



MEXICAN AEROSPACE INDUSTRY

Overview and Opportunities Report
April 2019



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Conversion Factors

To standardise reported currency amounts, historical amounts of Mexican pesos are converted to U.S. dollars. The U.S. dollar was chosen because Mexican sources typically report monetary amounts in dollars if not reporting them in pesos. See the table below for the conversion rate for current monetary figures discussed in this report, alongside the Canadian dollar equivalent.

Table 1 Exchange Rates

Exchange Rates		
Mexican Peso	U.S. Dollar Equivalent	Canadian Dollar Equivalent
1	0.050	0.065
20.16	1	1.32
15.30	0.76	1

Source: Google Conversion Factors (16/11/2018)

Abbreviations

Table 2 Abbreviations

Abbreviation	English	Spanish
AEM	Mexican Space Agency	Agencia Espacial Mexicana
CANAERO	National Chamber of Air Transport	Cámara Nacional de Aerotransportes
CCE	Business Coordinating Council	Consejo Coordinador Empresarial
COMEA	Mexican Council of Aerospace Education	Consejo Mexicano de Educación Aeroespacial
DGAC	Mexican Space Agency	Agencia Espacial Mexicana
FAM	Mexican Air Force	Fuerza Aérea Mexicana
FEMIA	Mexican Federation of Aerospace Industries	Federación Mexicana de la Industria Aeroespacial
JHH	Together we will make history	Juntos Haremos Historia
MORENA	National Regeneration Movement	Movimiento Regeneración Nacional
PAN	National Action Party	Partido Acción Nacional
PES	Social Encounter Party	Partido Encuentro Social
PRI	Revolutionary Independence Party	Partido Revolucionario Institucional
PT	Labour Party	Partido del Trabajo
SCT	Ministry of Communications and Transport	Secretaría de Comunicaciones y Transportes
SEDENA	National Defence Secretariat	Secretaría de la Defensa Nacional
UNAQ	Aeronautical University of Queretaro	Universidad Aeronáutica en Querétaro

Source: Research by GAES Consultancy Services

INTRODUCTION

This report was researched and written for Ontario companies in the aerospace industry. It is for companies that are interested in expanding their market reach into Mexico through either direct export or other means such as partnerships, service provision, business creation or investment. The study aims to provide actionable market intelligence to assist Ontario companies in pursuing opportunities in Mexico. It may serve both as a source of general knowledge of the Mexican market and its technical demands as well as a specific reference for developing a market entry plan. The Ontario Ministry of Economic Development, Job Creation and Trade (MEDJCT), together with the Mexico International Trade Development Representative (ITDR), offers many services to complement and support Ontario companies in pursuing export and business opportunities in Mexico, including incoming and outbound trade missions, contact development, and follow-up with clients and partners.

The report provides an overview of the aerospace industry in Mexico, the key aerospace manufacturing clusters, government and defence involvement in the industry and aviation. There is also a section of industry analysis which includes information from surveys conducted with industry experts. The report includes opportunities for Ontario companies through details of specific projects and investments in Mexico. The last part gives advice for market entry strategies in Mexico and a list of key players and contacts in the industry.

Mexico

Mexico is the southern-most partner of Canada and the United States in the trilateral trade agreement, the North American Free Trade Agreement (NAFTA), soon to be replaced by the United-States-Mexico-Canada Agreement (USMCA). The country has over 130 million residents, making it the tenth-most populous nation in the world.¹ Mexico has the 15th-largest economy in the world, ranking between Australia and Indonesia, with a nominal GDP in 2018 of approximately 1,213 billion USD.²

In terms of land mass, it is the fourteenth-largest country worldwide at nearly 1.97 million square kilometres, approximately 20% the size of Canada. The country is noted for its biodiversity and diversity of climates, which range from dry desert and steppe to humid jungle to temperate mountain. The country's primary natural resources are crude oil, natural gas, silver, copper, gold, lead and other minerals, as well as timber. Mexico's key industries are agriculture, automotive, chemicals, iron and- steel, oil, mining, manufacturing and tourism.

The country, together with its Aztec and Mayan civilizations and other indigenous communities, was colonized by Spain in the 1500s. The Spanish were attracted by Mexico's wealth of gold and silver resources. The country was governed as the colony of New Spain until 1810 when it gained independence. Mexico's current political structure, a federalist republic, was established in 1917 following the Mexican Revolution. Mexico has 31 states plus the district of the nation's capital, Mexico City. Up until early 2016, Mexico City had been referred to by its residents as 'the federal district' but in January 2016 changed its name to what it is known by worldwide, Mexico City (*Ciudad de México*).

Apart from changing the name of the city, this administrative reform was intended to devolve power from the federal government and allows the city's mayor to name senior officials such as the police chief, as an autonomous entity within Mexico³. In 2017, the city released its own constitution after an innovative process involving citizens' suggestions for inclusions.

For most of the 20th century, one political party governed the country without interruption. This party, known as PRI (Revolutionary Independence Party), held power for 71 consecutive years until it lost the federal election to the PAN (National Action Party) in 2000 for two six-year presidential terms. In July of 2012, PRI was elected back into the presidency, with Enrique Peña Nieto taking office on December 1, 2012.

Mexico's Next President

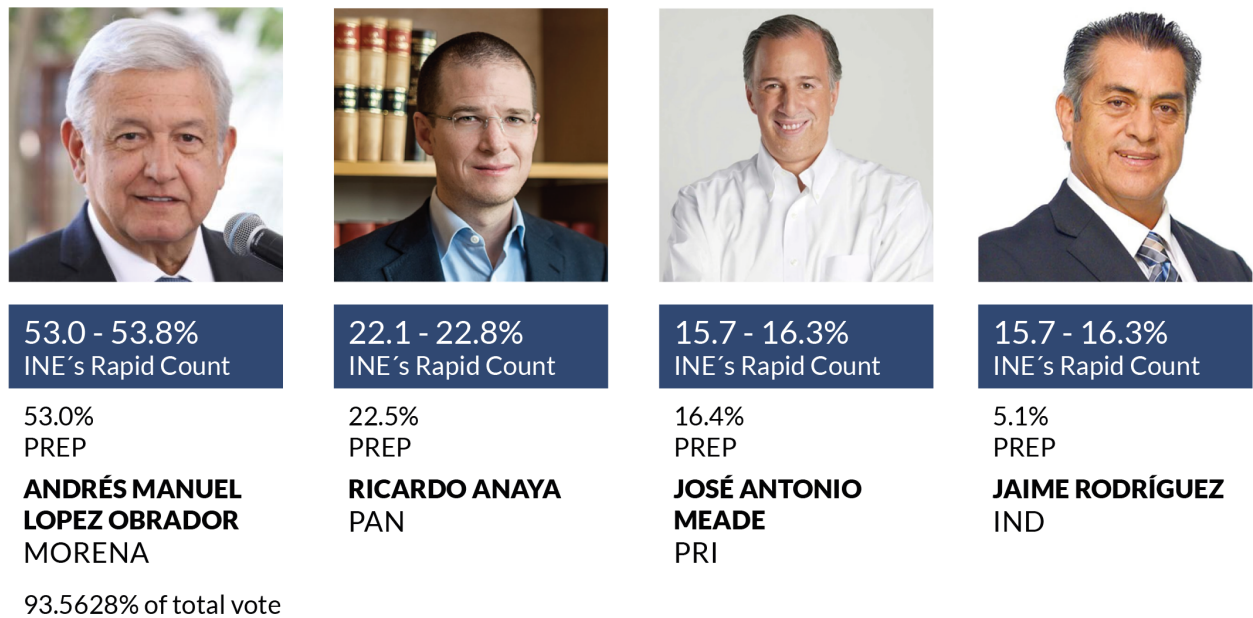
On July 1st, 2018, Andrés Manuel López Obrador, popularly known as 'AMLO,' won the federal election with 53% of the popular vote. His win was a landslide as 30 out of 31 states voted for his party as well as the federal entity, Mexico City. For the election, the coalition, Juntos Haremos Historia (JHH) was formed, which roughly translates to "Together we will make history". JHH is made up of the AMLO-led National Regeneration Movement (MORENA), the left-wing Labour Party (PT) and right-wing Social Encounter Party (PES). JHH has been described as an "alliance of diverse movements and political actors" that are bound together by their support of AMLO's presidency . AMLO's inauguration was on the 1st of December 2018.

Figure 1: Andrés Manuel López Obrador



Source: www.breitbart.com

Figure 2: 2018 Mexican Federal Election Results. AMLO won by a large margin over his rivals

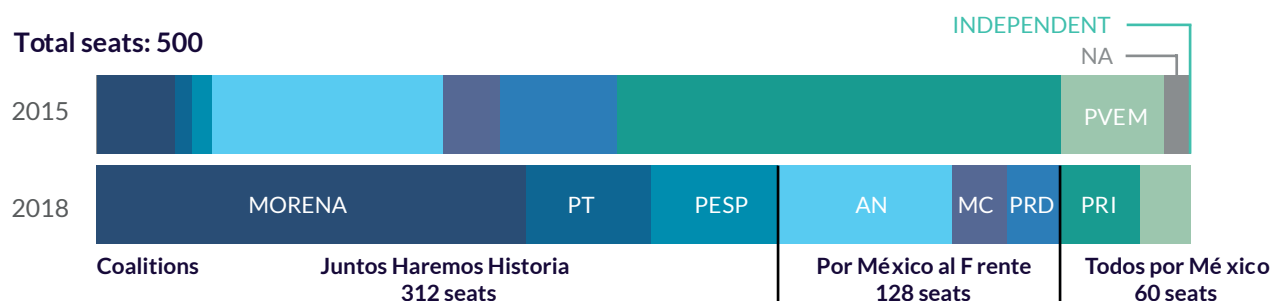


Source: National Electoral Institute and Preliminary Electoral Results Program (PREP)

AMLO's Key Election Promises⁵

- Democratic rule of law will be enforced
- Eradication of corruption and special privileges for government officials
- Development projects across the country including the decentralisation of government through transfer of Government agencies to different states outside of Mexico City
- Revitalisation of agricultural industry, including fixed prices for farmers. Increase self-sufficiency of Mexico in production of corn, beans, sorghum, beef, chicken, eggs and fish
- Review changes made to the energy sector by previous government
- State promotion of economic development – no increase in taxes or public debt, production projects and job offers will be government financed
- Secure access to education and work for young people with monthly scholarship to low-income university students
- Double the pension for senior citizens and retirees
- Free education for all – current education reform will be rendered null and void
- To combat violence and insecurity, the creation of a Ministry for Public Security, a National Guard and a Single Police Command

Figure 3: Mexico, Chamber of Deputies, Seats



AMLO's party now has an absolute majority in both the Chamber of Deputies and the Senate. Meaning his party will have more congressional power than any previous government since the 1990s and essentially be able to pass any legislation they wish. Despite the absolute majority, the MORENA party will have to deal with several competing political priorities within the JHH coalition.

On late December 2018, the lower house of the Congress approved the federal budget for 2019 for 303 billion USD (5.8 trillion pesos).⁶ The Ministry in charge of the aerospace and aviation sectors is the Ministry of Communication and Transportation (*Secretaría de Comunicaciones y Transportes*). They received 10.34% of the budget which is an increase from 2018. However, it appears more investment will be funnelled into infrastructure such as road and highways.

The government has until the end of March, 2019, to present the National Development Plan 2019 - 2024 (*Plan Nacional de Desarrollo*). This is a document that outlines their policies for each sector in Mexico for the 6-year term of the new government. Once the plan is presented, Congress will need to approve it through a vote. In the interim, indications for AMLO's policy direction come from the first federal budget, press conferences, speeches, announcements on his party's website and key election promises.

There has been some concern from the business sector that AMLO's election could lead to leftist policies with negative impacts on the business and the economy. However, AMLO has reassured the business sector that there would be no nationalisation and that he would respect Mexican business. Soon after his election, AMLO met with Mexico's major business chamber, the Business Coordinating Council (CCE). Business leaders who previously were openly concerned about AMLO's election congratulated his victory and said they would endeavor to work with the new government.

Regardless of the change of government, financial experts say the country's institutions are strong and the nation's central bank is in a good place⁷. In addition to being one of the world's largest economies, Mexico is an upper-middle income country, with a financially integrated economy and a growing middle class. Mexico's economic growth in 2017 was 2.4% and it is predicted by the Organisation for Economic Co-operation and Development (OECD) to grow at a rate above 2% in 2018 and 2019.⁸

Structural Reforms

Important structural reforms were implemented under the government of Enrique Peña Nieto following the signing of the Pact for Mexico, the country's bipartisan agreement for sweeping constitutional reform.⁹ The six reforms bring the most significant changes the country has seen in decades to communications, education, energy, finance, fiscal policy and even elections. They focus on fostering competition and facilitating access to credit.

However, there is some uncertainty regarding what changes the new president will make to these reforms. One of his proposals is to completely scrap the education reform. Another, regarding the energy reform, is to halt new offers for oil and gas investment from private enterprises, to develop stronger refining capacity nationally, and to expand Mexico's gas supply¹⁰. The president elect will be reviewing the existing energy reforms.

Figure 4 Reforms into Action: Energy and education are the two reforms that the new government has spoken about changing significantly



Source: promexico.com.mx

Mexico-Canada Trade

Mexico offers a rich source of business opportunities for Ontario exporters due to its growing consumer class and favourable labour conditions¹¹. It has a commitment to free trade, meaning that Canadian investors and exporters can quickly gain access to the market. Since the beginning of NAFTA in 1993, merchandise trade between Canada and Mexico increased nine-fold and services trade has increased six-fold.¹² For overall bilateral trade, Mexico is Canada's 3rd largest trading partner, with merchandise trade worth over 32.78 billion USD in 2017.¹³ Mexico is Canada's fourth-largest export market.

NAFTA Renegotiations and United States-Mexico-Canada Agreement

In October, 2018, Canada, Mexico and the US struck a new trilateral trade deal to replace the 25-year-old NAFTA agreement after more than a year of negotiations. The new agreement is called the United States-Mexico-Canada Agreement (USMCA). The major changes from NAFTA include new country of origin rules for automobiles, changes to labor provisions for Mexico, increased US access to the Canadian dairy market and changes to intellectual property and digital trade rules. The agreement has a 16-year sunset clause. The agreement was signed by the leaders of Canada, Mexico and the United States in November, 2018, but still needs to be ratified to take effect. This will occur once the legislation is approved by their respective governments.

NAFTA has been a very important factor in the development of the Mexican manufacturing industry over the past 25-years. NAFTA removed trade barriers between member states by eliminating tariffs. It has resulted in the integration of the manufacturing supply chain between the US, Canada and Mexico. Additionally, Mexico has benefited from foreign direct investment and increased economic activity from manufacturers choosing to move operations to the country. Experts from the aerospace industry are not expecting a significant impact from the changes to the agreement.



ONTARIO
CANADA

OVERVIEW

State of Aerospace Industry

Mexico's aerospace industry is still relatively new but is quickly growing to be an important part of the Mexican economy and the sector globally. Mexico is currently the 14th largest aerospace supplier in the world, and the country is aiming to enter the top 10 by 2020.¹⁴ The sector has been attracting economic growth, foreign investment and job creation to Mexico with an average growth of exports of 15% annually for the past decade.¹⁵ The number of aerospace companies operating in Mexico has increased by 65% since 2009 – there are now more than 330 aerospace companies in Mexico.¹⁶ The Mexican Federation for Aerospace Industry (FEMIA) considers aerospace to be one of the most dynamic industries in Mexico.

MEXICAN KEY AEROSPACE INDICATORS¹⁷



14th largest aerospace supplier globally



6th largest exporter of aerospace parts to the US



3rd largest recipient in foreign direct investment for aerospace



15% average growth rate of exports over the past decade



50,000 employees



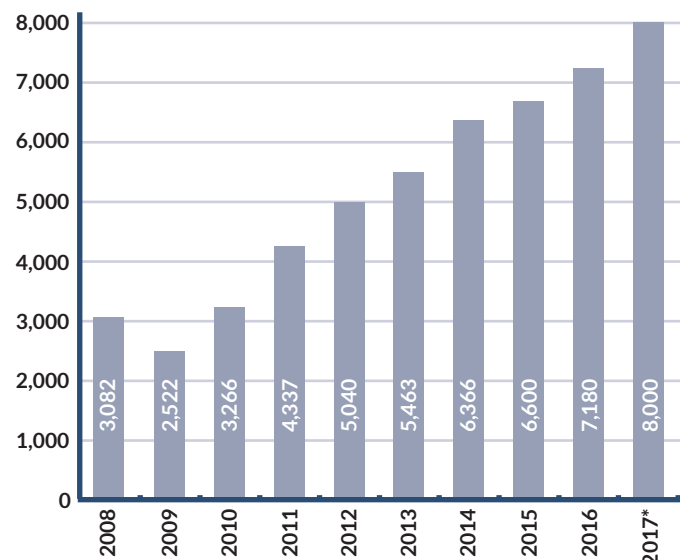
8 billion USD revenue in 2017



More than 330 companies in 18 states

Figure 5: Mexican Aerospace Exports. There has been a steady increase between 2009 – 2017

MEXICAN AEROSPACE EXPORTS (US\$ MILLIONS)



Source: Ministry of Economy and FEMIA *forecasted by FEMIA

Rockwell Collins was the first aerospace company to start operations in Mexico, building a plant in Baja California in 1969. The Maquiladora Export Program, that started in the late sixties, contributed greatly to the emergence of the aerospace industry in Mexico. It helped to encourage industrialisation, employment and regional development by making it advantageous for manufacturers to move south of the border to Mexico. The program allows for the tax-free importation of goods that are destined for the assembly of products that are then to be exported. Several aerospace firms took advantage of this by developing plants in the northern border states of Mexico to lower their costs of labour for products destined for the US. Some of the aerospace companies that have had a presence in Mexico for a long time include Rockwell Collins (1969), Safran Group (1991), Labinal (1996) and Beechcraft (2007).¹⁸

The Mexican government has demonstrated interest in supporting the aerospace industry through the creation of a Strategic Programme called 'Pro-Aero'. The objective of this programme is to elevate Mexico to the top-10 most prominent countries in the industry. The strategy is for the period 2012 – 2020 and by 2018, the effects on the market could already be seen.

Figure 6: Pegasus P-at FAMEX, Mexican-made plane



Source: www.aerospacemx.com

There are also some interesting local developments in the industry. One example is the work of Oaxaca Aerospace that has created a prototype for the first Mexican designed and constructed fighter plane. The company is aiming to increase manufacturing capacity in Mexico and to market a more cost-efficient plane. There is also the Aeronautical University of Queretaro (UNAQ), which opened in 2009 and is the only university of its kind in Mexico.

Mexico's aerospace industry has grown rapidly in part due to its highly skilled and cost competitive workforce. There are several manufacturing hubs, with the top 5 being Queretaro, Baja California, Sonora, Nuevo Leon and Chihuahua. These hubs have had a strong manufacturing presence from OEMs and suppliers in the automotive industry, meaning that appropriate labour, infrastructure and manufacturing capabilities already exist in these locations.

Industry Competitiveness

There are several key factors that make Mexico a centre for foreign investment in the aerospace sector and positions the industry to develop and expand further. These factors create opportunities for Canadian companies as large global aerospace companies that choose to operate in Mexico require specialised products and services to support their manufacturing.

At a glance:

- Extensive free trade agreements
- Strategic location
- Competitive production costs
- Engineering and technology graduates

A key advantage of the market is its extensive network of Free Trade Agreements (FTA). Trade liberalisation has made Mexico one of the most open markets in the world.¹⁹ The principal trade agreement was the North America Free Trade Agreement (NAFTA), soon to be the USMCA, which has helped the manufacturing industry in Mexico flourish and integrated supply chains closely with the United States and Canada. This free trade agreement is an advantage for Canadian companies as it lowers the cost of doing business in Mexico through the elimination of tariffs.

While NAFTA/USMCA is an important part of Mexico's international trade, the country benefits from a total of 12 free trade agreements with 46 different countries. Due to these FTAs, Mexico has access to over 60% of the world's gross domestic product. Companies incorporated in Mexico can make use of the free trade agreements to sell products to other parts of the world.

Mexico also has competitive production costs compared to the USA and Canada. Much of the cost-savings comes from the lower price of labour in Mexico. Moreover, the workforce is highly qualified, with a large number of engineers graduating every year - 125 thousand engineering and technology students graduate annually from Mexican institutions. Mexico also has a young and burgeoning working-age population, with a median age of 26-years-old (in comparison the median age in the US 37-years old). A young workforce means more innovative minds and better technological literacy resulting in the potential for higher efficiency. The Mexican government is also set on elevating the skills sets of the workforce through education initiatives.

As the aerospace industry in Mexico grows due to these favourable conditions, Canadian companies can take advantage of gaps in the supply chain.

Key Companies in Mexico

The three biggest players in Mexico are Safran, Airbus and Bombardier. These companies have manufacturing plants across Mexico as well as maintenance-repair-overhaul (MRO) facilities.

S A F R A N



Safran is a French-registered company that has operated in Mexico for more than 20 years and is the largest aerospace company in the country. Safran has more than 92,000 employees globally, 10,000 of those are employed in Mexico with facilities in Chihuahua, Queretaro and Mexico City. They have 14 facilities across Mexico including production, maintenance and engineering sites²⁰. Their facility in Chihuahua is the largest aircraft wiring plant in the world. They have just opened their 6th plant in Queretaro for the manufacture of turbine blades for the LEAP jet engine in February 2018. In Mexico, Safran manufactures SFM56 engines, SaM146 engines and Leap Engines. The LEAP engine has been selected to be the engine for Aeromexico's fleet of Boeing 737 MAX airliners and Interjet's A320neo airliners. The company has said the projections for Safran in Mexico are for the next 50 years and as such they are looking to nurture relationships with small businesses in Mexico that have the potential to become suppliers in the long term.

BOMBARDIER

BOMBARDIER

Bombardier is a Canadian-based aerospace company and is a world leading manufacturer of both planes and trains. Globally, they have 26,900 employees in their Bombardier Aerospace business segment. Bombardier Transportation has been doing business in Mexico since 1981 and in 2005, Bombardier Aerospace announced the establishment of its first facility in Queretaro, Mexico. The facility is an engineering and manufacturing site for aerostructures and was supported by a 200 million USD investment. In 2008, a further 250 million USD was invested to perform the sub-assembly systems installation, manufacture of carbon composite structure, electrical harness and wing assembly for the Learjet 85 aircraft. In 2011, they announced 50 million USD to support the manufacturing of the aft fuselage for the new Global 7000 and Global 8000 business jets. In 2015, their total investment in Queretaro operations had reached 500 million USD and in Mexico they have more than 1,500 employees. In Queretaro, they manufacture aft fuselage for the Global family of business aircrafts (5000, 6000, 7000, 8000), forward fuselage and doors of the CSeries aircraft, and harnesses and main electric sub-assemblies for Bombardier executive and commercial aircrafts.

AIRBUS & AIRBUS HELICOPTERS

AIRBUS

Airbus helicopters is a French-based company that has had operations in Mexico for 35 years. Mexico and Brazil are key markets for Airbus in Latin America. Mexican operations are the basis for their sales and after-sales operation between Mexico, Central America, Colombia, Ecuador and Venezuela. Their manufacturing plant in Queretaro was inaugurated in 2013 with an investment of 100 million USD. The plant manufactures assemblies and sub-assemblies for aircrafts. This is the first phase of the company's development strategy in Mexico, as they seek to supply their aircrafts to a number of Mexican government agencies. To support this, they have service centres in several Mexican international airports, including in Mexico City, Queretaro, Ciudad del Carmen and Saltillo. Airbus has sold more than 1,000 aircrafts in the LATAM area and has a backlog of more than 450 aircrafts. For Mexican airlines, Airbus's A320 family is the most popular aircraft for its versatility. Airbus has committed to the Mexican market by developing talent in the country through their Mexico Training Centre.

Original Equipment Manufacturers (OEMs)

In Mexico, OEM's making final products only cover small aircrafts. While OEM's such as Airbus and Bombardier are manufacturing in Mexico, they operate as Tier 1s, creating principal aircraft systems rather than entire planes.

International aerospace OEMs have backlogs on orders; Airbus and Boeing have 6691 and 5659 units to manufacture respectively. It is expected that the global increase in tourism, global connectivity and lower oil prices will keep the aviation industry strong and thus the demand for new aircrafts and MRO's. The global outlook is positive for Mexico, as there is a confirmed demand for the coming years.

While OEM's around the world have enough demand to increase their outputs, their supply chains are not able to meet current demand. Mexico has found its niche in aerospace parts and assemblies such as airframes, flight surfaces, flight control, engines and avionic assemblies, but there is still a lot of room for development across the supply chain in the country.

Supply Chain

Mexico's aerospace supply chain is "top-heavy", meaning that the OEMs and Tier 1's are better established than local Tier 2 and 3 suppliers. This means many companies need to source parts and specialised services from outside the country. This is an area with a lot of opportunity for foreign companies, especially those seeking to set up local production.

According to Xavier Hurtado, supply chain manager at FEMIA, the association has identified 639 million USD in purchasing in different categories from 45 buyer companies in Mexico (OEMs and Tier 1s). FEMIA has been able to locate appropriate suppliers for 15 million USD meaning more than 95% of procurement requirements

are open for businesses. As such, FEMIA has identified a large gap in Tier 2 and Tier 3 suppliers in Mexico. For example, there is 200 million USD in procurement requirements for forging and casting in the aerospace industry.

FEMIA has also identified that while there are manufacturing hubs, no one cluster is able to complete one component independently. This means components must be shipped between regions, which has a negative impact on cost competitiveness. In addition, there is an information gap in identifying which businesses can undertake specific processes. To address this, FEMIA is creating a directory that includes an inventory of machines and their specifications for the industry.

When an OEM or Tier 1 in Mexico begins manufacturing a new product, initial purchases tend to be under small contracts. This means it is difficult to justify a new product because of the distance and logistics involved. For example, some companies will have to buy full sheets of titanium bars or aluminium from the US but they only require 20% of the minimum order. The part is then often sent to various locations in Mexico and the US to undergo separate processes such as to be machined, heat treated and anodized.

As the supply chain within the country is not properly integrated, some companies operating in Mexico have had to become vertically integrated by developing certain capabilities within their own plants. For example, some companies have started doing special processes, such as anodizing, themselves. This is to avoid the need to ship the parts back and forth.

Another challenge for the supply chain is whether local or international suppliers can meet the stringent requirements of the buyers. Key performance indicators are very important such as “on time, in full” delivery and quality assurance.

FEMIA helps find aerospace suppliers in Mexico and abroad, identify and document their capabilities, acquaint them with qualified Mexican buyers, identify gaps where there are no suppliers and look for allies or government centres to bridge those gaps. Below is a list of products and services currently available in Mexico and a list of supply chain opportunities that Canadian companies could potentially address.

AVAILABLE PRODUCTS & SERVICES IN MEXICO²²

- Propulsion system components
- Aerostructures & sheet metal
- Landing system components
- Braking Systems
- Precision machined parts
- Plastic injection molding parts
- Heat and surface treatment
- Electrical & electronics
- Composite material parts
- Design & engineering services
- MRO services
- Aircraft interiors

SUPPLY CHAIN OPPORTUNITIES²³

- Thermal and hydro forming
- Surface treatments
- Nitro-carburized materials and nitrocarburizing
- Motors and rotors
- Special composites
- Testing equipment
- Special composites and processes
- Metal treatments
- Aerospace molding
- Special tooling
- Advanced composites
- Specialized aerospace services

Table 3: Direct Suppliers Operating in Mexico

Top 100 Rank	Company
6	GE Aviation
7	BAE Systems
10	Rolls-Royce
11	Safran
13	Honeywell Aerospace
25	Zodiac

Top 100 Rank	Company
30	GKN Aerospace
35	Dassault Aviation
56	Curtiss-Wright
94	Latécoère
97	Kaman Aerospace
Companies included in PwC list of top 100 industry manufacturers	



Of the top 100 global aerospace suppliers, 11 have a presence in Mexico. However, these companies also require their own tier 1, 2 and 3 suppliers further down the supply chain. Table 3 shows some of the direct suppliers working in Mexico.

Maintenance, Repair and Overhaul (MRO)

MRO is a key industry segment in Mexico and will become more important as commercial airlines continue to grow. It has been said that Mexico is in an ideal position to become a regional hub for MRO services due to its strategic location between North and South America.²⁴ There is demand for replacement parts and the repainting of fuselages.

Figure 7 Mexico's Top Three MRO Companies



MEXICANA MRO

Specialized in three aircraft families:

- **AIRBUS A320 FAM**
(A318, A319, A320 & A321)
- **B767-200/300**
- **B737**
(B737XCL & B737NG)



TECHOPS MEXICO

Services for Aeromexico aircraft:

- **BOEING 737**
- **EMBRAER ERJ145**
- **EMBRAER 170**
- **EMBRAER 170**



INTERJET MRO SOLUTIONS

Services provided for:

- **AIRBUS A318, A319, A320, A321**
- **BOEING B77-200, 300, 400 500, 700, 800**
- **SUPERJET SSJ 100**

Source: Mexico Aviation and Aerospace Review

AEROSPACE CLUSTERS

There are 5 key regions for aerospace manufacturing in Mexico, they are Queretaro, Chihuahua, Sonora, Nuevo Leon and Baja California. Each of these clusters have aerospace associations that bring together different players in the industry, including the OEM's, Tier 1, 2 and 3 manufacturers, research and development facilities, universities and government institutions. These organizations aim to consolidate the industry in their respective regions through collaboration between business, academia and government. Each of the 5 clusters maintains a specialisation. There are 5 other states with a smaller presence of aerospace companies which are Tamaulipas, State of Mexico, Mexico City, Jalisco and Coahuila.

Figure 8: Map of Mexico with Major Aerospace Manufacturing Regions



Baja California

The Baja California aerospace cluster has operations in two major cities: Tijuana and Mexicali. Both cities are on the border with California, US making Baja a key logistical point. Its main areas of expertise are knowledge process outsourcing, electrical plants, fuselage systems, landing gear and small aircraft mechanisms. Up until October 2017, there was more than 280 million USD invested in the aerospace

industry in Baja California, creating more than 2 thousand new jobs.²⁵ There are approximately 110 aerospace firms in this state and it is the largest cluster by number of companies.²⁶ Baja California's supply chain represents 2.1 billion USD in the areas of high precision machining, heat treatment, casting and forges and special processes.²⁷



AEROSPACE COMPANIES IN BAJA CALIFORNIA:



Chihuahua

Chihuahua's area of speciality is the final assembly of aircraft manufacturing, maintenance and repair. It has a prosperous international logistics infrastructure as a border state with the USA. The state of Chihuahua often attracts projects related to developing components of high-tech aircraft parts. The region specializes in restricted and

dual-use goods (tangible and intangible objects for civil, military, or mixed use). The cluster includes 5 OEM's, more than 40 certified suppliers and 1.5 billion USD in exports annually. Some of their capabilities include harnesses, aircraft interiors, aerostructures, thermal and metal treatments and high precision machining.



AEROSPACE COMPANIES IN CHIHUAHUA:



Queretaro

Airbus and Bombardier have facilities in Queretaro. In the last 10-years, Queretaro has attracted 50% of the industry's foreign direct investment (FDI).²⁸ In the first half of 2018, Queretaro had 250 million USD of investments²⁹. Some of the advantages of Queretaro are dynamic economic development policies, a modern airport and quality industrial and educational infrastructures. The state has potential

in design, manufacture, assembly and MRO for complex fuselage parts, like turbines or landing gear. Proximity to Mexico City also makes it a potential area for management and innovation. Aerocluster Queretaro currently has 60 members, including 41 companies, 6 research centers, 8 academic institutions and 5 public and private entities.



AEROSPACE COMPANIES IN QUERETARO:

MEGGITT

BOMBARDIER

 **Messier-Dowty**
SAFRAN Group

 **DAHER**

 **eurocopter**
an EADS Company

 **AERNnova**

DUQUEINE
GROUP



 **SAFRAN**

TechOps
MX

Nuevo Leon

Nuevo Leon focuses on advanced manufacturing, design, engineering and, research and development (R&D). Major companies in the state include Honeywell, RBC Bearings and Frisa Aerospace. The state has 32 companies involved in the aerospace industry and 22 DGAC certified MRO workshops. Their aerospace cluster is called Monterrey Aerocluster. Foreign direct investment in aerospace manufacturing and MRO in Nuevo Leon in 2016 was 16.8 million USD.³⁰ Educational institutions have been an important element for growing the industry of the state with the capital city of Monterrey being home to one of the country's best universities, Tecnológico de Monterrey.



AEROSPACE COMPANIES IN NUEVO LEON:

Honeywell

 **UTC Aerospace
Systems**

 **Parker** | Aerospace

 **Viakable**
New ways of doing business... Your way

 **FRISA**

HEMAQ

 **TECMAQ**
Tecnología, Procesos y Maquinados, S.A. de C.V.

 **PS**
ADVANCED MANUFACTURING

Sonora

Sonora's speciality is supply chain manufacturers and turbine production which is supported by high quality products and low production costs. This area originally started as an automotive hub but has expanded into aerospace manufacturing. Currently, they are focused on developing their local supply chain and improving their competitive costs to become the leading cluster in Mexico. Much of the production is done in the coastal region, around the

city of Guaymas, where automotive industry has been present for a longer period. Major companies in the state include Ducommun Aerostructures, Griffith Enterprises, Goodrich and Parker Aerospace. As of 2015, Sonora had 60 companies and 10,000 employees in the aerospace industry. Sonora's aerospace sector is represented by the Ministry for Economy of Sonora rather than there being a separate association as in the other regions.



AEROSPACE COMPANIES IN SONORA:

GOODRICH



Rolls-Royce



Ducommun

BAE SYSTEMS

DAHER

LATÉCOÈRE

**CURTISS -
WRIGHT**

GOVERNMENT, DEFENCE & AEROSPACE

The Mexican government has several initiatives to help develop and expand the aerospace sector. The government supports the aerospace industry in several ways. For example, they grant offsets for industrial developments and consolidating purchases. They promote foreign direct investment to attract Tier 1 suppliers and OEM projects. Recently, they have become more interested in the development of the space industry as well.

In late December 2018, the lower house of the Congress approved the federal budget for 2019 for 303 billion USD (5.8 trillion MXN). The Ministry of Communication and Transportation, which is responsible for the aerospace and aviation sectors received 10.34% of the budget. Compared to 2018, in 2019 the Ministry will receive an additional 7.8 million USD (150 million pesos). Of the budget assigned, 3.2 million USD (62 million MXN) will go to the Mexican Space Agency, and 6.3 million USD (121 million MXN), to the Mexican Transportation Institute.

The Ministry of Defence (SEDENA) budget for 2019 is 4.8 billion USD (93 billion MXN), which is an 11% increase from 2018.³² The budget specifically for the Air Force is 465 million USD (8.9 billion MXN).³³

ProAero – National Strategic Program for Aerospace Industry

One key initiative headed by the Mexican Secretariat of Economy is ProAero 2012 – 2020, which is a national strategic program with the objective of Mexico entering the top 10 countries in the world for aerospace production. Other goals include reaching over 12 billion USD in aerospace exports a year, 110 thousand workers employed in the industry and a goal of 50% of local content in raw materials and production in the industry.³⁴ They have a “triple helix” approach which brings together industry, academia and government through various programs to develop the industry and create new employment opportunities. Their policies to stimulate the industry include:

- Industrial compensational developments (offsets) and consolidating purchases
- To promote foreign direct investment to complement the aerospace supply chain
- Collecting data to create statistics and key indicators for the industry
- Enhancing certification through integrated teams between different government departments
- Analyse public and private needs in infrastructure
- To create a development fund for industry

Plan Orbita 2.0

- Plan Orbita 2.0 is a national strategy for the development of the space industry and capacity of Mexico. It has been created by ProMexico and the Mexican Space Agency*. Some of the goals that the strategy includes are:
- An inventory of current industrial capacities, of innovation and services and, technological monitoring of capabilities for the space industry in Mexico.³⁵
- Guarantee Mexican access to space by strengthening decision-making capacity for the expansion of resources in orbit, corresponding radioelectric spectrum and the establishment of two additional orbital positions.
- By 2026, for Mexico to be recognised for its role in the development of components, products and services for the space industry with a global participation of 1% of the global market – equivalent to 3 billion USD.
- By 2026, to develop necessary space and infrastructure to increase connectivity coverage by 25% across Latin America.

Each of these goals has several associated projects of varying lengths of time.

** ProMéxico is currently being dissolved after an announcement by AMLO in late 2018. The Mexican Space Agency will also have budget cuts.*

Secretariat of National Defence (SEDENA)

SEDENA is the government department that manages the army and air force of Mexico. As part of their role in maintaining social stability, which includes providing disaster relief, public safety and other activities, they also aim to assist in economic growth and stability. The Mexico Aerospace Fair (FAMEX) is held by SEDENA to help stimulate the industry. The fair was created by SEDENA in 2015 and is the first of its kind in the country. SEDENA also collaborates on projects with universities and private sector players. The opportunities section of this report provides more information on the purchasing plan of SEDENA.

Mexican Airforce (FAM)

The Mexican Air Force (FAM) is a branch of the Mexican Army and SEDENA. They have a 2030 Plan that involves three phases of modernisation. Through this plan, they aim to restructure the air force, which involves increasing the participation of women, to modernise air fleet equipment and to improve infrastructure. The first phase finished in 2018. The second phase lasts until 2024 and the third until 2030. Throughout these phases they have a purchasing plan for new helicopters, aircrafts and jets. More detailed information on the purchasing plan is provided in the “Opportunities” section of this report.

Mexican Space Agency (AEM)

The AEM was formed in 2010. It was created by the Federal Government and the Ministry of Communication and Transport. Their mission is to use space science and technology to help solve problems in Mexico as well as generate jobs of high skill sets and therefore greater value. They also seek to contribute to the competitiveness of Mexico and increase its position in the global community regarding the space industry.

Bilateral Aviation Safety Agreement (BASA)

The Bilateral Aviation Safety Agreement (BASA) was signed in 2012 and attained reciprocal recognition of standards between the US and Mexico for the aerospace industry. This includes the National Aerospace and Defence Contractors Accreditation Program (NADCAP), the AS9100 aerospace quality management system and other certifications from the Federal Aviation Administration (FAA) of the US and the Mexican organisation, the General Directorate of Civil Association (DGAC).

Federal Aviation Agency

On February 20th, 2019, during the inauguration of AeroExpo in Toluca’s International Airport, the Deputy Minister of Communications and Transportation announced that they are driving the creation of the Federal Aviation Agency as a regulatory and autonomous body that will supervise aviation in the country. Also, it was announced that in a two-year period, all the airports will have the Performance Based Navigation (PNB) for satellite navigation of the planes.

INNOVATION AND NEW TECHNOLOGY

Oaxaca Aerospace and the Mexican-Made Aircraft

Oaxaca Aerospace is the first 100% Mexican company to complete the whole development process for an aircraft for military, general aviation and commercial use. Currently, the Mexican industry does not construct complete aircrafts but supports international OEMs in doing this.

The goal of Oaxaca Aerospace was to develop a Mexican designed aircraft that was cheaper than those made in other countries. Thus, increasing the capacity of the Mexican aerospace industry and creating a plane that is more price appropriate for developing countries.

The project began in 2011. The prototype of the Pegasus PE-210A was first presented at FAMEX in 2015. In 2017, they presented the second prototype, the Pegasus P-400T for which the company received support from SEDENA and a contract to collaborate on further projects with the Mexican Airforce.

An average fighter aircraft costs around 12 million USD, but Oaxaca Aerospace aims to sell the Pegasus at around 2.5 million USD. The design of the aircraft also provides savings in running costs, using less fuel due to composite fuselage and aluminium wings. Their goal is to market the low-cost aircraft to low-to-middle income countries in Latin America and further afield, such as Thailand.

Mexican Satellite System

In the future, Mexico will require better internet infrastructure, which means it will need better satellites. Satellites can work as a connectivity solution for countries like Mexico, where land infrastructure for communications is still being developed. There are both private and publicly funded satellites operating for Mexico. However, the technology used is all sourced from other countries. There is a need to develop technologies locally. Currently, the Mexsat system consists of two satellites, Bicentenario and Morelos III, which provide support to telecommunications across Mexico. Bicentenario operates for fixed service and Morelos III for mobile service. There are two ground stations in Iztapalapa, Mexico City and Hermosillo, Sonora.

Figure 14: MEXSAT Bicentenario, launched in 2012



HUMAN CAPITAL & RESEARCH

Demand for Human Capital

As the number and size of aerospace businesses increase in Mexico, so too does the demand for qualified human capital. According to FEMIA, the industry now employs 50,000 individuals.³⁶ There is high competition for technicians and engineers leading to companies poaching employees from each other. The industry is aware of this challenge and there are several initiatives to supply the appropriate talent.

Mexico has great potential for research and development activities due to the large number of engineering graduates in the country and the lower costs of labour than other global aerospace clusters. According to ProMexico there are 11 research centres in Mexico that are capable of undertaking R&D for the aerospace industry.³⁷

Several universities have introduced courses specially for the aerospace industry, such as Nuevo Leon Autonomous University (UANL), National Polytechnic Institute (IPN), Guaymas Technological University (UPC), Baja California Autonomous University (UABC) and Chihuahua Technological University (UTC).

Aeronautical University of Queretaro - UNAQ

UNAQ is Mexico's first and only public institution of higher education specialized in aeronautical training. Although UNAQ was officially created as a public body in 2007; it has its origins in mid-2005 when the State of Querétaro along with the Federal Government, participated in an international bid for Bombardier Aerospace to establish a plant in the state. For the first two years, UNAQ had a training program just for Bombardier personal. In 2009, the university started offering two university degrees, Engineering in Aeronautical Manufacturing and Superior Technician in Avionics. They now have a postgraduate program for aerospace engineering. In 2010, UNAQ joined an initiative of the State of Queretaro to create Aerospace Research and Innovation Network of Querétaro (RIIAQ).

The university is developing UAV technology and composite based-materials to shield helicopters, simulators for pilot training alongside the Mexican Air Force, tooling and other capabilities for manufacturers of landing gears and engines.

AVIATION

Aviation is experiencing a boom worldwide that bodes well for the Mexican aerospace industry. Several factors are contributing to this growth including the expansion of the middle-class, tourism, cheaper airfares and an increasingly global economy. Between 2012 and 2017, commercial airlines had an annual average passenger increase of 6.2% with an estimated requirement for 41,000 additional plane deliveries by 2036³⁸.

Mexico & Latin American Market

Latin America is expected to be a huge growth area for air travel as it has become more accessible to people than ever before. Boeing expects Latin America will need 2,960 new aircrafts by 2035. Mexico represents the 2nd largest market in the region, after Brazil.

MEXICO AVIATION INDUSTRY KEY INDICATORS

- 1 million direct and indirect jobs
- 2.9% contribution to the national economy
- 35 billion USD annually contributed to the economy
- 82.7 million passengers flew in 2016

The Mexican aviation industry has been growing significantly in terms of passengers and cargo. The introduction of low-cost carriers (LLC) to the market has meant that established airlines have had to adjust to remain competitive. Flying has become an affordable option for a larger percentage of Mexicans than it was in the past. In the first half of 2018, passenger traffic grew 7.7% and cargo by 15.6% compared to the same period in 2017.³⁹ Seven aircrafts have been added to Mexico's commercial fleet since the end of 2017.³⁹ Mexican airlines transported 30.9 million passengers in the first half of 2018 which represent 64% of total passenger traffic in the country. Foreign airlines served 70.5% of international passengers in this period (17.4 million passengers), with US carriers serving almost half of those passengers.

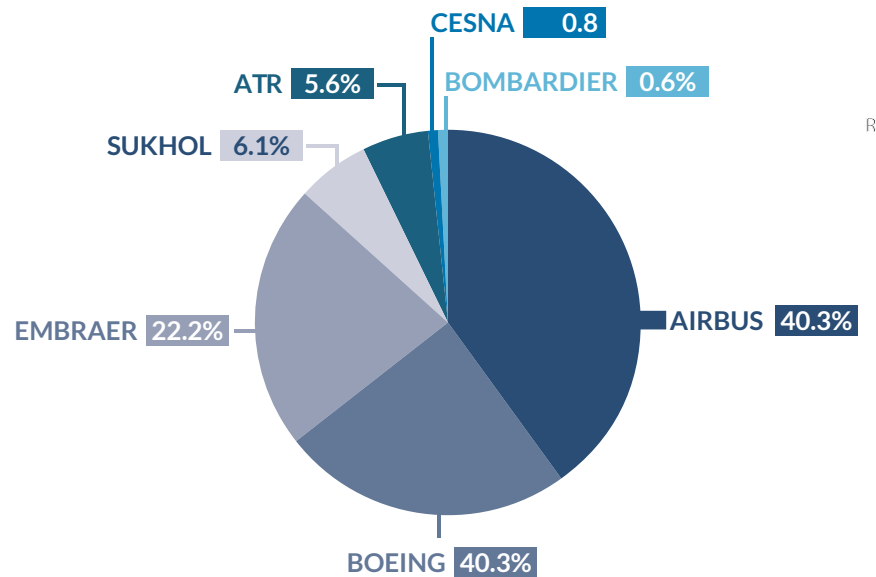
Grupo Aeromexico is the biggest company for the transportation of both passengers and cargo. Low-cost airlines are the fastest growing segment in Mexico, with VivaAerobus and Interjet reporting growth rates of 22.9% and 14.4% respectively.⁴⁰ Volaris, the second largest carrier in Mexico, also classified as a low-cost carrier, only grew by 6.2%.

In the first half of 2018, 437 thousand tonnes of cargo were transported by air in Mexico, which represents a 15.6% annual growth. Grupo Mexico carried the vast majority of this, with the second most important Mexican carrier being Aerounion, who carried 11.6% of the total cargo. US airlines transported 23.9% of the total cargo transported.

Mexican Airlines



Figure 9: Mexican Fleet Distributed by Aircraft



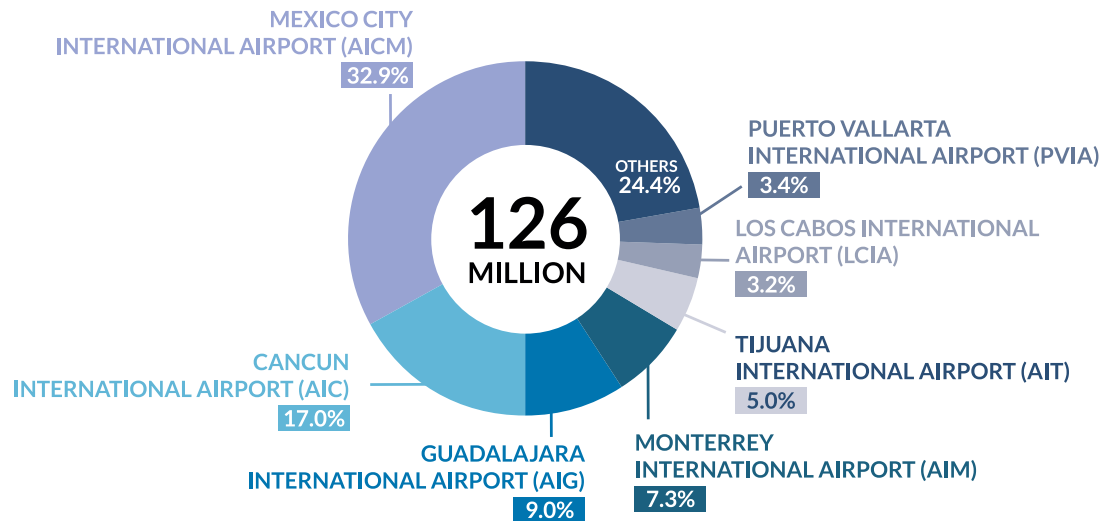
Source: DGAC & Mexico Aviation & Aerospace Review

Airports

As the number of Mexicans who can now afford air transport rises and Mexico’s position as a top tourist destination consolidates, airports need to keep up with the increasing demand. Mexico City International Airport (AICM) has been running at capacity since 2014. During 2017, approximately 65.8 million USD was spent to modernise and maintain airport infrastructure in Mexico. Between 2013 and the first half of 2018 there was a total investment of 5.3 billion USD in Mexico’s airport infrastructure. However, a large portion of this was directed to investments into the New International Airport for Mexico City (NAICM), which has since been cancelled.⁴¹

In November 2018 there was a public consultation initiated by president-elect, AMLO, which resulted in the official cancellation of the New Mexico City Airport (NAICM) project. It was decided that the existing airport in Mexico City will be updated as well as Toluca’s Airport and two new airstrips will be built in the Air Force Base of Santa Lucia, in the state of Mexico.

Figure 10: Transported Passengers in 2016



Source: DGAC

INDUSTRY ANALYSIS

Industry Voices

The Mexico International Trade Development Representative (ITDR) conducted an industry analysis involving interview style surveys with an array of representatives in the Mexican Aerospace Industry. The questions provide a 'Strengths, Weaknesses, Opportunities & Threats' (SWOT) analysis of the sector now, as well as asking each respondent their predictions for the future of the industry. Our industry experts are listed below:

- Antonio Velázquez, Managing Director at the **Aerocluster of Queretaro**
- Manual Rubio Montoya, Director at the **Ministry for Economic Development for the State of Baja California**
- Claire Barnouin, Director of the **Monterrey Aerocluster**
- José Javier Roch Soto, General Coordinator for the Commercial Industrial Development and Competitiveness in the Space Sector, **Mexican Space Agency**
- Benito Gritzewsky, Director General at **HEMAQ**
- Javier Morales de la Barrera, Manager of Operations at the **OMA** (Central North Airport Group)
- Juan Jose Bonilla Cortes, Director General at **Servicio Técnico Aéreo de México** (Aero Technical Services of Mexico)
- Dalia Guizar, Director for the Aeronautical Industry, **Ministry of Economy**

The contact and company information for our industry experts is detailed at the end of this brief. Below, the key trends across their responses are summarised into themes.

Strengths and Advantages of the Mexican Aerospace Industry

The experts pointed to several factors that give the Mexican industry an advantage. The first was that Mexico is strategically located next to two of the biggest players in the aerospace industry, the US and Canada, giving it a logistical advantage for exporting. The US is the largest producer in the global aerospace industry while Canada is the 5th largest. Additionally, Mexico is close to Latin American markets, such as Brazil, which is one of only 5 countries worldwide that manufacture commercial jets in full. Mexico also has strong infrastructure for the movement of products, with major highways to the US and Latin America, and sea ports to the east and west.

In addition to its strategic location, the experts highlighted Mexico's extensive global trade deals as a key strength of the industry. While the trilateral agreement with the US and Canada is a cornerstone for international trade, Mexico has free trade agreements with 46 different countries.⁴²

A highly trained workforce was identified as another advantage for businesses seeking talent in the country. This is partly due to experience in other high-tech industrial sectors such as the automotive, electrical and electronic sectors. A large number of engineering graduates means that the Mexican aerospace industry has access to a sizable talent pool.

The number of aerospace businesses in Mexico is increasing and there's already a significant presence of international brands. The value chain is becoming further integrated for manufacturing and a proficiency in advanced manufacturing already exists amongst the established facilities. The concentration of aerospace clusters in the north of the country and the cooperation between industry, academia and government has helped to develop this base.

There is also a growing domestic demand in aviation as passenger traffic has been increasing at double digit rates. This has meant airport operators have been investing in infrastructure and airlines in new aircrafts.

Local Challenges

Industry experts identified several challenges facing the sector in Mexico including the availability of highly-skilled experts, the need to further develop the supply chain, lack of government support and growing demands for a larger aviation fleet.

While the workforce in Mexico is seen as an advantage, it does also present a challenge. Many processes in aerospace manufacturing require highly specialised personnel, and the training of this personnel can take some years. About half of engineering graduates do not possess the skills required by the industry when they enter the workforce, and those who do are frequently moving companies for higher salaries.

Another challenge identified is the development and consolidation of the local supply chains from essential materials to final processes. Local SMEs need assistance to increase their capacity for specialised manufacturing by incorporating new technologies and providing technical training to their personnel.

Some experts claimed there was a lack of public policy supporting the sector.

On an international level, keeping with the demand for new planes is a big challenge, many OEMs have significant back logs of orders. The experts also expressed concern about increasing costs of oil and raw materials due to trade wars.

Significant Projects on our Radar

Our industry experts identified several diverse projects across Mexico.

PLAN X 2530 - QUERETARO

Plan X 2530 seeks to map out the needs of the aerospace supply chain in Queretaro and look to develop small-to-medium enterprises in the aerospace sector, they will be conducting a research and development study for the next 5-years. This is being led by the Queretaro Aerocluster.

INTERNATIONAL PROMOTION OF MEXICO FOR THE AEROSPACE INDUSTRY

Experts highlighted the importance of the promotion of Mexico internationally as an aerospace hub in order to attract more and better foreign investment. This was identified as important to maintaining and improving the products and services currently being provided to the sector.

REGIONAL INNOVATION AND DEVELOPMENT CENTRES - AEM

The Mexican Space Agency along with state governments is creating regional innovation and development centers. These centers are aimed at promoting necessary knowledge specifically in the space sector. They also promote project incubators for both national and foreign companies.

NEW TERMINAL BUILDINGS

Our experts also highlighted the new terminal buildings being constructed by the Central North Airport Group (OMA) in Acapulco, San Luis Potosi, Reynosa, Chihuahua, Tampico and Zihuatanejo.

PRO-AERO

Pro-aero was highlighted as a significant project with the goals of placing Mexico within the top 10 aerospace industries and exporting more than 12 billion USD of aerospace products by 2026.

Opportunities for Foreign Companies

Our experts claimed that there are extensive opportunities for the implementation of secondary processes of manufacturing that are not currently widely available in the country.

These manufacturing processes include:

- Heat treatments
- High precision machining
- Anodizing
- Cast and forged parts
- Manufactured harnesses
- Research and development
- Design of structure
- Manufacture of metal structures
- Extrusion of aluminum and metal sheets
- Raw materials access i.e. distribution centres for materials such as special alloys and non-ferrous materials
- Surface, thermal and chemical treatments
- Rare metal bars
- Alloy metals for high temperatures
- Aluminium
- Special coating
- Heat treatments

In the area of airlines and airport infrastructure, the following gaps were identified:

- Boarding bridges
- Closed Circuit Television (CCTV)
- Public Address Systems (PAS)
- Fire Alarm Systems (FAS)
- Sort Allocation Computer Systems (SACS)
- Baggage Handling Systems (BHS)
- Common Use Terminal Systems (CUTE)
- Common-Use Self-Service (CUSS)

The experts agreed that technology and innovation is a large area of opportunity as the country has several public and private research centres, which generate a base for companies to carry out technological development and innovation.

International Trade Agreements

Industry experts have a positive view of NAFTA/USMCA and its impact on productivity, consumer prices and employment. Their view regarding the negotiations of the agreement was that a new North American FTA will not have any significant impact on the aerospace industry as most points of contention are concerned with the automotive and agricultural industries, and raw resources.

In addition, they pointed out that if the renegotiated trade deal between Mexico-Canada-US results in worse terms of trade, Mexico will have to develop opportunities in other regions of the world. This diversification of trade partners was perceived as a positive outcome. Mexico will need to collaborate with other governments with the goal of creating new strategic alliances. Their perspective is that as the aerospace supply chain is globally integrated, any trade barriers put in place by the US will just impede the US industry's growth and competitiveness.

New Mexican Government

The key concern amongst the experts for aviation was the cancellation of the NAICM project. The cancellation of this project will have a large, negative impact on this industry. The AEM is also waiting for the transition of government to ascertain what kind of policy they will have for the space program.

However, despite this, the global boom in the sector will mean that there are still opportunities for companies in Mexico to grow and develop in advanced manufacturing. Generally, experts are optimistic that the industry will continue to grow and develop jobs under the new administration and that it could be an opportunity to further strengthen the sector.

Looking ahead

Industry experts are confident about the future of aerospace, predicting continued growth, new technological developments and job creation in Mexico. They foresee an increase in specialisation and concentration of activities in the various regions around Mexico. However, they did say that this was dependent on the consolidation of the local supply chain and its integration into global chains.

In terms of the space industry, experts perceive the Mexico Space Agency's ambitious plan to accelerate the country's entry into the sector as a new challenge. The plan will promote exploration, use and exploitation of outer space, scientific investigation, technological development, design, manufacture and operation of telecommunication systems, geolocation and observation of the earth and the cosmos. They said that the advantages of having a solid space industry in Mexico are various, such as promoting foreign and domestic investment for high value-added technology companies, well-paid jobs and an entire value chain of competitive companies supporting the industry.

OPPORTUNITIES

Supply Chain Gaps

The biggest opportunities in the Mexican aerospace industry for foreign companies are in the supply chain. As discussed in the Supply Chain section, Mexico's supply chain is top-heavy, meaning that while there are many large companies, such as Safran and Bombardier, there are not enough local suppliers and SMEs to meet their requirements. This means that companies must import materials, send parts out of the country for special processes, only then to import them again. FEMIA has identified 639 million USD of unfulfilled procurement requirements in the aerospace industry.

Supply Chain Gap | 639 million USD

The following commodities are of interest for FEMIA's supply chain development program:

- Castings (aluminum and magnesium)
- Machining
- Sheet metal
- Forgings (titanium and nickel)
- Hydroforming
- NDT
- Special Processes
- Plastic Injection Molding
- Soft Goods & Thermoforming Coatings
- Assemblies
- Carbo-nitrurizing
- Composites
- Raw material
- Heat Treatment Wire and connectors for harnesses
- Engines and rotors

Aerospace Manufacturing Investments



Focus on Safran | 100 million USD

French company, Safran is the leading aerospace presence in Mexico. They have just opened their 11th plant in Mexico and their 6th plant in Queretaro for the manufacture of turbine blades for the LEAP jet engine in February 2018. Safran announced an investment 100 million USD in the plant, which involved an initial investment of 75 million USD and another investment of 25 million USD to further expand the plant in the future.⁴² The plant will produce an estimated 4,000 fan blades for around 1,000 LEAP jet engines in 2018 and employs around 440 people in its initial stages. By 2020, they expect to be producing 20,000 fan blades. Safran has also announced intentions to build a 12th plant in Mexico with an investment of a further 25 million USD.



AT ENGINE MEXICO | 297 MILLION USD

A joint venture with the German-based Aerotech Peissenberg and Mexican company Grupo Punto Alto to build a plant in Hermosillo, Sonora. The facilities will do machining for high precision components for the LEAP turbine. The project opens 300 high-skilled positions for engineers in it's first phase and will produce parts for General Electric and Rolls Royce engines.



FIGEAC AERO | 61 MILLION USD

A French aerospace company announced in May 2018 that it is opening a plant in Sonora which will create more than 400 new jobs. Figeac is a Tier 2 supplier and they manufacture components for Boeing 787 such as aircraft doors and have design and manufacturing capabilities. Customers include Airbus, Boeing, Embraer, ATR, Bombardier, Eurocopter and Gulfstream.



GENERAL ELECTRIC ADDITIVE | 13.7 MILLION USD

A project to create an Additive manufacturing consortium with General Electric Additive, working alongside the National Council of Science and Technology (CONACYT) and Engineering and Industrial Development Center (CIDESI). The aim to encourage industry 4.0 and the use of 3D printing in Queretaro by offering facilities with cutting-edge technologies. Qualified personnel and prototype production capabilities will assist in this goal.



AIRBUS | INVESTMENT UNRELEASED

European aircraft OEM aims to double production capacity and increase 400-strong workforce in Queretaro over the next 4 years. Airbus has been in Mexico for 32 years and up until 2017 has invested 100 million USD in Mexico. Airbus Helicopter will also be doubling production hours in their plants and will hire 200 more employees to achieve this.



ASCENT AEROSPACE | 22 MILLION USD

A tooling and automated-assembly manufacturer, they opened their first plant in Mexico for aerospace automation technology in Mexicali in October 2018. The facility is 50,000 square feet and has a high-caliber welding and metal fabrication center. There will be 100 new jobs for workers with welding and advanced manufacturing skills.



MARTIN TECHNOLOGIES | 15 MILLION USD

The Michigan-based engineering and manufacturing company will open a new plant in Ramos Arispe, Coahuila. They will manufacture products for the safe and productive handling of solid materials in bulk cleaner for aerospace and other industries in April 2018. The new plant will hire an estimated 250 new employees.



ESTERLINE | 15 MILLION USD

This US aerospace components company will be expanding one of their 4 plants in Tijuana to be completed by the end of 2018. In Baja California, Esterline produce electronic and sensor equipment for the aerospace industry. They are increasing their capacity and the expansion will mean another 400 new employees.



PRETTTL | 2.5 MILLION USD

The German company opened a new plant for the manufacture of harnesses for planes in Corregidora, Queretaro inaugurated in January 2018. The products manufactured will be mostly for the US market but will also cover the local industry in the short term. The plant will produce 1.4 million harnesses per year.



DUQUEINE GROUP | 2.6 MILLION USD

French company opened new plant for composite processes to supply Safran in Queretaro inaugurated in June 2017. They have recruited 70 highly qualified workers for the plant. This is their 5th plant and it's first located in the Americas. The company has won three work packages from Airbus A350 XWB.



WALBAR ENGINE COMPONENTS | 10 MILLION USD

US company inaugurated their 2nd plant in Guaymas, Sonora in September 2018, to produce parts for the aerospace industry. The expansion has increased their total number of employees to 300. Their company has experienced double digit growth over the past year, and they have contracts lasting until 2022.

Maintenance, Repair and Overhaul Investments



AIRBUS HELICOPTERS | 12.5 MILLION USD

The European company announced they would open a new maintenance, repair and overhaul (MRO) centre for helicopters in July 2018. The center will also help increase the production capacity of their Airbus manufacturing plant. The company already operates a manufacturing plant that produces structures for emergency doors in Queretaro in which it invested 100 million USD.



MEXICANA MRO SERVICES & ISRAEL AEROSPACE INDUSTRIES (IAI) | INVESTMENT UNDISCLOSED



The two companies have come together to form a joint venture facility in Mexico City. They are converting two Boeing 767-300 from passenger to cargo configuration. They are currently in negotiations for further contracts. IAI has predicted that the facility will bring projects worth tens of millions of dollars in years to come.



TECHOPS MEXICO | UNDISCLOSED

The Delta and Aeromexico maintenance centre will be expanding their operation in Queretaro, in the first quarter of 2019. They will hire 400 new employees and they will construct 2 new hangars over the next 2-years to meet demand from their clients. The maintenance centre continues to increase its capacity, in 2018 offering service to 166 aircrafts.

Research and Development Centres

TECHNOLOGICAL RESEARCH AND INNOVATION CENTER TECNMI | 2 MILLION USD

Recently inaugurated first of 3 laboratories as part of the Technological Research and Innovation Center in Hermosillo, Sonora. The 3 laboratories will undertake research and development for unmanned vehicles, avionics, mini/ nano satellites, communication, remote sensing, PLM room, combustion, hangar, advanced design, prototyping, aerospace structures, aerodynamics, flight dynamics, aerospace materials, modelling and process optimisation.

Government and Defence Opportunities

Due to the change of government on December 1st, 2018, there is a lower number of public tenders than usual. It is expected this will change in the first half of 2019 when the new budget will be finalised, and the new government will start new initiatives for the country. Below we have provided an example of some of the types of contracts advertised on CompraNet, the Mexican Government online portal for contracts for services and products.

Table 4: CompraNet Advertised Government Contracts

Government Actor	Description	Type	Date of expiration
General Attorney's Office	Maintenance program for aerospace King Air	Services	13/09/2018
General Attorney's Office	Maintenance program for aerospace Air Bus - Eurocopter	Services	13/09/2018
Mexico City International Airport	Refurbishment of runway 05L-23R and complementary works	Construction	04/10/2018
Mexico City Airport Group	Technical supervision for the construction of the distribution network for combustible materials	Services	29/10/2018
Aguascalientes State Government	Acquisition of drones and control-laptops	Purchase	28/09/2018

SEDENA & SEMAR

SEDENA and SEMAR will have purchasing and MRO requirements in the coming years. Mexico's defence budget is an estimated 6 billion USD per year. They are the second largest importer of defence systems in Latin America. ProAero reported the following requirements by Mexican defence agencies in the coming years.

SEDENA will renew the following equipment:

- Three aircrafts to monitor airspace
- Eight CASA-212 aircrafts for maritime surveillance
- Helicopters
- Five Hercules aircrafts
- Five Airbus aircrafts

SEMAR will require the purchase of:

- 6 new airplanes
- 6 new helicopters⁴⁴

The Mexican Airforce (FAM)

In 2018, FAM completed the first phase of their three-phase “Plan 2030”. The plan is separated into three 6-year periods and is aimed at modernising the Mexican Airforce. Below is information on the aircrafts that FAM plans to buy for the next two phases of the plan.

FAM PURCHASING PLAN

2018 – 2024

- 24 tactical helicopters
- 24 transport helicopters
- 12 multipurpose helicopters
- 30 T-6C+ aircrafts
- 3 heavy transport aircrafts
- 4 transport jet aircrafts⁴⁵

2024 – 2030

- 24 interceptor aircrafts
- 3 Kind Air 350ER aircrafts with surveillance sensors
- 3 EMB-145 aircrafts with aerial radar

Table 5: Summary of Opportunities in Aerospace Manufacturing

Company	Project	Location	Country	Date	Million USD
Safran	New plant to manufacture turbine blades for LEAP jet engine	Queretaro	France	Feb 2018	\$100
AT Engine Mexico	New plant to manufacture turbine components	Sonora	Germany Mexico	2019	\$200
Figeac Aero	New plant for components for Boeing 787	Sonora	France	May 2018	\$61
Airbus	To double production capacity and workforce	Queretaro	France Germany Spain	Jan 2019	NA
Honeywell	State-of-the-art facilities that can test performance and effect of wind on various materials	Baja California	United States		\$150
Martin Technologies	New plant in Ramos Arispe, that manufactures products for the safe and productive handling of solid materials in bulk cleaner for aerospace and other industries in April 2018	Coahuila	United States	Apr 2018	\$15
Prettl	New plant for the manufacture of harnessless for planes in Corregidora, inaugurated in January 2018	Queretaro	United States	Jan 2018	\$2.5
Esterline	Expanding one of their 4 plants that produce electronic and sensor equipment	Baja California	Germany	Dec 2018	\$15

Company	Project	Location	Country	Date	Million USD
Duqueine Group	New plant for composite processes to supply Safran	Queretaro	France	Jun 2017	\$2.6
General Electric Additive & Meggitt	Manufacturing consortium encouraging industry 4.0 and the use of 3D printing	Queretaro	United States	2018	\$280
Walbar Engine Components	Inaugurated 2nd plant to produce aerospace parts	Sonora	United States	Sep 2018	\$10
Ascent Aerospace	Opened their first plant in Mexico for aerospace automation technology	Baja California	United States	Oct 2018	\$22

Table 6: Summary of Opportunities in MRO

Company	Project	Location	Country	Date	Million USD
Airbus Helicopters	New MRO centre for helicopters	Queretaro	European	Jul 2018	\$21.5
Mexican MRO Services	Joint venture converting passenger planes into cargo configuration	Mexico City	Mexico, Israel	2018	NA
Israel	2018	NA			
TechOps MX	Expanding operations at maintenance centre	Querétaro	Mexico	Jan 2019	NA

MARKET ENTRY STRATEGY

Mexican market entry considerations

Ontario suppliers are advised to develop an international market entry strategy tailored to the Mexican aerospace industry before attempting to enter that market. Many companies opt for a combination of tactics when entering a new market.

Ontario companies should consider applying to become a qualified supplier through the FEMIA supply chain program. FEMIA can provide in-market support by assisting them during the qualification process, facilitating access to purchasing pools and government incentives, promoting qualified suppliers with their membership and coordinating B2B meetings with potential buyers. The program is funded by the Mexican government and there is no commercial relationship between FEMIA and the buyers.

- There are several other options for exporters aiming to develop sales in Mexico:
- **Selling Directly:** This option requires minimal investment and can involve a sales team based in Canada that is responsible for the Mexican market. However, transportation and agency fees can make this option less lucrative.
- **Hiring a Local Representative:** A local independent agent who can be paid according to sales performance and is responsible for business development. The representatives are generally chosen based on geographical coverage, market expertise or experience importing products from Canada.
- **Working with importers and distributors:** Local distributors which have already established customers and contacts in the aerospace industry can sell products on behalf of Canadian companies.
- **Partnering with large customers:** Companies should consider partnering with a company with a large local presence that are looking to increase their capacity.
- **Producing locally:** Companies should consider completing processes locally, independently or through a partner, as there is a push for more manufacturing processes to be completed in Mexico.
- **Attending trade shows and advertising in local trade publications** are useful ways to make initial contact.

Ontario companies who are interested in entering the Mexican market can access a variety of resources and support through the Ontario Ministry of Economic Development, Job Creation and Trade (MEDJCT). MEDJCT offers export assistance and market-exploration activities including grant programs, trade missions and access to the Mexican International Trade Development Representative (ITDR). The ITDR can source industry contacts, help arrange meetings and market visits and audit trade shows on the behalf of interested Ontario companies. This support is offered by MEDJCT so that exporters can find and connect with clients, partners, representatives, distributors, or sales agents in Mexico. This is one of the best ways to increase market knowledge, participation and export sales.

This report was created by MEDJCT and ITDR as a tool for Ontario companies. It aims to provide basic orientation to the Mexican aerospace sector as well as actionable insights to aid Ontario companies to understand the sector and how their products might fit into the market landscape.

Trade Fairs

Table 7: Calendar of Select Aerospace Trade Shows in Mexico

February 2019	
February 20-22 Toluca, State of Mexico	Aero Expo www.aeroexpo.com.mx <p>Show and convention that aims to promote and foster the aviation business environment in Mexico. More than 150 exhibitors, 1,100 representatives from around the world, 10,000 attendees and 50 aircrafts on static display. In their 2018 event, they managed to secure trade agreements worth approximately 125 million USD dollars. The 2019 event will be the 16th edition.</p>
February 27-28 Hermosillo, Sonora	Engines Forum Sonora www.sonora.engine-meetings.com <p>International Business Convention for engines, turbines and propulsion systems. In its 4th edition. More than 150 companies (from 10 countries), 6000+ arranged meetings and 250 delegates. Attendees include representatives from supply chain, procurement, purchasing, engineering, fabrication and research and development.</p>
April 2019	
April 24-27 Santa Lucia, Edomex	Feria Aeroespacial Mexico (FAMEX) www.f-airmexico.com.mx <p>The most important aviation-aerospace trade show in Mexico. In its 3rd edition, in 2019 FAMEX is partnering with Canada. More than 505 expositors from 35 different countries, 4600+ B2B meetings and 48 educational institutions. Attendees include managers and directors from general management, supply chain, procurement, engineering, manufacturing and R&D. Over 220,000 people attend FAMEX. In attendance will be the Mexican aero cluster associations, major airlines and major companies such as Boeing and Airbus.</p>
May 2019	
May 29-30 Centro Citibanamex, Mexico City	Airport Solutions Mexico www.airportsolutions.com <p>An event focused on civil airport infrastructure, aviation support services and new technologies. In attendance there are visitors from the entire airports and aviation buying chain including manufacturers, airport operators, developers, regulators and investors.</p>

February 2019	
August 2019	
August 14-15 Queretaro, Queretaro	Mexico Aerospace Summit www.mexicoaerospacesummit.com <p>Show centered in the aerospace manufacturing industry in Mexico. The show contains B2B meetings, visits to aerospace industry manufacturing plants in Queretaro and an exhibition floor. In 2017 the show had more than 1,700 attendees, 700 participating companies and 1,500 B2B meetings. Attendees include OEMs, Tier 1, Tier 2, consultants, lawyers, real estate brokerage, industrial developers, and government and promotional agencies. The 2019 edition will be their 9th.</p>
November 2019	
Dates TBA Cancun	CIAM www.expo-ciam.com <p>An international aviation expo and congress in it's 9th edition. This expo includes seminars, a golf tournament, air shows and static aircraft displays. More than 1,000 attendees, 100 exhibitors and over 10 aircrafts on display. The 2018 event was in November and the next date is yet to be announced.</p>

KEY PLAYERS

This section provides a directory of key players in the aerospace industry including government actors, associations, clusters, manufacturers, academic associations and regulatory bodies.

Government Actors



GENERAL DIRECTORATE OF CIVIL AERONAUTICS *Dirección General de Aeronáutica Civil (DGAC)*

- 📍 Blvd. Adolfo López Mateos 1990, Tlacopac, Mexico City, 01010
- ☎ +52 55 5723 9300
- 🌐 www.sct.gob.mx
- 💬 DGAC is an agency under the Ministry of Transport and Communications. The DGAC is responsible for investigating aviation accidents and incidents, regulating civil aeronautics law and the sustainable growth of the air transport sector.



MINISTRY OF NATIONAL DEFENSE *Secretaría de la Defensa Nacional (SEDENA)*

- 📍 Blvd. Manuel Ávila Camacho, Lomas de Sotelo, Mexico City, 11200
- ☎ +52 55 2122 8800
- 🌐 www.gob.mx/sedena
- 💬 SEDENA is the ministry responsible for managing Mexico's Army and Air Forces, organizing the military service, administering military justice, overseeing Mexico's airspace security and issuing licenses to bear firearms.



MINISTRY OF THE NAVY *Secretaría de Marina (SEMAR)*

- 📍 Av. Heroica Escuela Naval Militar 861, Los Cipreses, Mexico City, 04830
- ☎ +52 55 5624 6500
- 🌐 www.gob.mx/semar
- 💬 SEMAR is the ministry responsible for managing Mexico's navy and territorial waters. Within their priorities they have a mission to prevent drug trafficking, protect PEMEX's oil wells and coordinate relief operations for natural disasters. They purchase some aircrafts and military weaponry.



MINISTRY OF TRANSPORT AND COMMUNICATION *Secretaría de Comunicaciones y Transporte (SCT)*

- 📍 Insurgentes Sur 1089, Nochebuena, Mexico City, 03720
- ☎ +52 55 5723 9300
- 🌐 www.gob.mx/sct
- 💬 The national federal entity that regulates and manages telecommunications, infrastructure, and transportation systems. The Ministry monitors and supervises the management of the national airports, gives permissions for the construction of private airports and monitors their procedures.



PROMÉXICO

- 📍 Camino a Santa Teresa 1679, Jardines del Pedregal, Mexico City, 01900
- ☎ +52 55 5447 7000
- 🌐 www.gob.mx/promexico
- 💬 ProMéxico is the federal government agency responsible for coordinating strategies aimed at strengthening Mexico's participation in the international economy, supporting exports and coordinating activities aimed at attracting foreign investment.
- *Disclaimer: ProMéxico is currently being dissolved after an announcement by AMLO in late 2018.



NATIONAL SCIENCE AND TECHNOLOGY COUNCIL *Consejo Nacional de Ciencia y Tecnología (CONACYT)*

- 📍 Insurgentes Sur, San José Insurgentes, Mexico City, 08400
- ☎ +52 55 5322 7708
- 🌐 www.conacyt.gob.mx
- 💬 Aims to promote scientific development and technological modernisation through human resource development, research and dissemination of information. They have projects with universities and business in the aerospace industry.



MEXICAN SPACE AGENCY *Agencia Espacial Mexicana (AEM)*

- 📍 Insurgentes Sur 1685, Guadalupe Inn, Mexico City, 01020
- ☎ +52 55 3691 1310
- 🌐 www.gob.mx/aem
- 💬 Established in July 2010, the Agency aims to increase education and promote research and development for the space industry. They are currently interested in building local knowledge and ability in the development of satellites.



FEDERAL TELECOMMUNICATIONS INSTITUTE *Instituto Federal de Telecomunicaciones (IFT/Telecomm)*

- 📍 Insurgentes Sur 1143, Nochebuena, Mexico City, 03720
- ☎ +52 55 5015 4000
- 🌐 www.ift.org.mx
- 💬 The autonomous government body dedicated to the development of radio broadcasting and telecommunications in Mexico. It oversees giving signal connectivity through national satellites. It frequently solicits tenders for high-tech infrastructure.

Associations



MEXICAN FEDERATION OF AERO SPACE INDUSTRIES *Federacion Mexicana de la Industria Aerospacial (FEMIA)*

- 📍 WTC - Montecito 38, Nápoles, Mexico City, 03810
- ☎ + 52 55 9000 7379
- 🌐 www.femia.com.mx
- 💬 A non-profit association, established in 2007, with 102 members from Mexico's aerospace industry. It promotes the development of the industry nationally and internationally. It is recognised by the federal government and has joint initiatives with the federal government. They collaborate with regional clusters to map out the supply gaps across the industry.



CHAMBER OF NATIONAL AERO TRANSPORT

Camara Nacional de Aerotransportes (CANAERO)

- 📍 Paseo de la Reforma 379, Cuauhtémoc, Mexico City, 06500
- ☎ + 52 55 5286 3515
- 🌐 www.canaero.com.mx
- 💬 An autonomous public-interest institution with more than 60 members from national and international airlines, cargo companies, air taxis and service providers. The organisation has operated for more than 50 years.

Aerospace Clusters



AEROCÚSTER QUERÉTARO

- 📍 Carretera Estatal Querétaro Tequisquiapan Km. 23 No. 22547, Parque Aeroespacial de Querétaro, Colón, Qro., 76270
- ☎ +52 442 454 1616
- 🌐 www.aeroclusterqueretaro.mx
- 💬 Non-profit association that brings together stakeholders in the aerospace industry operating in Queretaro. This cluster has 60 members including 41 companies, 6 research centers, 8 academic institutions and 5 public and private entities.



MONTERREY AEROCÚSTER

- 📍 Fundidora 501 Local 95ª, Obrera, Monterrey, N.L., 64010
- ☎ + 52 81 8191 5687
- 🌐 www.monterreyaerocluster.com
- 💬 Non-profit association that aims to promote and develop the aerospace sector and advanced manufacturing in Nuevo Leon through collaborative projects that create solutions for their members. The cluster has 30 members.



CHIHUAHUA'S AEROSPACE CLUSTER (CAC)

- 📍 William Shakespeare 157, Complejo Industrial Chihuahua, Chihuahua, Chih., 31136
- ☎ +52 614 442 8450 Ext. 236
- 🌐 www.aerospaceclusterchihuahua.com
- 💬 A non-profit association established in 2007 that works together with industry to gather information and promote the industrial growth of the state. They have 45+ members including OEMs, large companies, SMEs, universities and research and development centres.

MINISTRY FOR ECONOMY – STATE GOVERNMENT OF SONORA

Secretaria de Economia de Sonora



- 📍 Comonfort 122, Proyecto Rio Sonora Hermosillo XXI, Hermosillo, Son., 83270
- ☎ +52 662 213 8500
- 🌐 www.economiasonora.gob.mx
- 💬 Sonora's aerospace sector is represented by the Ministry for Economy of Sonora. There are 65 aerospace companies in Sonora's cluster. The cluster specialises in supply chain manufacturers and turbine production.

AEROSPACE CLUSTER OF BAJA CALIFORNIA

Cluster Aerospacial de Baja California



- 📍 Mision San Javier 10720-1, Zona Urbana Rio, Tijuana, B.C., 22010
- ☎ +52 664 380 5046
- 🌐 www.bajaaero.com
- 💬 A non-profit association that represents the aerospace sector in Baja California. In Baja California there are more than 28,000 employees in the aerospace industry and 80 global aerospace companies. It is the oldest cluster, with aerospace companies operating for over 50-years.

Academic Institutions & Research Centres

CENTER OF ENGINEERING AND INDUSTRIAL DEVELOPMENT

Centro de Ingeniería y Desarrollo Industrial (CIDESI)



- 📍 Av. Playa Pie de la Cuesta 702, Desarrollo San Pablo, Querétaro, Qro., 76125
- ☎ +52 442 211 9800
- 🌐 www.cidesi.com
- 💬 Founded in 1984, CIDESI is part of a system of research centers managed by the National Council of Science and Technology. They contribute to Mexico's productivity through research and innovation projects, as well as highly specialised services. They work with the aerospace sector and offer contract research and technological services.

NATIONAL CENTER FOR AERONAUTICS TECHNOLOGIES IN QUERETARO

Centro Nacional de Tecnologías Aeronáuticas (CENTA)



- 📍 Aeropuerto Internacional de Querétaro - Carretera Estatal 200 Lote 22500, Tequisquiapan, Colón, Qro., 76270
- ☎ +52 442 672 7501
- 🌐 www.centrosconacyt.mx/objeto/centaqro/
- 💬 A research centre dedicated to aeronautical industry that integrates scientific and technological capabilities. The centre has specialised testing laboratories and training programs for structural integrity of aeronautical components, design and simulation, non-destructive testing, mechanical testing of subcomponents and aeronautical components in metal and composite materials of the sector.

AERONAUTICAL UNIVERSITY OF QUERETARO

Universidad Aeronautica en Queretaro



- 📍 Carr. Querétaro-Tequisquiapan, Coyote, Qro., 76750
- ☎ +52 442 101 6600
- 🌐 www.unaq.edu.mx
- 💬 Mexico's first and only public institution of higher education specialized in aeronautical training. Established in 2007. They offer two university degrees, Engineering in Aeronautical Manufacturing and Superior Technician in Avionics. They now have a postgraduate program for aerospace engineering.

Aerospace Companies



AIRBUS HELICOPTER / EUROCOPTER

- 📍 Carretera Estatal – Querétaro Km 200, Colón, Galeras, Qro., 76295
- ☎ +52 55 5716 7555
- 🌐 latin-america.airbushelicopters.com
- 💬 Airbus has a plant in Queretaro that manufactures assemblies and sub-assemblies for aircrafts. They have service centres in several Mexican international airports, including in Mexico City, Queretaro, Ciudad del Carmen and Saltillo.



ASCENT AEROSPACE

- 📍 #80, Guadalupe, Parque Industrial Calafia, Mexicali, B.C., 21259
- ☎ +52 686 556 1136
- 🌐 www.ascentaerospace.com
- 💬 The biggest aerospace tooling company in the world, headquartered in Detroit, US. They officially opened their first plant in Mexicali, Baja California in October 2018 and the plant includes world-class welding and metal fabrication.



AERONNOVA MEXICO

- 📍 Av. Industria de la Transformación 431, Parque Industrial Querétaro, Querétaro, Qro., 76220
- ☎ +52 442 227 2850
- 🌐 www.aernnova.com
- 💬 Their two facilities include Aernnova Aerospace Mexico, which manufactures complex aerostructures assembly such as wings, empennages and fuselages and Aernnova Components Mexico which manufactures metallic components and subassemblies manufacturing for OEMs and Tier 1s. They have 700 employees in Mexico.



BOMBARDIER (AEROSTRUCTURES AND ENGINEERING SERVICES)

- 📍 Carretera Qro-Tequisquiapan km 22.5, Querétaro, Qro., 76270
- ☎ +52 442 101 7500
- 🌐 www.bombardier.com
- 💬 Bombardier established manufacturing operations in Queretaro in 2006. In Mexico, the company has more than 1,500 employees. In their plant they manufacture aft fuselage of the Global family of business aircraft (5000, 6000, 7000 and 8000), the forward fuselage and doors of the CSeries aircraft family, and the harnesses and main electric sub-assemblies for Bombardier executive and commercial aircrafts.



BEECHCRAFT

- 📍 Jose Fuentes Mares 9003, Ávalos, Chihuahua, Chih., 31074
- ☎ +52 614 429 5700
- 🌐 www.beechcraft.com
- 💬 Beechcraft inaugurated its first Mexican plant in 2007 and now has 3 manufacturing plants in Chihuahua for sheet-metal fabrication and electrical assembly of King Air turboprops and Hawker business jets. Their main product is fuselage assembly.



DAHER AEROSPACE

- 📍 Calzada Industrial Nuevo Nogales 270, Parque Industrial Nuevo Nogales, Nogales, Son., 84094
- ☎ +52 631 311 4850
- 🌐 www.daher.com
- 💬 Daher had had a plant in Nogales, Sonora since 2007 where it manufactures composite aerostructures and supplies these parts for manufacturers in the US. They received AS 9100 certification in 2008. There are 100 employees at the plant.



EATON AEROSPACE

- 📍 Av Santa Rosalia 9707, Parque Industrial Pacifico, Tijuana, B.C., 22572
- ☎ +52 664 978 1600
- 🌐 www.eaton.com/Eaton/ProductsServices/Aerospace
- 💬 Operates in Tijuana, Baja California. They began with the production of hydraulic and mechanical components and later expanded into the aerospace industry. Eaton has a manufacturing plant in Baja California. They specialise in: cabin interface, electric power management, solutions for engines, fuel and inserting systems, hydraulic systems and movement control.



ESTERLINE (ENGINEERED MATERIALS MEXICO)

- 📍 Av. Del Aguila Azteca 19430, Fracc. Baja Maq El Aguila, Tijuana, B.C., 22215
- ☎ +52 664 900 9190
- 🌐 www.esterline.com
- 💬 Operates their subsidiary, Engineered Materials Mexico in Tijuana, Mexico. They began operations in 2007 and provide manufacturing and assembly solutions for a range of engineered elastomeric products.



DUQUIENE GROUP

- 📍 Parque Aerospacial de Querétaro, Colón, Querétaro, Qro., 76278
- ☎ +52 442 153 0550
- 🌐 www.duqueine.fr
- 💬 A French aerospace composites manufacturer which started operations in Queretaro in 2017, they have two locations in the state. Recently they have won three large packages for the Airbus A350 XWB.



FIGEAC AERO

- 📍 4 Rue George Pierre Latecoere, Parc Damosa, Hermosillo, Son., 83000
- ☎ +33 5 65 34 52 52
- 🌐 www.figeac-aero.com
- 💬 Their plant in Sonora employs 160 people and produces elementary parts in light alloys and hard metals. Also, they manufacture small sub-assemblies for doors on the Boeing 787 Dreamliner.



FOKKER AEROSTRUCTURES

- 📍 Tabalaopa 8301, Parque Industrial Chihuahua Sur, Chihuahua, Chih., 31385
- ☎ +52 614 2606020
- 🌐 www.fokker.com
- 💬 Fokker has a plant in Chihuahua where they manufacture aerostructures, structural components and landing gears. Their main product is empennages. They export their products to North America (60%) and Europe (40%). It is part of GKN Aerospace.



FRISA AEROSPACE

- 📍 Valetín G Rivero 127, Los Treviño, Santa Catarina, N.L., 66150
- ☎ +52 81 8153 0300
- 🌐 www.frisa.com
- 💬 Their 5 manufacturing plants are all in Nuevo Leon. They manufacture seamless rolled rings in nickel and titanium alloys for critical components of engines. They make components for fan cases, compressors, combustion chambers, turbines, transmission and exhaust.



GENERAL ELECTRIC AVIATION

- 📍 Calle Campo Real, El Refugio, Santiago de Querétaro, Qro., 76146
- ☎ +52 442 238 2300
- 🌐 www.geaviation.com
- 💬 General Electric Advanced Engineering Center (GEIQ) employs 1,300 engineers. GE CIAT provides design, analysis and engineering services for propulsion engines and power generation systems. GE CIAT is one of the best turbo machinery engineering and design centers in Mexico. It is jointly owned by GE Aircraft Engines (GEAE) and GE Power Systems (GEPS).



GKN AEROSPACE

- 📍 Avenida Republica De Brasil 2699, Parque Industrial Mexicali IV, Mexicali. B.C., 21210
- ☎ +52 686 905 5700
- 🌐 www.gknaerospace.com
- 💬 GKN is a British multinational, multi-technology Tier 1 aerospace supplier. They design and manufacture innovative smart aerospace systems and components. It has a plant in Mexicali called Mexicali Metallics and Fokker Aerostructures in Chihuahua.



GULFSTREAM AEROSPACE

- 📍 Blvd. Lázaro Cárdenas 2385, Plutarco Elías Calles, Mexicali, B.C., 21376
- ☎ +52 686 562 8600
- 🌐 www.gulfstream.com
- 💬 Gulfstream is a company that produces advanced business aircrafts. In Mexico, it has a plant in Mexicali that manufactures sheet metal components, wiring harnesses, subassemblies and machine parts.



HONEYWELL

📍 Av. Santa Fe 94 Torre A, Zedec Santa Fe, Mexico City, 01210
☎ +52 55 5081 0226
🌐 www.honeywell.com

● Honeywell was established in Mexico in 1936. It has locations in Baja California, Nuevo Leon and Chihuahua. The Chihuahua site features the largest high-precision machining center in Latin America. Honeywell has a manufacturing plant in Mexicali, Baja California that is considered one of the most modern in the world. Currently there are around 2,200 employees at this plant.



ITP AERO MEXICO

📍 Acceso IV N° 6, Zona Industrial Benito Juárez, Querétaro, Qro., 76120
☎ +52 442 296 3911
🌐 www.itpaero.com

● This Spanish company has a manufacturing plant in Queretaro which engineers and manufactures aircraft components including seals, casings, pipes and other machined parts for TRENT, GTF, PW, HTF7000 and BR700 engines. They also perform MRO for aircraft engines.



MEGGITT

📍 Carretera Estatal 200 Querétaro- Tequisquiapan Km. 22 +547 Int. A, Parque Aeroespacial, Querétaro, Qro., 76278
☎ +52 442 153 4300
🌐 www.meggitt.com

● One of the largest aerospace and defence companies in the world. In Mexico, Meggitt Aircraft Braking Systems has plants in Queretaro and Fresnillo, Zacatecas. Meggitt Polymers & Composites (MPC) has two sites in Saltillo, Coahuila, which manufacture fuel containment systems, sealing solutions and advanced composites.



PRETTL

📍 Carretera libre a Celaya Km 8.6, Fracc. Industrial Balvanera, Corregidora, Qro., 76900
☎ +52 442 1929 100
🌐 www.prettl.com

● Aerospace is a new business segment for the cable harnesses and electronic assemblies business. They have a production site in Queretaro, Mexico, dedicated to the design and production, sales and after-sales service.



SAFRAN GROUP

📍 Campos Elíseos 345 piso 14, Chapultepec Polanco, Mexico City, 11560
☎ +52 55 5281 8775
🌐 www.safran-group.com

● With a presence for over 20 years, they employ 5,400 people and have seven sites for production, maintenance and engineering. They have 2 production plants in Queretaro, in Chihuahua they have the largest aircraft wiring plant in the world. They operate 3 MRO centers for aircraft engines, landing gear and hydraulic systems in Queretaro.



SARGENT AEROSPACE AND DEFENCE

- 📍 Carretera Internacional Km 129, Guaymas, Son., 85400
- ☎ +52 520 744 1000
- 🌐 www.sargentaerospace.com
- 💡 Sargent is a global supplier of precision-engineered customised components and flight-critical aftermarket aviation services. They have a manufacturing facility in Guaymas, Sonora which has undergone expansion over the past 2-year.



TEXTRON INTERNATIONAL

- 📍 Cristobal Colón Fontarrosa 22101, Chihuahua, Chih., 31170
- ☎ +52 614 238 7006
- 🌐 www.textron.com
- 💡 Textron is a multi-industry company that works with aircraft, defence, industrial and finance businesses. In Mexico, they have a yearly production value of \$300 million, invest \$9.54 million and employ 2,700 people. In their Chihuahua facility they assemble cabins for helicopters, sub-assemblies and electrical harnesses fabrication for Bell Helicopter and Textron Canada Limited. In Mexico, their companies are Cessna, Bell Helicopter and Beechcraft.



UNITED TECHNOLOGIES AEROSPACE SYSTEMS

- 📍 Calz. Venustiano Carranza 238, Desarrollo Industrial Colorado, Mexicali, B.C., 21397
- ☎ +52 686 904 7900
- 🌐 www.utcaerospacesystems.com
- 💡 An international aerospace company headquartered in Charlotte, North Carolina. In Mexico, they have four manufacturing sites for aerostructures, engine components (blades and vanes) and wheels and brakes in Baja California, Sonora and Mexico City.



WALBAR ENGINE COMPONENTS

- 📍 Carretera Internacional Km 129, Salida Norte, Guaymas, Son., 85400
- ☎ +52 622 225 2900
- 🌐 www.walbarenginecomponents.com
- 💡 This American company transitioned its operations to their facility in Guaymas, Mexico, in 2000 and expanded the facilities in 2008. They have capabilities in turbine blades, nozzle guide vanes, seal segments, engine rings, turbine wheel and compressors and assemblies.



ZODIAC AEROSPACE (OWNED BY SAFRAN)

- 📍 Calle Ishikawa 1201, Parque Industrial Supra, Chihuahua, Chih., 31183
- ☎ +52 614 158 6800
- 🌐 www.zodiacaerospace.com
- 💡 Zodiac has had a plant in Chihuahua since 2006, which began with the manufacturing of emergency evacuation systems. Now it also manufactures seats components and sub-assembly, actuation systems, interconnection systems, lighting and inflight entertainment systems. They have 3000 employees.

Maintenance, Repair and Overhaul Companies



MEXICANA MRO SERVICES

- 📍 Av 602 No.161-A, Zona Federal Aeropuerto Internacional Ciudad de Mexico, Mexico City, 15620
- ☎ +52 55 4747 6500
- 🌐 www.mexicanamro.com
- 💡 This MRO service has received the highest aeronautic and environmental certifications in the industry. They service Airbus, Bombardier, Boeing and Fokker aircrafts and have workshops for total and partial reparation and testing of components.



TECHOPS MEXICO

- 📍 Tequisquiapan 22500 A, El Marques, Querétaro, Qro., 76270
- ☎ +52 442 480 0000
- 🌐 www.world.aeromexico.com
- 💡 MRO service based in Queretaro with the largest facilities in Latin America. They have 3 hangars and can accommodate up to 9 aircrafts simultaneously. Original investment of \$55 million in 2014. TechOps works with UNAQ for their personnel.



INTERJET MRO SOLUTIONS

- 📍 Aeropuerto Internacional de Toluca, San Pedro Totoltepec, Toluca, Edomex., 50226
- ☎ +52 722 276 6113
- 🌐 www.interjetmrosolutions.com
- 💡 A division of the Interjet airline, they provide comprehensive MRO services. Their main facilities and hangars are in Toluca, but they also have operations in Mexico City International Airport.

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- 🌐 www.hemaq.com



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- 🌐 www.oma.aero

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