short-to-medium term. “It is tough for local players to compete because of the preferential treatment demonstrated by the OEMs. It is important to note, however, that the Mexican companies are just as apt as any foreign

Tier 1, but the OEMs eventually realize this only after a couple of years when they start to look for cost savings through local component sourcing,” argued Rodrigo Dromundo, CFO of SAG-MECA-SA.

Another challenge Mexican companies face in comparison to the foreign companies is the difficult and costly access to finance. “Even if a Mexican company has very good credit,” continued Dromundo, “it may get a loan in pesos with a 7% or 8% annual interest rate, which is most of the times not feasible, especially if margins are tight. If a company exports and sources the raw material from abroad, by undergoing various detailed and tedious negotiations with EXIM banks, the best rate one might get is 3%, which is still quite high even if the loan is in dollars. So, access to finance is really a barrier of entry for Mexican companies, and this is where foreign companies have an important advantage and why Mexican entrepreneurship is suppressed.”

According to Alberto Torrijos, Deloitte Mexico’s consulting partner and automotive lead: “Mexican Tier 2 and Tier 3 companies cannot risk their own capital. They do not necessarily, however, need foreigners to buy their product since their production goes mostly to local plants, but they need foreign companies to invest in them.... An interesting, progressive phenomenon happening in Japan could highly benefit Mexico; larger companies, such as OEMs and Tier 1s, actively invest in local suppliers and teach them how to get certified as this not only benefits the companies in the local supply chain but, more importantly, it benefits these larger companies as a return on their investment. The local businesses in Mexico need more push and financial support, and it is important for the government to start taking concrete steps to support their growth.”

“OEMs and Tier 1s do make a significant effort to try to integrate local players—it is in their best interest, especially in the long-run for cost-benefit,” argued Luis Alberto Díaz Monjaraz, general manager



of the newly reformed local Tier 2, Ingeniería y Manufactura (INMAN). “The problem may be, on the other hand, that local companies may lack the sufficient standards and capabilities in order to be able to fully serve these companies that are understandably demanding some of the highest quality.”

Competition is becoming quite a challenge for local companies, and one of the most significant ways Mexican companies can compete is by providing better quality products, with 100% on-time and zero PPM in order to try and beat the competition on cost. As such, one of the main priorities for companies is to create a design center in order to become a company of innovation and design of greater-valued added products. “The first step is to hire designers and purchase the software which are quite costly—and this process is not a short-term project, but definitely more on the long-term, which in turn becomes a much heavier investment,” stated Javier Ortiz Zavala, director general of Peasa.

Proper access to finance has been quite the political theme in Mexico’s modern history, as it is seen as one of the thwarting factors for the progress of the Mexican economy, especially for SMEs in the automotive industry. “Producing raw materials for the automotive industry requires a substantial amount of investment and, thus, it is not very easy to build up a local supplier base,” argued Ismael Gómez Charles general director of ISGO Manufacturing.

In an effort to revitalize the local economy, President Enrique Peña Nieto proposed, and successfully carried out, the Financial Re-

form in 2013 with the goal of lowering the barriers of access to capital. “As a company,” said INMAN’s Diaz, “it is now less challenging to get financing from a bank—the real challenge lies, however, in receiving attractive financing terms and interest rates, as these become quite expensive—especially operating in the automotive industry, a sector known for its small margins, and payments schemes that range from 60, 90 and 120 days after delivery. Having access to cheaper and more attractive payment terms on credit, or maybe even having financing departments within banks dedicated to catering products to the automotive industry would really benefit local Mexican companies in the sector currently dominated by foreign players.”

Once equipped with the proper standards and certifications, César A. Gómez Narvaez, commercial manager of Duralitte believes that fully Mexican companies can compete with no problem with foreign entities. “While they are often impressed with the quality and prices we offer, it becomes quite a challenge to get a foot in the door, as these companies may have never heard of companies like Duralitte or other local producers.” “Being a Tier 1 or a Tier 2, does not mean you offer a different product whether you are 100% Mexican owned, or a foreign company operating in Mexico. Every company operating wants to be a supplier to the main players—the challenge common to all (domestic and foreign) is the competition of being granted that opportunity,” argued Mario Palma, CEO of RAMCO

“It is our duty as local companies to let these

new foreign OEMs know that we have the know-how to provide for their necessities,” said Manuel Mendoza, director general of American Textil. “We have to find these opportunities ourselves and convince certain businesses we can give them the product they need. If we do not do this,” he warned, “they will just keep importing or keep bringing their foreign providers over.”

Mexico’s government’s current economic roadmap shows it is an administration ready to support local industries by simplifying the bureaucratic complexities for establishing local companies, and making efforts, such as the Financial Reform, to work with the banks to try provide more favorable lending rates to those seeking to expand. Nevertheless, industry players argue that more needs to be done, especially in providing local companies with equal incentives as the ones offered to international players in order to ensure competition is fair. “While there is definitely the need to attract large OEMs, such as Kia, to generate more jobs and business,” said Luis Arredondo, general director of Nava Hermanos, “the government must ensure that these investments also benefit local production. [The Mexican automotive local providers] are confident that we can compete with international companies if given a level playing field. Institutions like ProMéxico, the Secretary of the Economy and the Automotive Clusters have been instrumental in providing information on the supply chain and linking local suppliers with customers in order for Mexican companies to be able to prosper.” —



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# *Future Outlook*



"The development of the supply chain is a key aspect for the continual progress of the automotive sector in Mexico, especially in the face of waves of competition from foreign players as new OEMs come to Mexico"

Eduardo J. Solís Sánchez,  
President,  
AMIA





## Conclusion

The continual establishment of the world's most important assembly plants has increasingly strengthened the automotive supply chain in Mexico, boosting the emergence of regional clusters. This is largely explained by the implicit demand that the market has generated; for example, Nissan has created an exponential development surrounding its plant in Aguascalientes, or the areas near the Honda and Mazda plants in Guanajuato. Similarly, this is occurring near the FCA and General Motors plants located in Coahuila, and the Volkswagen plant in Puebla. To date, ProMéxico has enlisted approximately 1,200 different suppliers located in Mexico, meaning the growth of the automotive industry in these three regions has been dramatic.

Its great development potential has established synergies through the triple-helix model, comprised of the three levels of government (municipal, state and federal), public and private educational institutions, and automotive companies. This collaborative spirit has led to nuanced specifications in areas such as sustainability, finance, human resources, industrial operations, and innovation—in order to increase business competitiveness in the automotive sector.

With the establishment of the automotive clusters throughout the country, the Mexican automotive industry reflects both a geographical regional reality, and a spirit of improvement, based on the best global corporate practices of the sector, aided by the guidance and leadership of the Mexican Automotive Industry Association (AMIA), the National Association of Manufacturers of Buses, Trucks and Tractor Trucks (ANPACT), and the National Auto Parts Industry (INA), as these all

collaborate and cooperate closely with these clusters.

Eduardo Solís, president of the AMIA stated: “The development of the supply chain is a key aspect for the continual progress of the automotive sector in Mexico, especially in the face of waves of competition from foreign players as new OEMs come to Mexico.”

“Audi was the first OEM dedicated exclusively to the production of premium vehicles to enter to the country, having more specialized manufacturing processes. In recent years, other premium OEMs have established operations in the country like BMW, Daimler (Mercedes Benz) and Nissan-Renault (Infiniti). As of their premium profile, the projects of the OEMs opened a new era for FDI into Mexico,” summarized Cortes, ProMéxico's automotive sector executive director.

“There is, however,” continued Solís, “an important opportunity for local Tier 2 and Tier 3 players, as foreign Tier 1s continue to import more than half of the materials needed for their production, so it is a responsibility of not only the automotive industry but the Ministry of Economy and its various governmental arms to boost the capacities and capabilities of Mexican companies in order to be able to compete.”

“Over the next years,” Solís finalized, “Mexico will continue to play a key role among the world's most important producers and exporters. The new aim for Mexico is in the area of R&D and innovation. With close to 120,000 engineers graduating on a yearly basis, Mexico has been succeeding in setting up important engineering and design centers. This is the future for Mexico.”

## The Northeast



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D & D Manufacturing	N.L.	818-145-0511	www.ddmfg.com	Stamping
CATAFORESIS	N.L.	818-239-0363	www.cataforesis.com	stamping
MJ CELCO MEXICO, S. DE R. L. DE C. V.	N.L.	811-352-3526	www.mjcelco.com	stamping

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CROMIN DE MÉXICO, S.A. DE C.V.	N.L.	818-360-7524	cromindemexico.com	Surface Finishing
AKZO NOBEL INDA, S.A. DE C.V. (INTERPON)	N.L.	818-286-9800	www.inda.com	Surface Finishing
PLATING TECHNOLOGIES (Metalizados de Alta tecnología)	N.L.	818-372-0450	www.platingtech.com	Surface Finishing
METOKOTE DE MÉXICO S. DE R. L. de C. V.	Coah.	844-415-5840	www.metokote.com	Surface Finishing
Erie Shop S de R L de C V	N.L.	818-386-3391	www.erieshop.com	Surface Finishing
METAL PLATING E INDUSTRIALES DE MONTERREY S.A. DE C.V.	N.L.	818-058-3373	www.metalplating.mx	Surface Finishing
ANODIZE	N.L.	868-811-4300	www.anodize.com.mx	Surface Finishing
Maq-Rey, S.A. de C.V.	N.L.	811-365-3934	maq-rey.com	Surface Finishing
ALD Tratamientos Térmicos	Coah.	844-866-9770	www.alddt-mexico.com	Heat Treat
TRATAMIENTOS TÉRMICOS VICTORIA, S.A. DE C.V	N.L.	818-351-9940		heat treat
TECNOLOGÍA EN TRATAMIENTOS TÉRMICOS S.A. DE C.V.	N.L.	818-351-3112	www.tecnorat.com.mx	heat treat
TRATAMIENTOS TÉRMICOS AVANZADOS, S.A. DE C.V. TTA	N.L.	818-342-4864	www.ttavanzados.com	heat treat
TRATAMIENTOS ATMOSFÉRICOS USA (TAUSA)	N.L.	818-059-0180	http://www.tausa.com.mx/	heat treat
EZI Metales	N.L.	818-145-0405	ezimetals.com.mx	sheet metal
AC METAL PRO S.A. DE C.V.	N.L.	818-381-0664	www.acmetalpro.com	sheet metal
Maquinados y Servicios Díaz	N.L.	818-376-2533		sheet metal
Altesa Soluciones Industriales, S.A. DE C.V.	N.L.	818-239-0699	www.altesamx.com	Autoparts
Troqueles y Matrices	N.L.	818-336-0010	www.tymsa.com.mx/	Autoparts
Criser, S.A de C.V.	N.L.	818-393-1878	www.criser.com.mx	Autoparts
MAQUINADOS REYCHAP S.A	N.L.	818-364-5154	www.reychap.com	Autoparts
ROSMAN CNC	N.L.	818-297-1706	-	sheet metal
JAITER	N.L.	818-397-6645		auto parts
Novocast	N.L.	818-288-5800	www.novocast.com	Casting
EQUIPOS DE CARBURACIÓN SATELITE	N.L.	825-238-0015	www.satelitemx.com	Casting
PLASTICS AND CASTING, S.A. DE C.V. (SMARTCAST)	N.L.	818-351-2151	www.smart-cast.mx	Casting
Quasar Controls	Coah.	871-718-6090	www.quasarcontrols.com	Consulting
PLM Del Norte S.A. de C.V.	Coah.	871-763-4777	www.plmdelnorte.com	Consulting
Consultores CPM	N.L.	818-989-7902	www.consultorescpm.com.mx	Consulting
Equitec Equipos S.A. de C.V.	N.L.	811-099-0998	www.equitec.com.mx	Consulting
Kelly Services	N.L.	614-414-7789	www.kellyservices.com.mx	Consulting
Estampados MTY	N.L.	81-8336-0999	www.estampadosmt.com.mx	Stamping
Tool Engaged S.A. de C.V.	Coah.	871-7-17-80-99	www.toolengaged.com.mx	Machining
ARTICULOS TROQUELADOS MONTERREY, SA DE CV	N.L.	818-351-4082	www.atm-mx.com	Machining
HERRAMIENTAS Y DISPOSITIVOS MECÁNICOS	N.L.	818-989-7198	www.hdmnc.com.mx	Machining
Metalizados y Maquinados de México	N.L.	818-374-1541	www.mymmsa.com.mx	Machining

Welding & Cutting México, S.A. de C.V.	N.L.	811-090-8500	www.wcmex.com.mx	Machining
NWP National Welding Process	Tamps.	868-133-0048		Machining
HERRAMIENTAS Y DISPOSITIVOS MECÁNICOS	N.L.	818-989-7198	www.hdmnc.com.mx	Machining
GEMAK	N.L.	812-088-0150	www.gemak.com.mx	Machining
Lubral	N.L.	81-8122-7407	www.lubral.com	Lubricants
HERRAMIENTAS Y DISPOSITIVOS MECÁNICOS	N.L.	818-989-7198	www.hdmnc.com.mx	Machining
GEMAK	N.L.	812-088-0150	www.gemak.com.mx	Machining
RODA ROL, S.A. DE C.V.	Coah.	864-618-0150	www.rodarol.com.mx	Machining
TECMUR	Coah.	871-750-6160	www.tecmur.com	Machining
Maquinaria PARJ	N.L.	*818-375-1933		Machining
Grupo Plasma Automation S.A. de C.V.	Gto.	477-772-6095	www.plasmaautomation.com.mx/	machining
Maquinados SIGUE	N.L.	818-330-6915		Machining
ROSMAN CNC	N.L.	818-182-9717		Machining
MASTERTEC DE MÉXICO	N.L.	818-372-1918	www.mastertec.com.mx	Machining
MAQUILAS DE ALTA PRECISIÓN (MAPSA) Se incorpora a QUALY.	N.L.	811-334-0228	www.mapsamty.com	Machining
Technología en Maquinados S.A. de C.V.	N.L.	818-319-0407	www.tecmaq.com.mx	Machining
NWP National Welding Process	Tamps.	868-133-0048		machining
ABT Manufacturing Services S.A. DE C.V.	N.L.	818-882-9664	www.abtmexico.com	machining
DUROSA SA DE CV	N.L.	818-350-8837	www.durosa.net	machining
FLEXYLIN, SA DE CV	N.L.	818-336-0108	http://www.flexyline.com.mx/	machining
MAQUINARIUM	N.L.	818-190-1790	www.maquinarium.com.mx	machining
MRISA Maquinados y Reparaciones para la Industria, S.A. de C.V.	N.L.	818-372-7943	http://www.mrisa.com/	machining
MAQUINADOS TÉCNICOS COMPUTADOS	N.L.	818-332-5156		machining
Maquinado Jireh Industriales	N.L.	811-167-1069	www.jireh.mx	machining
Maquinados y Generados S.A. de C.V. (MYGSA)	N.L.	818-351-2550	http://www.mygsa.com.mx/	machining
SERMEC, S.A. DE C.V.	N.L.	818-371-2000	www.sermec.com.mx	machining
SEINT'S STEEL, S.A. de C.V.	N.L.	818-900-3400	www.seints.com	machining
Maquinados Industriales Mitras SA de CV (MIMSA)	N.L.	818-316-6323	http://www.mimsamaquinas.com/	machining
MACOR DE MEXICO SA DE CV	N.L.	818-331-7000	www.macordemexico.com.mx	metalworks
FABRICACIONES Y MAQUINADOS PARA LA INDUSTRIA, S.A. DE C.V.	Coah.	866-118-0034	www.famisa.mx	metalworks
Dosemmes 2M S.A. de C.V.	Coah.	871-193-0888	www.dosemmes.com	Misc
CIROTEC	Coah.	871-731-5489	www.cirotec.mx	Misc
CYGNUS	N.L.	811-365-1605	www.cygnusmx.com	Misc
Butler de Mexico	N.L.	818-262-4600	www.butlermfg.com	Misc.
Universidad Tecnológica de Torreón	Coah.	871-729-7407	www.utt.edu.mx	Misc.
QT Metal Industries SA de CV	N.L.	812-082-2096	www.qtechmexico.com	Misc.
INDUSTRIAL RUBBER & GASKET	N.L.	818-144-2500	www.rubber.com.mx	packaging
Carplastic S.A. de C.V.	N.L.	818-369-2200		plastic
Welding & Cutting México, S.A. de C.V.	N.L.	811-090-8500	www.wcmex.com.mx	Machining



Maquinados Industriales Mitras SA de CV (MIMSA)	N.L.	818-316-6323	http://www.mimsamaquinados.com/	machining	JNM de México	Coah.	844-489-7569	www.jnm.ca	tooling
MACOR DE MEXICO SA DE CV	N.L.	818-331-7000	www.macordemexico.com.mx	metal-works	Alta Tecnología en Mecanizado, S.A. de C.V.	N.L.	818-351-4082	www.atm-mx.com	tooling
FABRICACIONES Y MAQUINADOS PARA LA INDUSTRIA, S.A. DE C.V.	Coah.	866-118-0034	www.famisa.mx	metal-works	New Process Steel	N.L.	81-8215-7500	www.nps.cc	Sheet Metal
Dosemmes 2M S.A. de C.V.	Coah.	871-193-0888	www.dosemmes.com	Misc	Pace Industries de México, S.A. De C.V.	Coah.	844-438-7800	www.paceind.com/	tooling and die casting
CIROTEC	Coah.	871-731-5489	www.cirotec.mx	Misc	Magnesium Aluminum Corporation	Chih.	614-442-2942	www.magalumcorp.caler.com	tooling and die casting
CYGNUS	N.L.	811-365-1605	www.cygnusmx.com	Misc	Pace Industries de México, S.A. De C.V.	Coah.	844-438-7800	www.paceind.com/	tooling and die casting
Butler de Mexico	N.L.	818-262-4600	www.butlermfg.com	Misc.					
Universidad Tecnologica de Torreón	Coah.	871-729-7407	www.utt.edu.mx	Misc.					
QT Metal Industries SA de CV	N.L.	812-082-2096	www.qtechmexico.com	Misc.					
INDUSTRIAL RUBBER & GASKET	N.L.	818-144-2500	www.rubber.com.mx	packaging					
Carplastic S.A. de C.V.	N.L.	818-369-2200		plastic	Volkswagen de México S.A. de C.V.	Pue.	22-230-8111	www.vw.com.mx	OEM
ELECTRONICOS ANIMADOS S.A. DE C.V.	N.L.	*818-385-0102		Autoparts	Audi México, S.A. de C.V.	Pue.	1-800-849-2383	www.audi.com.mx	OEM
GROTE INDUSTRIES DE MEXICO S.A. DE C.V.	N.L.	818-262-4400	www.grote.com	plastic	FCA México, S.A. de C.V.	Edo-mex.	722-279-5000	www.chryslerdemexico.com.mx	OEM
JONES PLASTIC AND ENGINEERING DE MONTERREY S.A. DE C.V.	N.L.	818-625-3500	www.jonesplastic.com	plastic	General Motors México S. de R.L. de C.V.	Edo-mex.	1-800-508-0000	www.gm.com.mx	OEM
NICHOLAS PLASTICS DE MEXICO S. DE R.L. DE C.V.	N.L.	818-381-0687	www.npdem.com	plastic	Bayerische Motoren Werke de México S.A. de C.V.	Edo-mex.		www.bmw.com.mx	OEM
Criser, S.A de C.V.	N.L.	818-361-8803	www.criser.com.mx	plastic	Mercedes Benz México, S.A. de C.V.	Edo-mex.	713-279-2486	www.mercedes-benz.com.mx	OEM
PLASTICOS E INYECTORES DE SALTILLO, S.A. DE C.V.	Coah.	844-134-5138	www.plasticoseinyectores.com	plastic	Ford Motor Company, S.A. de C.V.	CDMX	555-899-7594	www.ford.mx	OEM
Alian Smart Plastics	N.L.	818-336-1155	www.alian.mx	plastic	Nissan Mexicana, S.A. de C.V.	Mor.	777-329-2020	www.nissan.com.mx	OEM
TEPSO PLASTICS MEX S.A. DE C.V.	N.L.	811-351-7500	www.tepsoplastics.com.mx/	plastic	VOLKSWAGEN DE MEXICO S.A. DE C.V.	Pue.	222-230-6273	www.vw.com.mx	OEM
EPKAMEX	N.L.	*	www.plasticoseinyectores.com/	plastic	Sypris Technologies		722-262-3300	https://www.sypristech-nologies.com/	T1
PLASTICOS E INYECTORES DE SALTILLO, S.A. DE C.V.	Coah.	844-416-6636	www.plasticoseinyectores.com/	plastic	Magna Assembly Systems de México S.A. de C.V.	Edo-mex.	555-864-9814	www.magna.com	T1
FALCCOS DE MÉXICO, S.A. DE C.V.	N.L.	818-390-5564	www.falccos.com.mx	plastic	MACIMEX	Edo-mex.	722-276-6500	www.macimex.com/	T1
Plásticos CRT	N.L.	811-133-9384	www.plasticosort.com.mx	plastic	Dassault Systemes de México	CDMX	555-256-0780	www.3ds.com/	T1
Leoplast, S.A. de C.V.	N.L.	818-360-4165	leoplast.com.mx	plastic	Movimiento y Control del Aire de Toluca S.A. de C.V.-MCAT	Edo-mex.	722-134-2932	www.mcat.com.mx	T1
Meridian Automotive Systems de México S. de R.L. de C.V.	Coah.	864-616-3143		Plastic	Valeo Climate Control de México S. A de C. V.	Edo-mex.	722-279-4000	www.valeo.com	T1
KP MÉXICO, S.A. de C.V.	N.L.	818-386-3695	http://www.kpmexico.com/	plastic	Trelleborg YSH S.A. de C.V.	Edo-mex.	722-262-0200	www.trelleborg.com/en	T1
INTERNATIONAL QUALITY PLASTICS, S.A. DE C.V. (ELECTRONICOS ANIMADOS)	N.L.	818-385-0102	http://iqp.com.mx/	plastic	Elring Klinger Mexico S.A. de C.V.	Edo-mex.	722-262-2800	www.elringklinger.de	T1
INDUSTRIAS GESTA S.A DE C.V	N.L.	818-336-1155	http://www.alian.mx/	plastic	U-Shin Access Mechanisms México, S.A. de C.V.	S.L.P.	722-279-4057	www.u-shin-ltd.com/	T1
In Injection Molding S.A de C.V. (PROVIDENCE)	N.L.	818-360-3273	http://www.providence-plastics.com	plastic	Industrias Cazel S. de R.L. de C.V.	Edo-mex.	552-620-7300	www.cazel.mx	T1
American Trim	N.L.	81-1454-3803	www.amtrim.com	Metal-working	Sony de Mexico, S.A. de C.V	CDMX	553-067-1000	www.sony.com.mx	T1
Steel Technologies de Mexico SA de CV	N.L.	811-223-0400	www.steeltechnologies.com/	Steel	Caska Mexico S.A. de C.V.	CDMX	555-393-0666	www.caskamexico.com	T1
Aceros Ferrom Rar, S.A. de C.V.	N.L.	818-336-1822	www.acerosfercom.com	Steel	HARADA INDUSTRIES (MEXICO), S.A. DE C.V.	CDMX	555-272-4806	www.harada.co.jp	T1
ABASTECEDORA DE ACEROS Y MAQUILAS SA DE CV	N.L.	818-360-0414	http://www.aamsa.com/	Steel	DuPont México S.A de C.V	CDMX	555-722-1150	www.dupont.mx	T1
Aceromart	N.L.	818-315-4187	http://www.aceromart.com/	Steel	Herrajes y Acabados Metálicos, S.A. de C.V.	CDMX	555-368-1255	www.hamsa.com.mx	T1
					BOCAR S.A.DE C.V.	CDMX	555-422-2300	www.bocar.com.mx	T1

## Central / South

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Plastic Tec S.A. De. C.V.	Edo-mex.	728-282-8000	www.bocar.com.mx	T1
CONTITECH FLUID MEXICANA, S.A. DE C.V.	Edo-mex.	555-565-3496	www.contitech.com.mx/	T1
Películas Utiles, S.A. de C.V.	CDMX	555-443-2943	www.películasutiles.com	T1
Allgaier de México SAPI de CV	CDMX	555-803-1050	https://www.allgaier.de/en	T1
Cables y Estampados, S.A. de C.V.	CDMX	555-657-4266		T1
Industrias Automotrices R.C. S.A. de C.V.	CDMX	555-657-0893	www.grupo-rc.com.mx	T1
NUGAR S.A. DE C.V.	Edo-mex.	555-899-2503	www.cleautomotive.com	T1
MYSOLUTION TAILORED TECHNOLOGY S.A. de C.V.	CDMX	555-908-3541	www.mysolution.com.mx	T1
Goodyear Servicios Comerciales S de RL de CV	CDMX	559-140-5600	www.goodyear.com.mx	T1
Huf México S de R L de C V	Pue.	222-141-5000	www.huf-group.com	T1
AUXIM DE MEXICO, S.A. DE C.V.	Pue.	222-210-5445	www.auxim.com	T1
Kayser Automotive Systems S en C	Pue.	222-210-5825	www.kayser-automotive.com	T1
Kunststoff-Technik Trier de Mexico, S.A. de C.V.	Pue.	222-223-1700	www.scherer-trier.de	T1
Autotek México S.A. de C.V.	Pue.	222-223-2700	www.autotek.com.mx/	T1
Kiekert de Mexico, S.A. de C.V.	Pue.	222-223-9500	www.kiekert.com	T1
JOHNSON CONTROLS AUTOMOTRIZ MEXICO S DE RL DE CV	Tlax.	246-465-0100	www.johnsoncontrols.com/	T1
Faurecia Sistemas Automotrices de México, S.A. de C.V.	Pue.	222-229-8712	www.faurecia.com	T1
Brose Puebla, S. A. de C. V.	Pue.	222-229-1311	www.brose.com	T1
ROSENDO VAZQUEZ MORENO	Pue.	222-231-0586	www.tuenkers.com	T1
SAS AUTOMOTIVE SYSTEMS S.A. DE C.V.	Pue.	222-273-5820	www.sas-automotive.com/	T1
Lear Corp. México, S.A. de C.V.	CDMX	555-862-3800	www.lear.com	T1
TECNICAS DE FLUIDOS, S.A. DE C.V.	Pue.	222-282-1382	www.teflu.com.mx	T1
Allgaier de Puebla, S.A.P.I. de C.V.	Pue.	222-286-6205	www.allgaier.de	T1
Unicar Plastics, S.A. de C.V.	Pue.	222-288-7474	www.unicarmex.com	T1
Grupo Antolin Silao; S.A. de C.V.	Gto.	472-722-7400	www.grupoantolin.com	T1
Abloj Mul-t-lock México S.A. de C.V.	Pue.	222-505-7111	www.fab.assaabloy.cz	T1
BOS Automotive Products Mexico S.A. de C.V.	Gto.	462-606-7400	www.bos.de/en/	T1
Lunkomex S. de R.L. de C.V.	Pue.	222-294-3594	www.flex-n-gate.com	T1
Nicro Bolta S.A. de C.V.	Pue.	222-894-3400	www.nicrobolta.com	T1
Draexlmaier Partes Automotrices de Mexico, S. de R.L. de C.V.	Pue.	227-102-6000	www.draexlmaier.de	T1
POSCO MPC S.A. DE C.V.	Pue.	227-102-6100	www.poscomppc.com.mx/	T1
AUNDE MEXICO S.A. DE C.V.	Pue.	227-275-9900	www.aunde.com	T1
Lupini por OTT Mexico S.A. de C.V.	Pue.	227-276-3214	www.opentechnologytrading.com/	T1
GENI DE MEXICO S.A. de C.V.	Pue.	227-275-9160	www.geni.com.mx	T1
Interiores Automotrices, S. A. de C.V.	Tlax.	241-418-4660	www.interauto.com.mx	T1

Kautex de Mexico S. A. de C. V.	Pue.	222-372-0500	www.kautex.com	T1
Olsa Sistemas de Iluminación Automotriz, S. de R.L. de C.V.	Qro.	442-221-5696	www.olsagroup.com	T1
Air Thermal Systems, S. de R.L. de C.V.	Pue.	222-222-8060	www.ai-thermal.com/	T1
ELECTRONICA AUDIOCODE, S.A. DE C.V.	Edo-mex.	552-452-4577	www.audiocode.com.mx	T1
BLINDAJES ALEMANES S.A. DE C.V.	Mor.	552-453-4444	www.wblindajesalemanes.com/	T1
Kirchhoff Mexicana, S.A. de C.V.	Pue.	222-266-5509	www.kirchhoff-gruppe.de	T1
MECANISMOS AUTOMOTRICES S.A. DE C.V.	Edo-mex.	551-098-8182		T1
Draexlmaier Componentes Automotriz de Mexico, S de R.L. de C.V.	S.L.P.	874-147-2599	mx.draexlmaier.com	T1
ESTANADORA, S.A. DE C.V.	Edo-mex.	555-397-8422	www.estanadora.com.mx	T1
FATA Aluminum México, S.A. de C.V.	CDMX	555-242-5843	www.fataaluminum.com	T1
ETAL, S.A. de C.V.	CDMX	1-800-681-8107	www.etal.com.mx/	T1
Industrias Automotrices RC, S.A. de C.V.	CDMX	555-657-0893	www.grupo-rc.com.mx/	T1
SYVASA SERVICIOS Y VENTA DE ACERO S.A. DE C.V.	CDMX	555-686-0327	www.syvasa.com.mx/	T1
SUMITOMO CORPORATION DE MEXICO S.A. de C.V.	CDMX	555-520-2825	asociacionmexicanadeenergias.com.mx/	T1
FORMETAL MEXICANA, S.A DE C.V.	CDMX	555-561-9330	www.formetalmexicana.com/	T1
Advanced Comfort System Mexico S.A de CV	Edo-mex.	555-888-5107	www.cleautomotive.com	T1
"	N.L.	812-088-0150	www.gemak.com.mx	Machining
Continental Tire de Mexico SA de CV"	CDMX	521-500-0996	www.continental-corporation.com	T1
R-F Hoods & Truck Parts S.A. de C.V.	Edo-mex.	555-932-1340	www.refidrio.com.mx	T1
Plastic Tec SA de CV	CDMX	555-422-2400	www.bocar.com.mx	T1
Martinrea Developments de Mexico S. A de C.V.	Edo-mex.	551-083-9000	www.martinrea.com	T1
BorgWarner Morse TEC Mexico, S.A. de C.V.	CDMX	555-039-8991	www.borgwarner.com	T1
Hella Automotive México S.A. de C.V.	Edo-mex.	555-321-1300	www.hella.com	T1
Mecaplast Group	Pue.	222-210-5766	www.mecaplast.com	T1
Sag-mecasa	Edo-mex.	551-083-9870	www.sag-mecasa.com/	Autoparts
Hitachi Automotive Systems	Edo-mex.	722-265-1905	www.hitachi-automotive.co.jp/	Autoparts
Eimex	Edo-mex.	555-311-7776	www.eimex.com.mx/	Autoparts
Asiatech QC	Pue.	222-240-4030	www.asiatechqc.com	Autoparts
KWD Industrias S.A. de C.V.	Edo-mex.	722-265-7595	www.kirkwood.com.mx	Autoparts
Pepperl Fuchs Mexico S.A. de C.V.	CDMX	555-636-0970	www.pepperl-fuchs.com.mx	Autoparts
Intier Automotive Interiors de Saltillo, S.A. de C.V.	Coah.	844-438-1100		Autoparts
Cooperstandard Automotive Sealing de Mexico S.A. de C.V.	Ags.	465-922-2000	www.cooperstandard.com	Autoparts
JSP International de Mexico S.A de C.V	Edo-mex.	722-548-2810	www.jsp.com	Autoparts





TF VICTOR S.A. DE C.V.	Edo-mex.	552-122-8500	www.tfictor.net/es/	autoparts	Cornplast S.A. de C.V.	Pue.	222-889-6788	www.cornplast.com.mx	Autoparts
MCCORD PAYEN DE MEXICO, S. DE R.L. DE C.V.	Edo-mex.	553-003-0200		autoparts	JOPP AUTOMOTIVE DE MEXICO S.A. DE C.V.	Tlax.	241-412-7302	www.jopp.com	Autoparts
DINAMICA AUTOMOTRIZ DE MEXICO, S.A.	Edo-mex.	555-000-6700		autoparts	Calidad Total FOOM S.A. de C.V.	Tlax.	246-462-2376		Autoparts
Bujías NGK de México, S.A. de C.V.	Edo-mex.	555-317-5872	www.ngkntk.com.mx	autoparts	Rassini Frenos, S.A. de C.V.	CDMX	248-482-8200	www.sanluisrassini.com	Autoparts
FILTROS Y TUBOS S.A. DE C.V.	Edo-mex.	555-317-9876		autoparts	INDUSTRIAS TOJI MORA S.A. de C.V.	Pue.	222-288-4474		Autoparts
INSERTECH S.A. de C.V.	CDMX	555-662-9925		autoparts	<b>ERM Mexico</b>	CDMX	55-5000-2500	www.erm.com	Environmental Consultancy
Federal Mogul de México S.A. de C.V.	CDMX	555-729-8800	www.federalmogul.com/	autoparts	Brummer Cooling Systems	Tlax.	222-231-9990	www.brummer.com.mx/	Autoparts
DMI Itzapalapa S.A. de C.V.	CDMX	555-804-3300	www.divmi.com	autoparts	MAHLE Sistemas de Filtración de México S.A. de C.V.	Edo-mex.	722-262-7050	www.mx.mahle.com	Autoparts
ACCESORIOS DE CALIDAD INTERNACIONAL S.A. DE C.V.	CDMX	555-842-1365	www.acisamexico.com.mx	autoparts	Mecanomatic, S.A. de C.V.	CDMX	555-670-1727	www.mecanomatic.com	Autoparts
MAGNETI MARELLI SISTEMAS ELECTRONICOS MEXICO,S.A. DE C.V.	Edo-mex.	555-873-2511	www.magnetimarelli.com	autoparts	Productos y Derivados Domésticos e Industriales, S.A. de C.V.	CDMX	555-681-0415	www.prodtdi.com	Autoparts
Osrām, S.A. DE C.V.	Edo-mex.	555-899-1800	www.osram-latam.com/	autoparts	Tuercas y Tornillos Báez, S.A. de C.V.	CDMX	555-642-3729	www.tbaz.com.mx	Autoparts
Procesos y Manufacturas Técnicas S.A. de C.V.	Tlax.	241-412-7027		autoparts	INDUX S.A. DE C.V.	CDMX	552-282-9330	www.indux.com.mx/	Autoparts
Truck Lite, S. de R.L. de C.V.	Pue.	222-210-5573	www.truck-lite.com	autoparts	PROMOTORA DE PARTES AUTOMOTRICES, S.A. DE C.V.	CDMX	555-260-0233		Autoparts
PWO DE MEXICO, S.A. DE C.V.	Pue.	222-223-8600	www.pwo-mexico.com.mx	Autoparts	KOYO MEXICANA, S.A. DE C.V.	CDMX	555-207-3860	www.koyo.com.mx	Autoparts
Mecaplast de México S.A. DE C.V.	Pue.	222-210-5761	www.mecaplast.com/	Autoparts	RESORTES Y PARTES S.A. DE C.V.	Edo-mex.	555-358-7366	www.rypsa.com/	Autoparts
TB&C Outsert México S. de RL de C.V.®	Pue.	222-210-5395	www.outsert.com	Autoparts	ConduMex Autopartes	CDMX	555-393-5923	www.grupoconduMex.com.mx/	autoparts
Automotive Veritas de Mexico S.A. de C.V.	Pue.	222-210-6360	www.veritas.ag/es/	Autoparts	NSK Bearings Manufacturing México S.A. de C.V.	Edo-mex.	553-682-2900	www.mx.nsk.com	autoparts
IACNA MEXICO II, S. DE R.L. DE C.V.	Pue.	222-211-2247		Autoparts	W. KLEINERT INDUSTRIAS AUTOMOTIVE MEXICO SA DE CV	Pue.	222-210-5071		autoparts
Inoplast Composites S.A. de C.V.	Pue.	222-380-8000		Autoparts	KYB México S.A. de C.V. (KMEX)	CDMX	555-282-5770	www.kyb.com.mx	autoparts
GONVAUTO PUEBLA S.A. DE C.V.	Pue.	222-223-8300		Autoparts	Big Brakes S.A. de C.V.	Edo-mex.	551-666-8163	www.hawkmexico.com	autoparts
TWB de México, S.A. de C.V.	Coah.	844-438-9650	www.twbcompany.com	Autoparts	Brinco Automotriz	Edo-mex.	555-870-5020	www.brinco.com.mx	textiles
Refa Mexicana S.A. de C.V.	Pue.	222-229-9600		Autoparts	FYNOTEJ S DE RL DE CV	Edo-mex.	555-861-8030	www.fynotej.com	textiles
Benteler de México S.A. de C.V.	Pue.	222-223-2002	www.benteler.com/	Autoparts	Concorde Group S. A de C.V.	Pue.	222-210-6150	www.concorde.com.mx/	textiles
Fontana Fasteners de Mexico S.A. de C.V.	Pue.	222-230-5090	www.gruppofontana.it/en	Autoparts	Jugla de México S.A. de C.V.	Pue.	222-231-7177		textiles
Eisentech Mexico S.A. de C.V.	Pue.	222-233-7642		Autoparts	Ideal Fibras & Fabricas Wielsbeke	Pue.	222-893-0234		textiles
Hules EIME S.A. de C.V.	Pue.	222-240-5030	polihules.com/	Autoparts	Industrias SEA S.A. de C.V.	Pue.	222-282-5822	www.industriassea.com.mx/	textiles
Pelzer de Mexico, S.A. de C.V.	Edo-mex.	779-796-0550	www.hppelzer.com/	Autoparts	SE Bordnetze Mexico S.A. de C.V.	Tlax.	246-465-2300	www.sebn.com	Electronic Systems
SAVAL DE MEXICO S.A. de C.V.	Pue.	222-297-3365		Autoparts	Arocomex, S.A. de C.V.	Tlax.	248-482-8600		Electronic Systems
Automotive Mexico Body Systems, S. de R.L. de C.V.	Pue.	222-303-2913	www.intevaproducts.com	Autoparts	Tyco Electronics Mexico S. A.	Edo-mex.	551-106-0920	www.te.com	Electronic Systems
Fujikura Automotive Mexico Puebla, S.A. de C.V.	Pue.	222-309-6000	www.fujikura.com/	Autoparts	Hella Automotive Mexico S.A. de C.V.	Edo-mex.	555-321-1300	www.hella.com	Electronic Systems
Fujikura Automotive Mexico Puebla, S.A. de C.V.	Pue.	222-309-6000	www.fujikura.com/	Autoparts	SK Automotive, S. de R.L. de C.V.	Pue.	222-210-5506		Electronic Systems
ThyssenKrupp Automotive Systems de México S.A. de C.V.	Pue.	222-622-1000	www.thyssenkrupp-automotive-systems.de/	Autoparts	MARATHON ELECTRICA DE PUEBLA S.A. DE C.V.	Pue.	222-785-1784	www.marathongroup.com.mx/	Electronic Systems
Autopartes Walker S.A. de C.V.	Pue.	222-223-7028		Autoparts	Harness Engineering Services de Mexico S. de R. L. de C. V.	CDMX	555-512-2966		Electronic Systems
					Ramco Stamping de México S.A. de C.V.	CDMX	555-822-1900	www.ramcostm.com.mx/	stamping
					Inovan Mexico	CDMX	552-620-7264	www.inovan.de	stamping

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ASSOCIATED SPRING MEXICO, S.A.	CDMX	555-747-5300	www.asbg.com/	stamping
Pullman de Puebla S.A. de C.V.	Pue.	222-273-7623		stamping
Gestamp Puebla, S.A. de C.V.	Pue.	222-303-1320	www.gestamp.com	stamping
antiruidos y estampados industriales s.a. de c.v.	Pue.	222-169-5981		stamping
Diseño y Metalmecánica, S.A. de C.V.	CDMX	555-090-7460	www.dym.com.mx	Stamping
AMG ALUMINUM MEXICO S.A. de C.V.	CDMX	555-250-4263	amg-al.com/	Aluminum
Recubrimientos Metálicos de México, S.A. de C.V.	CDMX	555-577-0001	www.recubrimientosmetalicos.com/	Surface Finishing
RECUBRIMIENTOS METALICOS SULTANA, S.A. DE C.V.	CDMX	555-577-0811	www.recubrimientosmetalicos.com/	surface finishing
CONSTRUCLIMAS, S.A. DE C.V.	Pue.	222-281-6212		AC and Heating
Electro Adhesivos Ruman S.A. de C.V.	CDMX	555-693-2317	www.electroadhesivosruma.com.mx	adhesives
Henkel Capital, S. A. de C. V.	Edo-mex.	553-300-3600	www.henkel.mx	adhesives
Ballistic Protection S.A de C.v	Edo-mex.	555-272-7770	www.ballistic.com.mx/	armored exteriors
Vibracoustic de Mexico S.A. de C.V.	Camp.	722-548-1360	www.vibracoustic.com	Auto Components
Poliuretanos SW S.A. de C.V.	Edo-mex.	555-002-2300	www.woodbridgegroup.com	Auto Components
Schlemmer, S.A. de C.V.	Pue.	222-224-8943	www.schlemmer.com	Auto Components
DOW Química Mexicana, S.A. de C.V.	CDMX	555-201-4700	www.dow.com	Chemical Processes
QUIMICA DELTA S.A DE C.V.	Edo-mex.	555-899-9400	www.quidelta.com.mx	Chemical Processes
Artecola México S.A. de C.V.	Edo-mex.	555-539-7890	www.atrecola.com.mx	Chemicals
Operadora Comercial Innovax	Edo-mex.	722-215-3152	innovax.com.mx/	Clamps
LuK Puebla S.A. de C.V.	Pue.	222-229-9200	www.luk.com	Clutch
FTE Mexicana S.A. de C.V.	Pue.	222-286-6037	www.fte-automotive.com	Clutch and Brake
Servicios Integrales CNC	Edo-mex.	713-133-0860	www.silcnc.com/	Consulting
CIMATIC	CDMX	551-500-0780	www.cimatic.com.mx	Consulting
Intrade Consultores	CDMX	551-450-9268	www.intradeconsultores.com	Consulting
Sistemas Dinámicos Internacionales S.A. de C.V.	CDMX	555-250-4814	www.sdicointer.com.mx	Consulting
CTS Consultores	CDMX	555-687-4615	www.ctsconsultores.com	Consulting
Global Services	Edo-mex.	555-664-1845	www.glostermex.com	Consulting
KIMECA	CDMX	555-781-4385	www.kimeca.com.mx	Consulting
M y D Asesores, S.A. de C.V.	CDMX	555-233-1515	www.mydasadores.com.mx/	Consulting
General Internacional de Comercio S.A. de C.V.	Pue.	222-225-2576	www.gicsacv.com	Consulting
Transformación Puebla S.A. de C.V.	Pue.	222-285-0572	www.transformacionpuebla.com	Consulting
Human Factor	CDMX	554-212-1500	www.humanfactor.mx/	Consulting
Corporación de Fomento Empresarial S.A. de C.V.	CDMX	555-286-0206	www.cofemsa.com	Consulting

Nacional de Cobre S.A. de C.V.	CDMX	555-728-5300	www.nacobre.com.mx	Copper Supply
Tecnologico de Monterrey	Edo-mex.	722-279-9990	www.itesm.mx/	Education
Interfil, S.A. de C.V.	Edo-mex.	1-800-440-8400	www.interfil.com	filters
DISTRIBUIDORA TECNIFIL S.A. de C.V.	Pue.	222-231-3720	www.tecnifil.com.mx/	filters
PREMO	CDMX	555-661-1647	www.premo.mx	Financing
TI Group Automotive Systems S. de R. L. de C. V.	Edo-mex.	555-864-2000	www.tiautomotive.com	Fuel Systems
RILSA 2000 SA DECV	Pue.	222-282-6171	www.rilsa.mx	hydraulic systems
Zinbend, S.A. de C.V.	CDMX	555-618-7365	zinbend.wix.com/	industrial parts
ABB	Edo-mex.	555-328-1400	new.abb.com/	Machining
Feiyang Maquinaria	CDMX	555-566-8261	www.feiyangmaquinaria.com	Machining
GRAVOTECH S. de . R.L de C.V	CDMX	552-978-0177	www.gravotech.com.mx/	Machining
Ingenieros Edra y Asociados, S.A. de C.V.	CDMX	555-685-2371	www.edrayasociados.com.mx	Machining
Canacintra	CDMX.	55-5482-3000	www.canacintra.org.mx	supporting organization
Jostim Products, S.A. de C.V.	Pue.	222-222-4038		Machining
Maquitec	CDMX	555-277-5545	www.maquitec.com.mx/	machining
La Paloma	CDMX	1-800-849-5444	www.lapaloma.com.mx	Metal
BIOIN	CDMX	555-578-4259	www.bioin.mx	Misc
INDUSTRIAS TAMER S.A. de C.V..	Edo-mex.	555-397-5844	www.mikels.com	Misc
Grupo Un1Brand	Pue.	222-169-5480	www.unibrand.com.mx	Misc
MOLDEO Y CENTRIFUGADO DE METALES S.A. DE C.V.	Pue.	222-234-1384		molds
Articulos de Bakelita, S.A.	CDMX	555-396-2729	bakelita.mx/	Molds
Ureblock S.A. de C.V.	CDMX	555-558-8856	www.ureblock.com.mx	packaging
Mexipack	CDMX	555-536-2040	www.mexipack.com.mx	Packaging
Industrias Corrubox, S.A. de C.V	Edo-mex.	555-824-5152	www.corrubox.com.mx	Packing
Hi-Fil Pinturas S.A. de C.V.	Edo-mex.	555-855-0699	www.hi-fil.com	paint
Organización Brenn	Edo-mex.	555-884-2762	www.obrenn.com/	Plastic
URRESKO, S.A. de C.V.	Edo-mex.	555-831-7370		plastic
TransNav	Pue.	222-210-5636	www.transnav.com	Plastic
Termoplasticos Tecnicos de Mexico, S.A. de C.V.	Pue.	222-210-5440		Plastic
AKsys de México S.A. de C.V.	Pue.	222-223-0510	www.apsolutions.com.mx/	Plastic
SMP Automotive Systems Mexico S.A. de C.V.	Pue.	222-273-9300	www.smp-automotive.com	Plastic
A&P SOLUTIONS S.A DE C.V	Edo-mex.	791-913-8500	www.apsolutions.com.mx/	Plastic
GERGONNE PLASTICOS INDUSTRIALES S.A. DE C.V.	Edo-mex.	722-481-9500	www.gergonne-corporate.com/	Plastic
ACOUSTIC & PLASTICS SOLUTIONS (A&P Solutions)	Edo-mex.	791-913-8500	www.apsolutions.com.mx/	Plastic
Soliplas, S.A. de C.V.	CDMX	555-600-9566	soliplas.com.mx/	Plastic

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Soliplas, S.A. de C.V.	CDMX	555-600-9566	soliplas.com.mx/	Plastic
Vinoplastic (persona fisica)	Edo-mex.	555-612-3765	www.vinoplastic.com.mx/	Plastic
Qengineering Plastic Products México S.A. de C.V.	Edo-mex.	728-282-9110	www.quadrantplastics.com	plastic
Novatec Pagani S.A. de C.V.	CDMX	555-203-1184	www.novatec.com.mx	plastic
Polímeros Nacionales S.A. de C.V.	Edo-mex.	555-362-5360	www.polnac.com	Plastic
Gates de Mexico, SA de C.V.	CDMX	552-000-2700	www.gates.com.mx	plastic and rubber
Polímeros del Uretano S.A. de C.V.	Edo-mex.	555-822-4444	www.poliuretan.com	plastic and rubber
Servicios & Elastómeros Rubber, S. DE R.L. DE C.V.	Pue.	222-195-5683		plastic and rubber
Grupo Merik	Edo-mex.	722-265-7500	www.merik-internacional.com	Ramps
Codan Rubber Mexico, S.A. de C.V.	Edo-mex.	555-310-0720		Rubber
<b>RAMCO</b>	Edo-mex.	555-5822-1900	http://www.ramcostm.com.mx/	Stamping
Ternium	Edo-mex.	555-220-2800	mx.ternium.com/	Steel
ACEROS EN BARRAS AL CARBONO, S.A. DE C.V.	Edo-mex.	551-106-2000	www.acerosabc.com	Steel
Peasa Autopartes, S.A. de C.V.	CDMX	551-500-0300	www.peasa.com.mx	Steel
Servicio Industrial S.A. de C.V.	Edo-mex.	555-576-4011	www.sisa1.com.mx	Steel
FERRECEPSA S.A. de C.V.	Pue.	222-297-2000	www.ferrecepsa.com.mx	Steel
ThyssenKrupp Materials de México, S.A. de C.V.	Pue.	222-229-8911	www.lagermex.com.mx	Steel
TREFILADOS INOXIDABLES DE MEXICO, S.A. DE C.V.	Tlax.	247-472-5400	www.trefilados.com.mx	Steel
Forjas MERIK S.A. de C.V.	CDMX	555-582-1810	www.forjasmerik.com.mx	Steel
ABINSA	CDMX	555-860-5050	www.abinsa.com.mx/	Steel
Nippon Steel & Sumikin Bussan Mexico, S.A. de C.V.	CDMX	555-662-2938	www.nssb.nssmc.com/	Steel
Formacero S.A. de C.V.	CDMX	551-083-5858	www.formacero.com.mx	steel
Metal One de México S.A. de C.V.	CDMX	555-202-8795	www.metaloneamerica.com	Steel
Grupo Collado S.A. de C.V.	CDMX	555-804-2399	http://www.collado.com.mx/	steel
KORAGG MEXICO S.A. DE C.V.	CDMX	555-319-2065	www.koraggmexico.com	Supply
Cía. Hulera Tornel, S.A. de C.V.	CDMX	555-354-0200	www.jktornel.com.mx	tires
PIRELLI NEUMATICOS de MEXICO S.A. DE C.V.	CDMX	559-138-2345	www.pirelli.com.mx	Tires
ATHESA	Edo-mex.	555-392-2663	www.athesa.com.mx	tooling
SKF DE MEXICO S.A. DE C.V.	Pue.	222-229-4900	www.skf.com/mx	tooling
HERRAMIENTAS NEUMATICAS DE PUEBLA S.A. de C.V.	Pue.	222-294-7372	www.herramientasneumaticaspue.com/	tooling
Intertools S.A. de C.V.	Pue.	222-404-8634	www.intertools.com.mx	tooling
BRANBOR TOOLS DE R.L. DE C.V.	Pue.	222-603-9179	www.branbortool.com.mx	tooling
HERRAMENTAL DE PRECISIÓN	CDMX	555-551-6598		Tooling
Fischer Tubtech S.A. de C.V.	Pue.	222-286-6005	www.fischer-group.com	tubes
Grupo Infra	Edomex.	555-329-3020	www.infra.com.mx	welding supplies

Formacero S.A. de C.V.	CDMX	551-083-5858	www.formacero.com.mx	steel
Metal One de México S.A. de C.V.	CDMX	555-202-8795	www.metaloneamerica.com	Steel
Grupo Collado S.A. de C.V.	CDMX	555-804-2399	http://www.collado.com.mx/	steel
KORAGG MEXICO S.A. DE C.V.	CDMX	555-319-2065	www.koraggmexico.com	Supply
Cía. Hulera Tornel, S.A. de C.V.	CDMX	555-354-0200	www.jktornel.com.mx	tires
PIRELLI NEUMATICOS de MEXICO S.A. DE C.V.	CDMX	559-138-2345	www.pirelli.com.mx	Tires
ATHESA	Edo-mex.	555-392-2663	www.athesa.com.mx	tooling
SKF DE MEXICO S.A. DE C.V.	Pue.	222-229-4900	www.skf.com/mx	tooling
HERRAMIENTAS NEUMATICAS DE PUEBLA S.A. de C.V.	Pue.	222-294-7372	www.herramientasneumaticaspue.com/	tooling
Intertools S.A. de C.V.	Pue.	222-404-8634	www.intertools.com.mx	tooling
BRANBOR TOOL S DE R.L. DE C.V.	Pue.	222-603-9179	www.branbortool.com.mx	tooling
HERRAMENTAL DE PRECISIÓN	CDMX	555-551-6598		Tooling
Fischer Tubtech S.A. de C.V.	Pue.	222-286-6005	www.fischer-group.com	tubes
Grupo Infra	Edo-mex.	555-329-3020	www.infra.com.mx	welding supplies

## The Bajío

Bayerische Motoren Werke de México S.A. de C.V.	S.L.P		www.bmw.com.mx	OEM
Ford	S.L.P		www.ford.com	OEM
General Motors de México	S.L.P	444-832-5011	www.gm.com.mx	OEM
Nissan Mexicana, S.A. de C.V.	Ags.	449-910-4111	www.nissan.com.mx	OEM
Nissan Mexicana, S.A. de C.V.	Ags.	555-628-2727	www.nissan.com.mx	OEM
Mercedes Benz México, S.A. De C.V	Ags.		www.mercedes-benz.com.mx	OEM
Honda	Gto.	461-202-5400	www.honda.mx	OEM
GM	Gto.	472-222-6000	www.gm.com.mx	OEM
Bayerische Motoren Werke de México S.A. de C.V	Gto.			OEM
Nissan Mexicana, S.A. de C.V.	Ags.	449-910-4111	www.nissan.com.mx	OEM
Honda de México S.A. de C.V.	Jal.	333-284-0000	www.honda.mx	OEM
Kenmex, S.A. de C.V.	Gto.	477-711-1572	https://www.kenmex.com/	OEM
Mazda Motor Manufacturing de México S.A. de C.V.	Gto.	464-647-6400	www.mazda.com.mx	OEM
Airequipos del Centro	Gto.	800-999-2372	www.airequipos.com.mx	T1
Hino Motors Manufacturing de México S.A. de C.V.	Gto.	472-103-5710	www.hino.com.mx	T1
EG Automotion S.A. de C.V.	Gto.	477-212-1365	www.eg-automation.com	T1
Electro Ramsa S.A. de C.V.	Gto.	477-714-0650	www.electroramsa.com.mx	T1
Kostal Mexicana, S.A. de C.V.	Q.R	442-211-9500	www.kostal.com	T1
PPG Industries de México, S.A. de C.V.	Q.R	427-271-9100	www.mexico.ppg.com	T1
Shape Corp Mexico, S. de R.L. de C.V.	Q.R	555-562-5108	www.shapecorp.com	T1

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Autoliv Steering Wheels Mexico, S. de R.L. de C.V.	Q.R.	442-278-1100	www.autoliv.com	T1	Yorozu Mexicana, S.A. de C.V.	Ags.	449-910-1200	www.yorozu-corp.co.jp	T1
TRI Anvis México S.A.P.I de C.V.	Q.R.	442-101-9400	www.anvisgroup.com	T1	MOTO DIESEL MEXICANA S.A. DE C.V.	Ags.	449-910-7500	www.mdmxcorp.com	T1
BOSAL MEXICO, S.A. DE C.V.	Q.R.	442-101-9900	mexico.bosal.com/	T1	SACRED MEXICANA, S.A. de C.V.	Ags.	449-929-2026		T1
MANN+HUMMEL MEXICO S.A. DE C.V.	Q.R.	442-103-1100	www.mann-hummel.com.mx	T1	Sanoh Industrial de Mex., S.A. de C.V.	Ags.	449-910-9660	www.sanoh.com	T1
GILL QUERETARO, S. DE R.L. DE C.V.	Q.R.	442-103-3800	www.gill-industries.com	T1	Artifbras S.A de C.V	Mich.	452-503-3100	www.artifbras.com	T1
Woco Tech de Mexico SA de CV	Q.R.	442-192-4800	www.wocogroup.com	T1	Janesville de Mexico S.A. de C.V.	Mich.	452-519-8100	www.janesvilleacoustics.com	T1
EMUGE-FRANKEN, S.A. de C.V.	Q.R.	442-209-5168	www.emuge-franken.com.mx	T1	MOLDEADO DE FORMAS DE PRODUCTOS DE HULE SA DE CV	Gto.	461-156-7607	www.mefrup.com	T1
Fujikura Automotive Mexico Queretaro S.A. de C.V.	Q.R.	442-211-3400	www.fujikura-automotive.com	T1	Inaumex, S.A. de C.V.	Gto.	461-161-3002	www.inaumex.com.mx	T1
Narmx Querétaro, SA de CV	Q.R.	442-211-3700	www.narmco.com	T1	Hutchinson Autopartes México, S. A. de C. V.	Gto.	461-192-0100	www.hutchinsonworldwide.com	T1
VRK AUTOMOTIVE SYSTEMS, S.A. DE C.V.	Q.R.	442-211-3900	www.kirchhoff-automotive.com	T1	Pierburg Pump Technology México, S.A. de C.V.	Gto.	461-598-7800	www.kspg.com	T1
Maxion Fumagalli de Mexico, S. de R.L. de C.V.	S.L.P.	444-826-6200	fumagalliwheels.com	T1	GKN DRIVELINE CELAYA S.A. DE C.V.	Gto.	411-160-3150	www.gkn.com	T1
Robin Mexicana S. de R.L. de C.V.	Q.R.	442-221-5825	www.robin-mexicana.com.mx	T1	KINUGAWA MEXICO SA DE CV	Gto.	462-166-3500	www.kinugawa.com.mx	T1
Zanini de México, S.A. de C.V.	Q.R.	442-221-6014	www.zanini.com	T1	BOS Automotive Products Irapuato S.A. DE C.V.	Gto.	462-606-7400	www.bos.de	T1
Bitron de México S.A. de C.V.	Q.R.	442-222-7779	www.bitron.net	T1	Fujikura Automotive Mexico Salamanca, S.A. de C.V.	Gto.	464-647-8900	www.fujikura.com	T1
MONTAJES ELECTROMECANICOS E INGENIERIA S.A DE C.V.	Q.R.	442-225-4280	www.meisa.com	T1	Maflow Mexico, SA de CV	Gto.	472-103-0461	www.maflow.com	T1
MPI International Mexico S. de R.L. de C.V.	Q.R.	442-227-4300	www.mpiproducts.com	T1	Grupo Antolin Silao, S.A. de C.V.	Gto.	472-722-3278	www.grupoantolin.com	T1
Eaton Technologies S de RL de CV	Q.R.	558-503-5462	www.eaton.com	T1	Poliuretanos SW León SA de CV	Gto.	477-152-2400	www.poliuretanoss.w.com.mx/	T1
Johnson Matthey de Mexico S. de R.L. de C.V.	Q.R.	442-238-1400	www.matthey.com/	T1	Bader de México, S. en C. por A. de C.V.	Gto.	477-152-4600	www.bader-leather.de	T1
Hi-Lex Mexicana, S.A. de C.V.	Q.R.	442-238-4118	www.hi-lex.com.mx	T1	SERVACERO PLANOS S DE RL DE CV	Gto.	477-152-6000	www.serviacero.com	T1
Bosal Oris de Mexico, S.A. de C.V	Q.R.	442-101-9900	www.bosal-oris.com	T1	Kasai Mexicana S.A. de C.V.	Gto.	477-463-5550	www.kasai.com.mx	T1
Ronal Queretaro S.A. de C.V	Q.R.	442-238-9300	www.ronalgroup.com	T1	Scherdel de México, S. de R.L. de C.V.	Gto.	472-500-3400	www.scherdel.com	T1
Carcoustics Industrial de México S. de R.L. de C.V.	Q.R.	442-309-3800	www.carcoustics.com	T1	Premium Sound Solutions Mexicana, S. de R.L. de C.V.	Zac.	493-935-8414	www.premiumsoundsolutions.com/	T1
Brose México, S.A. de C.V.	Q.R.	442-478-7200	www.brose.com	T1	ZF Suspensión Technology Guadalajara, S.A. de C.V.	Jal.	333-208-0000	www.zf.com	T1
INDUSTRIAS MICHELIN, S.A. DE C.V.	Q.R.	1800-062-1492	www.michelin.com.mx	T1	Continental Automotive Guadalajara Mexico S.A. de C.V.	Jal.	333-818-2000	www.continental-corporation.com	T1
Kwang Jin SLP Mexico SA. de C.V	S.L.P.	444-137-1100	www.kwangjin-kr.com/eng	T1	SKF SEALING SOLUTIONS, S.A. de C.V.	Jal.	333-540-7500	www.skf.com	T1
INDUSTRIA DE ESTAMPACIONES METALICAS SA DE CV	Sin.	444-799-2030		T1	Element14 S de RL de CV	Jal.	333-777-5000	www.newark.com.mx	T1
San Luis Metal Forming, S.A. de C.V.	S.L.P.	444-101-3025		T1	Henniges Automotive Sealing Systems Mexico S.A. de C.V.	Jal.	333-777-9000	www.hennigesautomotive.com/	T1
TEKNIA AUTOMOTIVE MEXICO, S.A. DE C.V.	Sin.	444-799-7262	www.tekniagroup.com	T1	Remy México Holdings, S. De R.L. De C.V.	S.L.P.	444-834-6457	www.remyinc.com	T1
Conectores Flexibles Automotrices, S.A. de C.V.	S.L.P.	444-799-7445	www.flexitech.com	T1	Kotobukiya Treves de México S.A. de C.V.	Ags.	449-139-3190	www.kf-k.co.jp	T1
Keihin de Mexico, S.A. de C.V.	S.L.P.	444-298-3100	www.keihin-na.com	T1	REHAU S.A de C.V.	Gto.	461-618-8050	www.rehau.com.mx	T1
Compañía de Planeamiento Acústico, S. de R.L. de C.V.	S.L.P.	444-101-3013		T1	Schaeffler Aftermarket Service	Gto.	462-166-1100	www.schaeffler.com	T1
ContiTech Mexicana, S.A. de C.V.	S.L.P.	444-826-9400	www.contitech.de	T1	Akebono Brake Mexico S.A. de C.V.	Gto.		www.akebonobrakes.com	T1
JD Norman de San Luis Potosi, S. de R.L. de C.V.	S.L.P.	444-826-9700	www.jdnorman.com/	T1	American Axle & Manufacturing S.A. de C.V.	Gto.	472-722-9500	www.aam.com	T1
Nobel Automotive Mexico S. de R.L. de C.V.	S.L.P.	444-834-6500	nobel-automotive.com/	T1	Arbomex S.A. de C.V.	Gto.	461-598-6500	www.arbomex.com	T1
Gestamp México SA de CV	Ags.	449-910-9140	www.gestamp.com	T1	Arneses Eléctricos Automotrices S.A. de C.V.	Gto.	472-722-9400	www.conduumexarneses.com.mx	T1
Yorozu Automotive Guanajuato de Mexico, S.A. de C.V.	Gto.	413-158-6400	www.yorozu-corp.co.jp/en	T1					

Ashimori Industria de México S.A. de C.V.	Gto.	472-748-9148	www.ashimori.co.jp	T1	MISA National Metal Processing S.A. de C.V.	Gto.	419-109-0100	www.misteel.com	T1
Asmo Manufacturing de México S.A. de C.V.	Gto.		www.asmo.co.jp	T1	Mitsui Kinzoku Act Mexicana S.A. de C.V./ Steel Technologies / Nucor	Gto.	472-103-0201	www.act.mitsui-kinzoku.co.jp/en	T1
BHTC México S.A. de C.V.	Gto.		www.bhtc.com	T1	Monroe México S.A. de C.V.	Gto.	461-192-0000	www.monroe.com.mx	T1
Boreal Research S.A. de C.V.	Gto.	461-618-6150	www.borealresearch.com	T1	Morioku Technology de México S.A. de C.V.	Gto.	477-104-2031	www.morioku.co.jp/english	T1
Cikuatxo de México S. de R.L. de C.V.	Gto.	477-730-0803	www.cikuatxo.es	T1	NACHI-TOKIWA MÉXICO, S.A. DE C.V.	Gto.	477-761-0285	www.nachi-tokiwa.com.jp	T1
Codan Rubber Guanajuato S.A. de C.V.	Gto.		www.codan.com	T1	Nifco Central México	Gto.		www.nifco.com	T1
Coglitex S.A. de C.V.	Gto.	462-622-5011	www.sulastic.com	T1	Nishikawa Sealing Systems México S.A. de C.V.	Gto.	472-722-6938	www.nishikawa-rbr.co.jp/english	T1
Copo Textile México	Gto.	472-748-9362	www.grupocopo.com	T1	Nissin Brake de México S.A. de C.V.	Gto.	462-166-1800	www.nissinbrake.com	T1
Cotromma S.A. de C.V.	Gto.	461-618-4700	www.cotromma.mx	T1	NovatecLeón S.A. de C.V.	Gto.	477-167-6967	www.novatecleon.com	T1
Dai Dong México S.A. de C.V.	BC	664-645-0341	www.daidong.com	T1	Oshkosh Corporation	Gto.		www.oshkoshcorporation.com	T1
Denso México S.A. de C.V.	N.L.	818-156-7000	www.globaldenso.com	T1	Pintura, Estampado y Montaje SAPI de C.V. (PEMSA)	Gto.	461-618-5200	www.cieautomotive.com	T1
DM Color Mexicana S.A. de C.V. (Dainichiseika Colors & Chemicals)	Gto.	442-229-3159	www.daicolor.co.jp	T1	Pirelli Neumáticos de México S.A. de C.V.	Gto.	1-800-500-8667	www.pirelli.com	T1
F&P MFG de México S.A. de C.V.	Gto.	462-166-1700	www.fandp.com	T1	Plastico Omnium Auto Exteriores S.A. de C.V.	Gto.	472-722-8395	www.plasticomnium.com	T1
Flex & Gates de México S.R.L. de C.V.	Gto.	419-198-3000	www.flex-n-gate.com	T1	Posco MPPC S.A. de C.V.	Gto.	461-471-6000	www.poscompcc.com.mx	T1
Forjas de Celaya SAPI de C.V.	Gto.	461-618-5615	www.cieautomotive.com	T1	PYA Automotive S. de R.L. de C.V.	Gto.	462-606-6233	www.pyaautomotive.com	T1
Getrag Transmission Manufacturing de México S.A. de C.V.	Gto.	462-166-2000	www.getrag.de	T1	RYOBI Mexico	Gto.	462-166-0000	www.ryobidecasting.com	T1
G-One Autopartes de México S.A. de C.V.	Gto.	413-158-6500	www.g-tek.jp	T1	RSB Transmissions de México S. de R.L. de C.V.	Gto.	472-103-0111	www.rsbglobal.com	T1
Grupo de Ingeniería Capricornio S.A. de C.V.	Gto.	472-722-9785	www.incapricornio.com.mx	T1	Sanko Gosei México S.A. de C.V.	Gto.	461-471-6100	www.sanko-gosei.com	T1
Hella Electronics México S.A. de C.V.	Gto.	419-198-8100	www.hella.com	T1	Sankyo Kogyo	Gto.		www.skjpn.com/english	T1
Hirotec Tooling de México S. de R.L. de C.V.	Gto.	472-103-4070	www.hirotectooling.com	T1	Setex Automotive México S.A. de C.V. (Tachi-S)	Ags.	449-922-4600	www.tachi-s.co.jp/en	T1
Honda Lock México S.A. de C.V.	Gto.	472-103-2000	www.hondalock.co.jp	T1	Shiloh de México, S.A. de C.V.	Coah.	844-438-9200	www.shiloh.com	T1
Hope Industries de México S.A. de C.V.	Gto.	477-441-4673	www.hopeglobal.com	T1	Shinano Kenshi Group (SKG)	Gto.	462-693-7154	www.shinanokenshi.com	T1
IK Plastic Compound México S.A. de C.V.	Gto.	472-103-9700	www.inabata.co.jp	T1	Showa Autoparts México S.A. de C.V.	Gto.	472-748-9287	www.showa1.com	T1
Imasen México Technology S.A. de C.V.	B.C	462-606-8466	www.imasen.co.jp	T1	SRG Global México S. de R.L. de C.V. (Guardian)	Gto.	462-606-7820	es.srgglobal.com	T1
Inalfa Roof Systems de México S. de R.L. de C.V.	Gto.	462-166-3600	www.inalfa-roofsystems.com	T1	Standard Profil México S.A. de C.V.	Gto.	413-158-6900	www.standardprofil.com	T1
INFAMOL MEXICO S.A DE C.V	Gto.	442-291-0221	www.infamol.es	T1	Stant México S.A. de C.V.	Gto.	415-152-9900	www.stant.com	T1
Infinish Acabados Industriales S.A. de C.V.	Gto.	461-611-0320	www.infinishai.com.mx	T1	Tekfor México S.A. de C.V.	Gto.	462-166-3300	www.amtektekfor.com	T1
"Kanamatsu Mexico S. de R.L. de C.V.	CDMX	551-500-0300	www.peasa.com.mx	Steel	Time S.A. de C.V.	Gto.	476-757-5568	www.time.mx	T1
Silao*	Gto.	472-748-9187	www.kanematsuusa.com	T1	Tokyo Roki de México S.A. de C.V.	Gto.	472-103-9100	www.roki.co.jp/english	T1
Kawada Mx S.A. de C.V.	Gto.		www.kawadakk.jp/en	T1	Topura Fastener de México SA de CV	Gto.	462-623-8030	www.topura.com	T1
Kolektor Group	Gto.	472-748-5700	www.kolektor.com	T1	Toyoda Gosei Personnel Service Mexico, S.A. de C.V.	Gto.		www.toyoda-gosei.com	T1
MAHLE Componentes de Motor de México, S. de R.L. de C.V.	Ags.	449-910-8200	www.mahle.com	T1	Tritech Autoparts Mexicana S.A. de C.V.	Gto.	472-748-9113	www.deltakogyo.co.jp	T1
Maquinados Automotrices y Talleres Industriales de Celaya S.A. de C.V.	Gto.	461-159-9100	www.cieautomotive.com	T1	TST Manufacturing de México S. de R.L. de C.V. (TS Tech)	Gto.	462-478-3500	www.tstech.co.jp/english	T1
Materias Plásticas y Elastómeros S.A. de C.V.	Gto.	477-212-1818	www.mpeplastics.com	T1	Tsubakimoto Automotive México S.A. de C.V.	Gto.	472-748-9312	www.tsubakimoto.com	T1
					UGN	Gto.	472-103-2800	www.ugnauto.com	T1
					U-Shin Autoparts México S.A. de C.V.	B.C	462-500-3000	www.u-shin-ltd.com/english	T1
					Usul International Manufacturing México S.A. de C.V.	Gto.	472-103-9600	www.usul.co.jp/en	T1
					VCST de México S. de R.L. de C.V.	Gto.	477-152-6100	www.vcst.be	T1
					Webasto-Edscha Cabrio México S.A. de C.V. (Webasto de México)	Pue.	222-273-7500	www.webasto.com	T1

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Wiesauplast Servicios S. de R.L. de C.V.	Gto.	419-109-0410	www.wiesauplast.de	T1
Yachiyo México Manufacturing S.A. de C.V.	Gto.	413-158-6000	www.en.yachiyo-ind.co.jp	T1
Yutaka Technologies de México S.A. de C.V.	Gto.	413-158-6200	www.yutakagiken.co.jp	T1
Grupo CiE Pensa	Gto.	461-618-5601	www.cieautomotive.com/	T1
Grupo CiE Celaya	Gto.	461-618-5600	www.cieautomotive.com	T1
Grupo CiE Forjas Celaya	Gto.	461-618-5270	www.cieautomotive.com	T1
Robert Bosch Sistemas de Frenos, S.A. de C.V.	S.L.P	444-826-7400	www.bosch.com.mx	T1
VALEO SISTEMAS ELECTRICOS	S.L.P	899-932-2000	www.valeo.com	T1
ILPEA S. DE R.L. DE C.V.	Qro.	442-217-1542	www.ilpea.com.mx/	T1
TRW Sistemas de Direcciones S.A. de C.V.	Qro.	442-211-0851	www.trwkorea.com	T1
Tenneco Mexico S. de R.L. de C.V.	Gto.	461-618-6541	www.tenneco.com/	T1
Valeo Termico S.A. de C.V.	S.L.P	444-826-6600	www.valeo.com	T1
Gurego	Qro.	442-298-0978	www.gurego.com.mx	T1
A1 Fastener & Compnenents Inc.	S.L.P	444-813-4724	www.a-1fastener.com/es/	autoparts
BARFEA	Gto.	477-763-2475	www.barefa.com.mx	autoparts
COMANHI	Gto.	477-717-1248	www.comanhi.com	autoparts
MEFRUP	Gto.	461-156-7607	www.mefrup.com	autoparts
MORSA	Jal.	333-619-0495	www.morsaquimicos.com	autoparts
Ventramex SA de CV	Qro.	442-196-0700		autoparts
Resortes y Productos Metalicos S de R.L. de CV	Qro.	442-153-3800		autoparts
Pullman de Queretaro, SA de CV	Qro.	442-211-3710		autoparts
AUTOPARTES EXCEL DE MEXICO, S.A. DE C.V.	Qro.	442-211-7500		autoparts
ET MEXICO HOLDINGS I S DE RL DE CV	Qro.	442-238-3000		autoparts
Fountar S.A. de C.V.	S.L.P	444-834-6400		autoparts
CK Trading de Mexico, S de RL de CV	Ags.	449-910-0100	www.calsonic.com	autoparts
KS GLEITLAGER DE MEXICO S. DE R.L. DE C.V.	Gto.	461-598-7800	www.kspg.com	autoparts
WRSI de México, S. de R.L. de C.V.	B.C	462-166-0700		autoparts
Anderson-Cook de Irapuato S. de R.L. de C.V.	B.C	462-693-7005	www.andersoncook.com	autoparts
Baumann Springs de León S. de R.L. de C.V.	Gto.	477-152-1400	www.baumann-group.com	autoparts
Beneficiadora de Alambres y Metales S.A. de C.V.	Gto.	462-622-5186	www.tornillo.com.mx	autoparts
Bulk Tank International S. de R.L. de C.V.	Gto.	419-198-3300	www.bulkinternational.com	autoparts
Omron Automotive Electronics de Mexico S de RL de CV	Gto.	472-723-8902	www.omronauto.com	autoparts
Corporación Manufacturera Automotriz S.A. de C.V.	Gto.	461-611-8787	www.juntasquebec.com	autoparts
Diseño Central S.A. de C.V.	Gto.	477-292-0000	www.dicentral.com	autoparts
Distribuidora de Suministros S.A. de C.V.	Gto.	462-626-2254	www.dissaweb.com.mx	autoparts
Ecenarro Mexico S. de R.L. de C.V.	Gto.	461-202-7800	www.ecenarro.com	autoparts
FUJI OOXZ MEXICO, S.A. DE C.V.	Gto.	462-625-2238	www.oozx.co.jp/	autoparts

Fujikoki México S.A. de C.V.	Gto.	462-167-1400	www.fujikoki.co.jp	autoparts
Fumaq S.A. de C.V.	Gto.	442-241-7054	www.fumaq.com	autoparts
Gat México S.A. de C.V.	Gto.	461-611-0346	www.grupoamayatel-leria.com	autoparts
Johnan de México S.A. de C.V.	Gto.	472-723-8400		autoparts
Kautex Textron de México S. de R.L. de C.V.	Pue.	222-372-0500	www.kautex.de	autoparts
Mailhot de México S. de R.L. de C.V.	Gto.	472-103-5300	www.mailhotindustries.com	autoparts
Matsuju Mexicana S.A. de C.V.	Gto.	472-103-7400	www.matsumoto-jukogyo.co.jp	autoparts
MD Manufacturing S.A. de C.V.	Gto.	477-711-2530		autoparts
Mecanomatic GTO S.A. de C.V.	Gto.	442-688-1282	www.mecanomatic.com	autoparts
Metagra México SAPI de C.V.	Gto.		www.matagra.com	autoparts
Mexpulley S.A. de C.V.	Gto.	477-470-1320	www.mexpulley.com	autoparts
NHK Spring México S.A. de C.V.	B.C	462-693-7124	www.nhkspg.co.jp	autoparts
Noble Metal Processing de México S. de R.L. de C.V. (AMTB SUMMIT)	Gto.	472-722-7000		autoparts
Ohashi Technica México S.A. de C.V.	Gto.	472-103-2100	www.ohashi.co.jp/english	autoparts
Okawa Mexicana S.A. de C.V.	Gto.	462-493-7143	www.okawaseira.co.jp/english	autoparts
Pistones Moresa S.A. de C.V. (KUO Automotriz)	Gto.	461-618-3320	www.kuo.com.mx	autoparts
Precisión Mecánica Mexicana S.A. de C.V.	Gto.	461-611-5315		autoparts
Relats México S.A. de C.V.	Gto.	472-748-9100	www.relats.com	autoparts
RPK México S.A. de C.V.	Gto.	461-618-7600	www.rpkmexico.com	autoparts
SAGA TEKKOHSO MEXICANA, S.A. DE C.V.	B.C	462-693-7146	www.satetsu.co.jp	autoparts
Samot Industria Mecánica S. de R.L. de C.V.	Gto.	472-748-9040	www.samot.com.br	autoparts
Sannohashi Manufacturing México S.A. de C.V.	Gto.	472-103-2900	www.sannohashi.co.jp	autoparts
Servicio de Ingeniería Industrial y Outsourcing S.A. de C.V.	Gto.	461-609-0863	www.siosa.com	autoparts
SK Tec Mexicana S.A. de C.V.	Gto.	462-693-7127	www.sktec.com.mx	autoparts
Suajes y Preparaciones S.A. de C.V.	CDMX	555-569-4461		autoparts
Teknolinea S.A. de C.V.	CDMX	477-711-8676	www.teknolinea.com.mx	Autoparts
Tenneco Autopartes Walker S.A. de C.V.	N.L.	811-351-7500	www.walkerexhaust.com	Autoparts
Tigerpoly Industria de México S.A. de C.V.	Gto.	472-103-9200	www.tiger-poly.com	Autoparts
Topy MW Manufacturing México S.A. de C.V.	Gto.	472-135-0300	www.topyamerica.com	Autoparts
Transmore S.A. de C.V.	Gto.	461-613-6258	www.transmore.com.mx	Autoparts
USM de México S. de R.L. de C.V.	Gto.	472-791-0050	www.usmfg.com	Autoparts
Wallstabe & Schneider de México S. de R.L. de C.V.	Gto.	462-166-0800	www.wallstabe-schneider.de	Autoparts
Whitehall Industries de México S. de R.L. de C.V.	Gto.	415-154-7880	www.whitehallindustries.com	Autoparts
Witzenmann Metal Products México S.A. de C.V.	Gto.	413-688-1088	www.witzenmann.com.mx	Autoparts
Y-Tec Keylex Mexico S.A. de C.V.	Gto.	464-641-4300	www.sumitocorp.co.jp	Autoparts

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ZKW	Gto.	472-722-9050	www.zkw-group.com/en	Autoparts	Daubert Cromwell	Gto.	449-973-5151	www.daubertcromwell.com	Surface Finishing
Frankische Industrial Pipes	Gto.	477-343-0000	www.fraenkische.com	Autoparts	Electroplating & Surface Engineering S.A. de C.V.	Gto.	461-611-0171	www.eplating.com.mx	Surface Finishing
Automotive Lighting Rear Lamps Mexico S. de R.L. de C.V.	Qro.	442-296-3500	www.al-lighting.com/	autoparts	Roto-Mex S.A. de C.V.	Gto.	461-611-0808	www.rotomex.com.mx	Surface Finishing
Plastic Omnium Auto Exteriores S. A. de C. V.	Qro.	472-722-8395	www.plasticomnium.com	Autoparts	Especialidades Térmicas (GRUPO ETSa)	Jal.	*	www.luendelbajo.com.mx	Consulting
DISTRIBUIDORA INDUSTRIAL DE BALEROS S.A. de C.V.	Qro.	442-209-0216	www.dibsamexico.com	autoparts	Bodycote Thermal Processing de México S. de R.L. de C.V.	Gto.	472-103-5500	www.bodycote.com	heat treat
NKPM Mexico S.A. de C.V.	Gto.	413-158-6105	www.nkparts.com	autoparts	Contour Hardening de México S. de R.L. de C.V.	Gto.	472-103-0738	www.contourhardening.com	heat treat
DaikyoNishikawa Mexicana Operaciones SA de CV	Gto.	464-641-4112	www.daikyonishikawa.com.mx	autoparts	Imexaza S.A. de C.V.	Gto.	461-611-1288	www.imesaza.es	heat treat
Globxel S.A. de C.V.	Gto.	477-711-5430		textiles	Inmetmatic, S.A. de C.V.	Gto.	419-109-0700	www.multimatic.com	Sheet Metal
Medina Torres S.A. de C.V.	Gto.	477-740-3053	www.medinatorres.com	textiles	Askatlan México, S.A. de C.V.	Gto.	477-292-4276		Sheet Metal
Suminoe Textile de México S.A. de C.V.	Gto.	462-693-7141	www.suminoe.us	Textiles	Fränkische Industrial Pipes Mexico S.A. de C.V.	Gto.	477-343-0002		Sheet Metal
Textiles León S.A. de C.V.	Gto.	477-152-4800	www.textilesleon.com	Textiles	AMTB Summit S. de R.L. de C.V.	Gto.		www.usa.arcelormittal.com	Sheet Metal
TAP Leon	Gto.	477-770-1900	www.tapleon.com/	Textiles	LTC Roll & Engineering de México, S. de R.L. de C.V.	Gto.	461-202-5700	www.ltcroll.com	Sheet Metal
EMEC (GN FUNDICION)	S.L.P	481-381-2187		Foundry	Hirotec Mexico S.A. de C.V.	Gto.	472-722-7100	www.hirotecmexico.com	
Schunk	Edomex	728-282-7890	www.mx.schunk.com	Electronic Systems	S.A.M. SUEDEDEUTSCHE ALUMINIUM MANUFAKTUR de México, S. de R.L. de C.V.	Pue.	222-273-9904		Aluminum Supply
Suro Sistemas S.A. de C.V.	Gto.	477-717-1365	www.surosystem.com	Electronic Systems	Metal Verde S.A. de C.V.	Gto.	477 715 0130	www.metalverde.com	Aluminum Supply
CELEC	Gto.	477-713-6373	www.celec.com.mx	Electronic Systems	VRK Automotive Systems, S.A. de C.V.	Qro.	442-211-3900	www.kirchhoff-automotive.com/	Auto Components
Conduet S.A. de C.V.	Gto.		www.condumex.com.mx/	Electronic Systems	Frenos y Mecanismos S.A. de C.V.	Qro.	442-211-3300		Brakes
GSW de Guanajuato S. de R.L. de C.V.	Gto.	418-154-8100	www.gs-electech.co.jp/	Electronic Systems	DCC - Diecasting Celaya S.A. de C.V.	Gto.	461-165-8400	www.diecastingcelaya.mx/	Casting
Kromberg & Schubert México S. en C.	Gto.	462-606-7700	www.kromberg-schubert.com	Electronic Systems	Altorf de México S.A. de C.V.	Gto.			Chemicals
Marquardt México S. de R.L. de C.V.	Gto.	462-166-1500	www.mx.marquardt.com	Electronic Systems	Kem Design S. de R.L. de C.V.	Gto.	477-740-3500		Chemicals
PEC de México S.A. de C.V.	Gto.	472-748-9234	www.pecj.co.jp	Electronic Systems	Plus Integral Consultores - Bajío	Gto.	4777 186032	www.plusintegralconsultores.com	Consultancy
Prettl Electric del Bajío S.A. de C.V.	Gto.	412-156-3917	www.prettl.com	Electronic Systems	Ontario Die International Sa De Cv	Gto.	477-774-1276	www.ontariodie.com	Dies
Wurth Elektronik México S.A. de C.V.	Gto.	462-636-0605	www.we-online.com	Electronic Systems	ICATEQ	Qro.	442-215-7815	www.icateq.edu.mx	Education
SIIOSA	Gto.	1-800-837-3037	siiosa.com	Metal-working	Proteam	Qro.	442-193-5472	www.proteam.com.mx	environmental cleaning
Celay S.A. de C.V.	Gto.	461-618-7200	www.celay.com	Metal-working	Productos y Tecnologías Ambientales S.A. de C.V.	Qro.	442-216-6228	www.proteam.com.mx	environmental cleaning
Faeza Alloyers S.A. de C.V.	Gto.	462-693-7033	www.faeza.com.mx	Metal-working	Freudenberg Telas Sin Tejer S.A. de C.V.	Gto.	477-740-9999	www.freudenberg-filter.com	filters
FUNPREBA S.A. de C.V.	Gto.	477-771-5271	www.funpreba.com	Metal-working	Grupo Mega	Jal.	333-777-1640	www.gfmega.com	Financing
Hanwa Steel Service Mexicana S.A. de C.V.	Gto.	413-158-6600	www.hanwa.co.jp	Metal-working	Grupo Financiero MEGA	Jal.	333-777-1640	www.gfmega.com	Financing
Iwai Metal Central México S.A. de C.V. (UACJ)	Gto.		umc.uacj-group.com/	Metal-working	Petrofer Latinoamericana S.A. de C.V.	Gto.	461-611-5857	www.petrofer.com	Fluids
Makina Industrial Services S.A. de C.V.	Gto.	461-611-0379	www.makinais.com	Metal-working	Adilub S.A. de C.V.	Gto.	476-743-7578	www.adilub.com.mx	fluids
ORIIMEC	Qro.	442-225-2849	www.oriimec.mx	Stamping	Lubri-lab mx S.A. de C.V.	Gto.	462-625-3880	www.lubrilabmx.com	fluids
Panelfisa	Qro.	461-202-7860	www.panelfisa.com	stamping	Nufer Plus S.A. de C.V.	Gto.	461-615-1762	www.nuferplus.com.mx	fluids
TTD MEXICO S. DE R.L. DE C.V.	Qro.	442-240-9268	www.ttd.cc	stamping	Petrofer Latinoamericana S.A. de C.V.	Gto.	461-611-9543	www.petrofer.com.mx	fluids
Hal Aluminum México S.A. de C.V.	Gto.	472-748-9001	www.halmex.com.mx	Aluminum	Yushiro Chemical México S.A. de C.V.	Gto.	472-748-9208	www.yumex.mx	Fluids
					Desitec	Gto.	477-215-2222	www.desitec.com.mx	Misc.
					Teneria Vargas	Gto.	477-714-3034	www.teneriavargas.com	leatherworks
					Kromberg & Schubert Mexico S. en C.	Gto.	462-606-7700	www.kroschu.com	leatherworks
					Cueros Industrializados del Bajío S.A. de C.V.	Gto.	477-710-8600		leatherworks
					Concurmex S.A. de C.V.	Gto.	477-788-7300	www.concurmex.com	leatherworks
					Curtidos Alta Calidad	Gto.	477-714-0338	www.curtidosaltacalidad.com.mx	leatherworks

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