Summary

The Mexican aerospace industry has received growing attention from the federal and state governments, manufacturers, the media, consultancy firms doing special reports, and the academic sector, among others. In 2004, Mexico had around 100 aerospace firms, but for 2010 more than 200 firms have been employing a workforce up to 27,000 people. Large international manufacturers have established market presence in Mexico and their operations have encouraged other firms to consider the country as their new location.

Some of the most important worldwide aerospace firms in Mexico include: Bombardier, Safran Group, Gulfstream, Goodrich, BAE Systems, EATON, Honeywell, GE and Raytheon. All are leading the global aerospace industry trends. Moreover, diverse industrial groups have selected Mexico as a gateway to improve their competitiveness and to take advantage of an 25% annual growth of the industry.

As Mexico continues to exhibit strong growth and development toward becoming a regional aerospace manufacturing hub, it will need to address certain challenges that offset the benefit of competitive labor rates and proximity to the United States. Currently, the industry’s greatest challenge is a reduced local supply chain, which also represents market opportunities for U.S. manufacturers to provide local OEM’s with more sophisticated products and services.

Market Demand

During the past fifty years, Mexico has developed a strong automotive industry, as well as a significant electronic sector, and both industries have built an industrial supplier base to backup the recently takeoff of the aerospace industry. The Calderon administration has been promoting the aerospace industry particularly in the last five or six years, following on actions begun during the administration of former President Fox (2000-2006) to facilitate growth of the industry, even though several well-known firms initiated their market presence a long time ago.

The aerospace industry has several differences with respect to the automotive and electronics industries, such as a complex high level of manufacturing processes, specialized raw materials, no mass production, and the highest quality standards. Over the past three decades, Mexico has proven to be competitive with in-bond operations using labor intensive work, manual activities and intensive assemblies necessary to complement other manufacturing, which frequently crosses the U.S. border multiple times before becoming a finished product. The goal for Mexico’s aerospace industry is to reach a higher level of manufacturing and engineering in country.

In Mexico, the aerospace industry has been growing due to a combination of factors, such as the strong global competition, increased aircraft deliveries, applying flexible manufacturing schemes, reducing logistics costs, finding new suppliers that will bring new advantages to OEM’s, create new solutions to problems (as in the case of bio-fuels), and move on the road of innovation and technical progress. Internally, Mexico has a robust and young labor force, an excellent location, available space to expand, government incentives, and economic
stability, together with common business objectives with its main business partner, the United States.

As a relatively new industry, aerospace has received relevant financial, and lately technical and educational resources. Business opportunities are present in this market in terms of the demand for more advanced products. Globally, the industry employs more than one hundred qualified processes that are now starting to be available in Mexico.

The Mexican aerospace industry is linked to the international global consumption, but is also growing fast due to its excellent location next to the largest aviation marketplace. In 2009, the U.S. aerospace market had a value of USD$214 billion. Manufacturing firms in Mexico have Boeing and Airbus as their main clients, and some other companies are looking to become providers of other new manufacturers, such as Embraer. On the other hand, China is considered to play a major role in terms of aircraft consumption and production in the next 15 years.

In the United States, the demand for aerospace products has been better during the third quarter of 2010, and has stable perspectives for the coming years. The recent third quarter of 2010 experienced a strong demand for commercial jets, and in September, 195 new jet aircraft were ordered and 888 large civil jets were requested by clients.

Nevertheless, new aircraft deliveries from Boeing will be lower than 2008, but its 777 series production will be increased again in 2013. Airbus continued delivering new passengers aircraft with an estimated annual growth of 4.8% in 2010. Its forecast estimates a demand of 26,000 new passenger and freighter aircraft valued at USD$3.2 trillion between 2010 and 2029.

In particular, for 2010 it is estimated that the Mexican aerospace industry received USD$ 1,100 million in foreign investments and very likely will capture USD$ 1,200 in 2012. The market challenge now is to make these investments produce manufacturing integration for the whole industry, which also requires the participation of new players that may contribute to the maturation of the sector, its regional distribution, competitiveness and cluster construction.

**Market Data**

The Mexican Federation of the Aerospace Industry (FEMIA) states that the aerospace industry has registered an annual growth of 25% in the last two years, with around 200 firms distributed throughout 17 Mexican states: 79% are manufacturing firms, 11% are MRO, and 10% develop design and engineering services. Some forecasts visualize that for 2015, 205 of the total companies will be in the field of MRO, and another 20% in Engineering and Research, and 60% of firms will be manufacturers.

It is possible to identify three large clusters/concentration by regions:

1) Baja California: 48 firms  
2) Sonora: 31  
3) Chihuahua: 22  
4) Nuevo Leon: 21  
5) Tamaulipas: 9  
6) Coahuila: 8  
7) Queretaro: 20  
8) Mexico City: 10  
9) State of Mexico: 3

Group 1= +50% (Northwestern)  
Group 2= +17% (Northeastern)  
Group 3= 16.5% (Central)
Seven other states (San Luis Potosi, Zacatecas, Guerrero, Yucatan, Aguascalientes, Puebla and Guanajuato) host another 12 firms, including technological schools and universities. In addition, labor force has been increasing significantly. The Mexican Association of Universities (ANUIES) reported in 2007 that 91,000 new engineers and technological specialists that would soon contribute to the aeronautical and aerospace work force of the country.


In the **Group 2** we have companies such as Fruisa Aerospace, GE, MD Helicopters, Corporacion EG, Viakable, MetalinSpec, Inelectra, Grupo Protexa, Doncasters, Asertec, Exxova, Tecnologico de Monterrey, EZI Metales, Grupo Lomex, Maquinados Programados, Monterrey Jet Center, Aerodisel Engine, Pirta Disel, RBC Bearings, Nova Link, Ametek, Kearfott Corp. Porta Systems, and Cinch.
In the **Group 3** we have the presence of Bombardier, Safran, Snecma, Safran Messier-Downy, Elimco-Prettl, Axon, Tecnum, OES, Drovenadi, Dishon Limited, Aerovista, ITR, GE, Crio, Meggitt, GE-IQ, EADS, Tecnum, Gima, Navair, Aeria, Kuo Aerospace, Galnik, Especialistas en Turbopartes, Hyrsa, Mac, Duquine, Global Composites Manufacturing, Rymsaand, Maquinados Pasva, Raytheon, Ansorge and Avemex.

Mexico has 15 research centers with aeronautical works, mainly in the states of Jalisco (5), Baja California (3), Nuevo León (3) and Querétaro (3). The new Aerospace University in Queretaro represents a government investment of almost USD$ 50 million in order to strengthen the availability of a young qualified work force for the industry. In addition, there are other strategic alliances between foreign universities from Canada and France and local institutions to support the specialization of educational programs.

The following chart represents a sample of what many aerospace firms are currently manufacturing in Mexico:

<table>
<thead>
<tr>
<th><strong>Product/Service</strong></th>
<th><strong>Companies</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft Interiors</td>
<td>Aerodesign de Mexico, Aeronautica y Diseño, Volare.</td>
</tr>
<tr>
<td>Audio and Video</td>
<td>Clariond Electronica, Rockwell Collins.</td>
</tr>
<tr>
<td>Emergency Slides</td>
<td>Zodiac Aerospace.</td>
</tr>
<tr>
<td>Engine Parts</td>
<td>Trac, Frisa, Jaintex, Sargent, GKN Aerospace, ESCO, Tolerance Masters, Chromalloy.</td>
</tr>
<tr>
<td>Engines</td>
<td>GE, Honeywell, Goodrich Aerospace, Snecma, ITR, Rolls Royce.</td>
</tr>
<tr>
<td>Fluid Power Components</td>
<td>EATON, Crissair.</td>
</tr>
<tr>
<td>Fuselages for Aircrafts and Helicopters</td>
<td>Bombardier, Gulfstream, Cessna, MD Helicopters, Daher Socata, Cav Aerospace.</td>
</tr>
<tr>
<td>Heat Exchangers</td>
<td>Honeywell.</td>
</tr>
<tr>
<td>Insulating Parts</td>
<td>Placas Termodinamicas, Aerotechnologies de Mexico.</td>
</tr>
<tr>
<td>Jigs and Fixtures</td>
<td>Global Vantage.</td>
</tr>
<tr>
<td>Landing Systems</td>
<td>Messier Services, Messier-Dowty, Meggitt Aircraft, Zodiac Aerospace.</td>
</tr>
<tr>
<td>Machining Parts</td>
<td>Tecmaq, Kuo, Mahetsa, Sego, Cambrian, Decrane, Rkern, Maquinados Programados, Tecnum, Eckerle, GS Precision, Horts Engineering, Aviso, Javid, Grupo Sumex, Pencom CSS, Hemaq, Goodrich.</td>
</tr>
<tr>
<td>Rustles Steel Bolts</td>
<td>Hartwell Dzus.</td>
</tr>
<tr>
<td>Sheet Metal Works</td>
<td>GKN, Hawker Beechcraft, Aerovista, EZI Metales, Tightco, Senior Aerospace.</td>
</tr>
</tbody>
</table>

*Source: USCS Mexico City with data of “Negocios ProMexico” Magazine (Number X-2010).*
Electronic components and assembly operations are some of the most common processes, but also the manufacturing of sensors, hydraulic and pneumatic systems, turbine components and machining, and turbine precision parts are produced in Mexico and comply with international standards, such as NADCAP, AS9100 and ISO series.

Regarding the value of the total trade in the aerospace industry, with the exception of 2009, the last few years (2008-2010) have registered an average growth closed to 25%. Mexican exports have maintained 10.4% average growth and imports 13.9%. As consequence, the estimated total trade reached more than USD$6,000 for 2010, and even with the economic slowdown in 2009, total trade in 2009 was slightly more than in 2007. The trends for 2011 should reflect a 10-12% growth both in exports and imports.

![Mexico: Aerospace Industry Trade Balance (U.S. dollars)](chart)

Source: USCS Mexico City with FEMIA’s data.

U.S. foreign trade data from the Bureau of Census\textsuperscript{iv} publishes statistics about the category of Advanced Technology Products (ATP), which is divided into ten sub-divisions (biotechnology, life sciences, electronics, advanced materials, and six other concepts). Under the sub-division of aerospace, in the period January-October 2010, U.S. imports from Mexico increased by almost 46%, and the U.S. kept an average surplus of more than USD$800 million, in comparison to 2009. During the same period, U.S. aerospace exports to Mexico had a slight decrease of 2.7%, equal to USD$ 36 million.

The figures in the charter below are not comparable to the FEMIA’s data, as each are using a different methodology and U.S. product selection is too specific (please see the end note). ATP reflects the tendency of our merged bilateral trade and the relevance of bigger trade flows between firms also in this industry.
Best Prospects

The aerospace industry is changing very fast and it is possible that eventually some executive aircraft will be completely manufactured in Mexico, as Bombardier visualizes in the mid-term. Aerospace research has produced its first unmanned aerial vehicle (UAV), a small aircraft manufactured by the Mexican firm Hydra Technologies with the backup of the Mexican university IPN and Science and Technology Council (CONACYT). Complete helicopter manufacturing is also on the horizon.

The aerospace market in Mexico offers opportunities for U.S. firms to find new business, both in terms of exporting to OEM’s high-level finished parts and industrial inputs, as well as in establishing local alliances with firms that are already supplying parts, components and diverse services. The strategic advantages of being in Mexico may imply the convenience of analyzing other options, such as local presence, firms acquisitions, opening consultancy operations, exploring manufacturing licenses and technology transfer programs.

Some of the most promising services and processes that the aerospace industry demands are:

1) Special aerospace metals: nickel, titanium, and aluminium
2) Qualified machining operations
3) Large monolithic parts
4) Aerospace parts molds and tools
5) Complete finished parts to be used by OEM’s (special metal processing)
6) Resistance and testing systems
7) Carbon fiber and glass fiber parts and large pieces
8) Tier 2 aerospace diverse suppliers
9) Surface, metals and thermal treatments

**Key Suppliers**

Currently, the high growth of Mexico’s aerospace industry has resulted in an unusual situation where the supplier base supporting the OEM’s resembles an inverted pyramid. Many OEM’s have entered the market, some bringing their Tier 1 suppliers with them or performing those operations themselves. However, Tier 2, 3 and 4 suppliers of specialized materials, components and processes specific to the aerospace industry are in short supply. While the supplier base to industries, such as automotive and electronics is well-established, and can support aerospace to some extent, it does not yet have all of the complex and highly specialized technologies required for complete aerospace manufacturing.

Among the suppliers already established, firms such as GE, Honeywell, ITR, Maquinados Programados, and Frisa Aerospace, are some of the most important manufacturers in this sector and are already supplying solutions and services for Tier1 firms. Leading manufactures such as Bombardier, Eaton, Grupo Safran and EADS are implementing programs to develop the supply chain in Mexico, which will support their global market goals of new green technologies (motors, fuels, etc.) for the industry and also for aircraft weight reduction.

Aerospace components, raw materials and parts require the AS9100 certification (derived from the ISO9001), as well as the Nadcap certification. Both are additional to the Bilateral Aviation Safety Agreement (BASA) agreement, which provides through the General Direction of Civil Aviation (DGAC/SCT), the bilateral recognition for aerospace and aeronautical designs and products manufactured in Mexico.

As an example of the local supplier needs, Bombardier has evaluated several local companies to provide structural parts as wings, fuselage, and aircraft tails. At the same time, some firms are building a kind of internal council to coordinate the development of a supply chain for the industry: the National Council of “Tracting” Firms under the sponsor of the Mexican Ministry of Economy and part of its National Supplier Program.

In the U.S. key suppliers of surfaces coatings, aerospace special treatments, aerospace parts moldings, and toolings are some of the most important processes required by the aerospace industry in Mexico. So far, U.S. manufacturers have solid market advantages due to their experience in the industry, their level of development, and the industrial capabilities derived from aerospace R&D. Nevertheless, other European countries are doing business here to take advantage of the local industrial base to improve their competitiveness and also to have more access to the United States market, in terms of suppliers and final clients. Some have started complete new operations (Bombardier), while others have acquired local firms (CEI Global), and other have opened small offices to test the market and do their direct market assessment.

It is a fact that the aerospace industry is growing fast and is seen as an opportunity for global firms to find their own market niche to manufacture and export to third markets. Competition is welcome if all players contribute to strengthen the level of national manufacturing and the competitiveness of the industry.

**Market Entry**

Bilateral trade is still very important for both the U.S. and Mexican economies. Mexico sources more than 50% of all its imports from the U.S. In the period January-September 2010, U.S. exports to Mexico reached USD$118 billion. Mexico is the third largest trading partner for the U.S., just after Canada and China, and it is the second largest market for U.S. exports. Other links between the two countries are represented by investment, proximity,
logistics advantages, language capabilities, and common security goals. The NAFTA agreement (1994) detonated an economic integration beneficial for economic players along both sides of the border.

Currently, there are no barriers for U.S. companies to participate in the aerospace industry. All duty tariffs (Ad Valorem) have been removed for aviation and aerospace products and services, and the NAFTA dispositions guarantee national treatment and non-discriminatory trade policies. Business success in the market will require sustained effort, investment, time, and good marketing strategies.

In Mexico, business is conducted on the basis of personal relationships. U.S. exporters need to travel to Mexico frequently to develop and strengthen relationships in order to successfully do business in Mexico. Word-of-mouth referrals are very important and relationships inside key business groups are built over the long-term. Time is essential to cultivate trust and to enhance a professional partnership. In the case of the aerospace industry, developing relationships with key high-level contacts within the government and the private sector are important, and personal attention must be given to important clients.

Several market entry strategies have proven to be effective in Mexico. In general, Mexicans appreciate close working relationships, so working with a locally-based agent, representative or distributor is usually successful. However, market entry strategies can vary by sector and region in Mexico. The U.S. Commercial Service staff is available to provide individualized counseling to determine the best market entry strategy for a given U.S. company/product.

Trade Events

- **Mexican Business Aviation Exhibition, MBAE 2011** (Feb. 28- March 2nd.)
  Toluca, State of Mexico
  http://www.mbaeexpo.com

- **International Trade Show of Space and Air, (FiDAE) 2011** (March 27-April1st.)
  Santiago, Chile
  http://fidae.cl

- **Aero Expo 2011** (April 6-9, Toluca International Airport)
  International Aviation Trade Show & Convention / 8th. Edition
  México
  http://www.aeroexpo.com.mx

- **Latin America Aero & Defense (LAAD) 2011** (April 12-15)
  Rio de Janiero, Brazil
  http://www.laadexpo.com

- **Expo CIAM Cancun 2011** (December, TBD)
  http://www.expo-ciam.com

The U.S. Commercial Service will have a U.S. Pavilion at **Aero Expo 2011**, it is the most important aviation industry event in Mexico. It is a biennial international exhibit and will have more than 250 exhibitors in a surface of 10,000 sq. meters. Other activities complementing the trade show include the conference program, a static display and a business cocktail for U.S. exhibitors.
Please contact Silvia Cárdenas: silvia.cardenas@trade.gov if interested in a booth within the U.S. Pavilion in 2011. Further information is available on: http://www.buyusa.gov/mexico/en/

Resources & Contacts

Mexican government sources

Ministry of Communications and Transportation
http://www.sct.gob.mx

Ministry of Economy
http://www.economia.gob.mx

PROMEXICO
http://www.promexico.gob.mx

Other sources

http://www.mexico-now.com
http://www.femia.com.mx
http://www.expansion.com.mx (Manufactura Magazine)
http://www.eleconomista.com.mx
http://www.elsemanario.com.mx

For More Information
The U.S. Commercial Service in Mexico City, Mexico can be contacted via e-mail at: Silvia.Cardenas@trade.gov; Phone: 52-55-5140-2670.; Fax: 52-55-5566-1111 or visit our website: http://www.buyUSA.gov/mexico

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Comments and Suggestions: We welcome your comments and suggestions regarding this market research. You can e-mail us your comments/suggestions to: Customer.Care@mail.doc.gov. Please include the name of the applicable market research in your e-mail. We greatly appreciate your feedback.

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i   Mexico Now: http://www.mnconference.com/aero.htm
iii Bombardier started its first plant construction in Queretaro in August 2006.
iv  GE in 1896, Ericsson in 1876, Siemens in 1894, and Chrysler in 1908, among others.
v  Ibidem
vi  http://www.aerospace-market-news.com
vii http://www.boeing.com
viii http://www.airbus.com
ix “Mexico Now” Magazine, September-October 2010
x  Op Cit FEMIA
xi  Op Cit “Mexico Now” Magazine
xiii http://www.aerostrategy.com
xiv http://www.census.gov
xv http://www.census.gov/foreign trade. Aerospace definition: Encompasses most new military and civil helicopters,
airplanes and spacecraft (with the exception of communications satellites that are included under Information &
Communications Technology). Other products included are turbojet aircraft engines, flight simulators and automatic pilots.
xvi http://www.dicyt.com
xviii  Nadcap certification assures industry-wide standards for special processes and products.
ix  Montreal 2007, bilateral agreement between the United States and Mexico.