FLIGHT PLAN

MEXICO'S AEROSPACE INDUSTRY ROAD MAP 2013

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4th edition
Mexico City, June 2013

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Flight Plan Version 4

1. Introduction

The amazing growth of the Mexican aerospace sector has been the result of coordinated actions of the industry leaders —industry, academia and government— to build a collective vision of the future and foster its competitive development, "the best way to predict the future is to build it."

In accordance with this vision it was created and implemented a comprehensive dynamic road map, the **National Flight Plan**. This was the basis for the development of the (ProAéreo) Mexican aerospace sector national strategy, and its fourth version presents it as a point of reflection and evaluation. This allows for fine-tuning the strategy defined in previous versions as the sector has evolved and to assess the results of its tactical and operational implementation.

This NFP is focused on presenting the results of the projects and action lines proposed since its third version. It also includes a prospective analysis of the aerospace and defense sector's global trends, including its consequences for Mexico. Finally, it points out the regional strategies of the country's main clusters. The results here reported have been achieved from the first and second NFP versions of the proposals. These show that it is possible to coordinate various Mexican aerospace sector players to trigger its growth and increase its added value.

It is important to note that the PVN is a dynamic document, that must be continuously updated and it demands constant participation of the actors involved in its implementation. This continuous updating process aims at adjusting the roadmap according to the prevailing conditions and identify both the factors that affect its growth and opportunity niches.

2. The Aerospace and Defense Industry Worldwide

According to Marketline estimates, the global aerospace and defense (A+D) market grew about 4.3% in 2011 compared to the previous year, reaching a value of US $1,128.5 billion. It is forecast that by the year 2016 this will reach a value of US $1,238.7 billion with an annual average growth of 1.9% between 2011 and 2016.

The defense sector was the most profitable one and contributed US $836.1 billion, equivalent to 74.1% of the total A+D market value. The civil segment contributed the remaining 25.9% equivalent to US $292.4 billion in 2011.[1]

1 Marketline. "Global Aerospace & Defense 2012"

For the third consecutive year it is expected that the defense sector will slow its income due principally to defense budget cuts in the United States and Europe.

At global scale the defense sector seems to have maintained its level of income during the first nine months reported in 2012[2]. Nevertheless, it is expected that for the third consecutive year there will be a slow down as a result of defense budget cuts in the United States and Europe. In this manner, the civil sector boom will maintain positive growth of the A+D sector.

2 Deloitte. "2013 Global aerospace and defense industry outlook"

Aerospace and defense companies face new cost efficiency challenges in their programs and contracts. In addition to adjusting to global defense budget cuts, they will continue to look for the best options to build more efficient and lighter aircraft, and at a lower cost. These challenges bring a new level of pressure conferred by a high standard industrial environment where innovation is the determinant factor for a competitive advantage.

Aerospace and defense companies experience a multitude of challenges, in costs, in the procurement chain, the need for global expansion of their operations, and macroeconomic uncertainty, among others. Beyond these challenges the clients of these companies consistently seek innovation and price improvement. The A & D industry recognizes that innovation is vital and should be done in any way possible, but no longer at any cost.

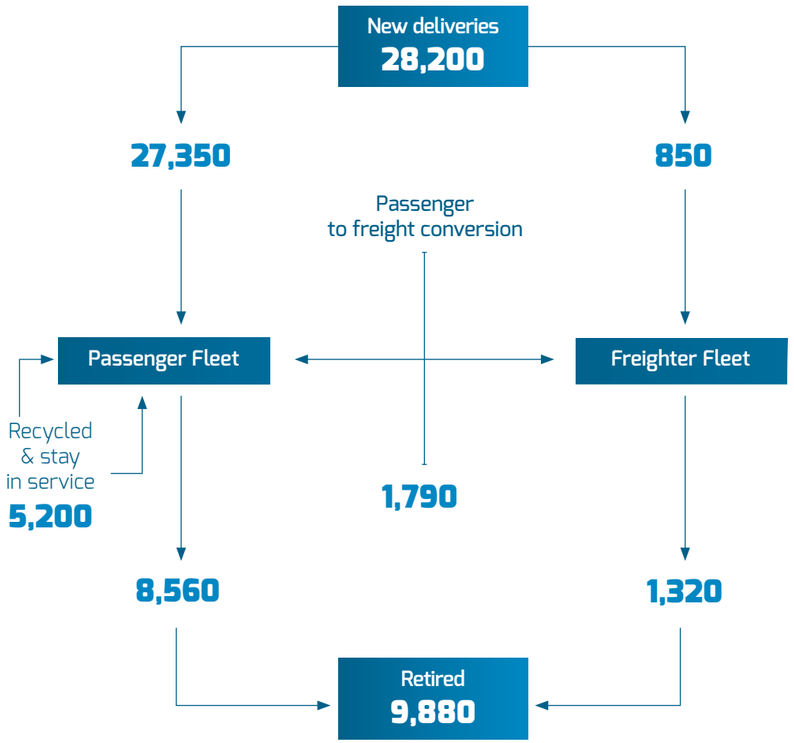
As the A & D Insights Executive Summary of Price Waterhouse Coopers indicates, "said convergence of pressures is leading the industry towards a major shift in the direction of the programs that go beyond traditional scheduling, progress monitoring, risk management and penalties to suppliers. In the past, companies responded to pressure through operational excellence, but in today's environment excellence alone appears to be insufficient, as companies, and eventually program managers have to go beyond excellence and offer innovation and financial viability."

Estimates for the civil sector indicate that by 2031, the fleet of passenger and cargo aircraft, with more than 100 seats and 10 tons will total 35,490 aircraft, increasing by more than double the 17,170 aircraft in commercial service. The single-aisle passenger aircraft represents the largest segment of the 19,500 new aircraft deliveries planned for the next 20 years. The demand for twin-aisle aircraft is 6,500

new passenger aircraft and nearly 500 for cargo. It is expected that over the next 20 years, technological advances and new products will comply with capacity, cost and efficiency, not only to achieve better quality of flights and make the aircraft more accessible financially, but also to lessen environmental impact.[3]

3 *Airbus. "Airbus Global Market Forecast 2012-2031"*

Graph 1. Fleet and deliveries



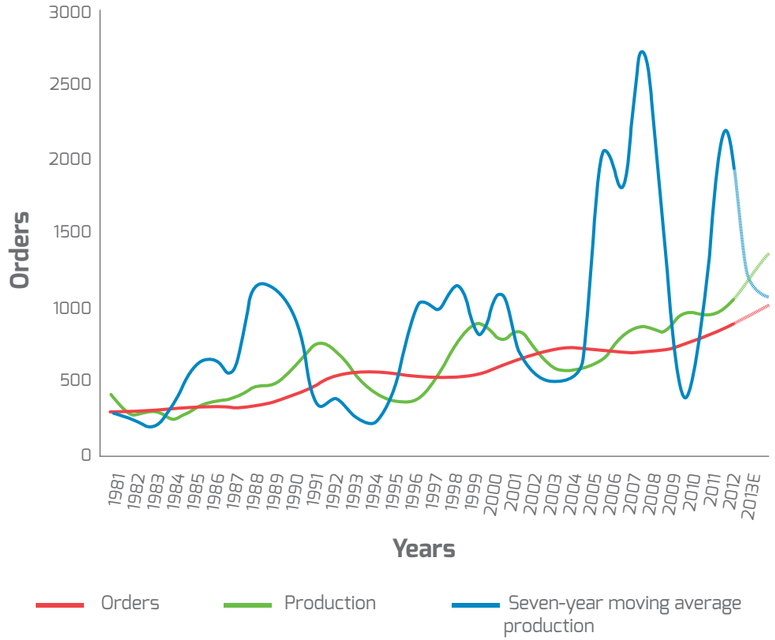
Due to traffic growth in the Asia-Pacific region, 46% of the demand for wide-body passenger aircraft comes from this region. On the other hand, North America and Europe will be receiving 42% of all deliveries of aircraft with more than 100 seats. Much of this demand, particularly in North America, comes from the need that new aircraft and fuel efficient aircraft replace old and low ecologically efficient airplanes. The world's airlines are forecast to take delivery of more than 28,200 new passenger and cargo aircraft between 2013 and 2031, valued at US $3.96 trillion at current list prices.[4]

4 *IDEM*

The commercial aircraft market is expected to reach a record revenue level in 2013, due primarily to increased production and market introduction of next generation aircraft. It is likely that by 2013 the global trend of production levels above 1,000 aircraft per year will continue for the third consecutive year. The number of orders will continue to grow because of the continuous improvements and renewals airlines will make to their fleets. They will possibly retire older aircraft sooner looking for more fuel cost-efficient aircraft costs to guarantee a competitive pricing offer to travelers.[5]

5 *Deloitte. "2013 Global aerospace and defense industry outlook"*

Graph 2. History and forecast for large commercial aircraft orders and production (1981 to 2013E)



Source: "2013 Global aerospace and defense industry outlook, Deloitte"

OEM suppliers will face major challenges to keep pace with the demanding requirements of production levels required by these, so they are expected to make large investments in the development of skills, tools and manufacturing capacity.

Cost efficiency and innovation challenges will occur in the next generation of aircraft that will be developed for both the commercial and defense sectors. The commercial aircraft market this year will focus on the development of the A350 and 787-9 wide-body aircraft, as well as the development and design of the 777X. Furthermore, the Bombardier C-Series will come as a narrow-body aircraft, as well as

the improved engines for the A320NEO and C919, scheduled to be assembled by the end of the year. Finally it should be mentioned the launch by the Brazilian Embraer of the G2 JET successor and the COMAC bid of its C919 and ARJ21 aircraft, which will intensify competition with Boeing and Airbus.

In the defense aerospace sector, there is a trend toward association between countries to manufacture combat aircraft. Switzerland cooperates with Sweden in the development of the next generation Saab Gripen. Indonesia has joined the South Korean KFX combat aircraft program, while Turkey is looking for a partner country for its TFX combat aircraft program.

The sales forecast will be dominated by the Joint Strike Fighter Lockheed Martin F-35, a project with a growing customer portfolio, with the partnership of 9 countries: United States, United Kingdom, Italy, Netherlands, Turkey, Canada, Denmark, Norway and Australia, scheduled for completion in 2019. Progress in the development of the F-35 Joint Strike Fighter will be crucial for the constant concern of international partners regarding escalating costs, a key factor in the aerospace industry where Mexico can be acknowledged as a strategic option.

Based on data from Aviation Week, Lockheed Martin has confirmed orders from more than 15 countries for 340 Hercules C-130 units. There are new competitors around the manufacture of this aircraft, so that delivery on time for these orders will be central to the company. In this segment, the Embraer KC-390, the Chinese plane Shaanxi Y-9, the Medium Transport Aircraft (MTA) Russian/Indian and A400M are the main competitors.

With regard to helicopters, the seven countries behind the Eurocopter Typhoon are expected to grant a development contract for an AESA (Active Electronically Scanned Array) to the Selex Galileo Euroradar consortium as of 2013. On the other hand, the U.S. has commissioned Bell to replace the use of Apache AH-64E helicopters with an update.

In Europe, Britain and France spend about the same percentage of GDP on defense, and together account for half of the continent's military expenditure and their armed forces are of a similar nature. Both nations are cooperating in individual programs, such as the unmanned (UAV) Watchkeeper reconnaissance aircraft. They have made progress in the field of cyber defense and share research objectives of the English Taranis and the French Neuron aircraft.

In this context of intense activity in the international scene, the development and construction of commercial and defense aircraft faces challenges of cost reduction and an emphasis on innovation, design and materials through a reliable supply chain, where Mexico emerges as a great opportunity.

3. The Aerospace and Defense Industry in Mexico

Mexico has established itself as a global leader in the aerospace sector. It registered a growth rate of about 20% annually since 2004. Currently, there are 270 companies and support organizations most of which have NADCAP and AS9100 certifications. They are mainly located in six states and employ more than 31,000 high-level professionals.[6]

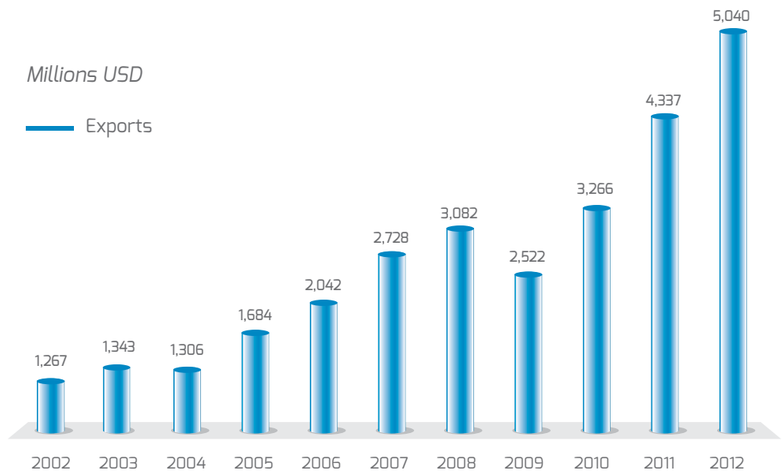
6 FEMIA, Ministry of Economy (SE) and ProMexico

Mexico has built its vocation as a manufacturing, engineering and development center with high strategic value. This is due to the degree of technological sophistication of its exports, engineering talent (Mexico has the largest number of graduates in the Americas) and the quality and competitiveness of its workforce. In addition to this, respect for industrial property in Mexico has been crucial.

Mexican aerospace exports amounted to US $5.04 billion in 2012, representing an increase of 16.3% compared to 2011, while foreign direct investment in the sector exceeded US $1,300 million according to estimates from the Ministry of Economy (SE).[7]

7 Ministry of Economy (SE), DGIPAT, 2012

Graph 3. Mexican aerospace exports



Source: Ministry of Economy (SE), DGIPAT.

According to estimates from the "2010-2020 Aerospace Industry Strategic Program," coordinated by the Ministry of Economy (SE), the industry is expected to report exports of US $12.267 billion in 2012, with a 14% average annual growth rate.[8]

8 ProAéreo, Ministry of Economy (SE)

Major international companies like Bombardier, Safran Group, GE, Honeywell and Eurocopter have found in Mexico the conditions to develop design and engineering centers, laboratories and production lines capable of evolving quickly to handle more complex assignments in the race for next generations of engines and airframe components.

This has been possible due to the wealth and availability of specialized human capital. Mexico is the most important talent pool in America, with more than 100,000 graduates per year for careers in engineering and technology. This represents a generation of talent and skills in sufficient quantities to supply both aerospace and other industries with medium and high technology.[9] In addition to the new graduates, Mexico has highly qualified personnel with decades of experience in the automotive industry, electronics, and medical devices and related advanced manufacturing industries.

9 *Mexican National Institute of Statistics, Geography (INEGI)*

The global infrastructure of quality has also played a major role in the conditions favorable to the industry due to the availability of laboratories, certification units and presence of Mexican aviation civil authorities. In fact this facilitated the signing of BASA (Bilateral Aviation Safety Agreement) with the Federal Aviation Administration. This agreement involves the recognition by the United States government of aeronautical certification systems and products made in Mexico. This allows for the design and manufacture of components in the country, and encourages the development and strengthening of national procurement for the industry of parts manufacturing.

Moreover, Mexico is still the most competitive country in the hemisphere in aerospace manufacturing costs. Its legal framework is effective to protect industrial property and to ensure the proper use of the goods produced and exported from the country. The new Mexican export control system was found to be so efficient and safe by the international community that in 2012 it entered the Wassenaar Arrangement and the Nuclear Suppliers Group Taking into account only the first of the systems, this participation has an access potential to a market of $11.300 million additional dollars in exports. Mexico is already part of two of the four main systems of export control, and is in the process of applying to enter the remaining two.

Mexico's admission into both systems ratifies the international community's trust in the country as a reliable destination for the integration of sensitive technologies. It also shows the country's commitment to remain a safe destination for the production of goods and services, which includes both restricted technologies and dual use goods and services.

Furthermore, proximity to the United States, the world's largest aerospace market, of which Mexico is now the sixth provider, convergence with the two main manufacturing corridors in North America, and in general the geographical position of the country facing major markets, are attractive conditions for this industry.

All of these factors, together with the commitment of industry, academia and government to establish and implement a national strategy that has enabled the creation of high competitiveness poles that work within a certified ecosystem and at world-class level that present Mexico as a attractive destination in terms of innovation and operational efficiency

4. National Strategy

To give direction to any plan requires us to invest intelligence, energy and consciousness in an industry effort focused on specific objectives outlined in a strategy, which will be a fundamental guide for concrete actions achieve the sector's development goals.

A road map focused on innovation, is not built in isolation. It must be product of a team effort: to design it the major players in the aerospace community in Mexico were convened to define the path to be followed by industry, academia and the government in order to become a flagship industry of the country, to promote technology transfer, methodologies, jobs, investment, training and strategic alliances.

This update of the National Flight Plan, shows the progress and alignment requirements that are being worked upon to keep the focus on the goals set since the first version was published, the strategic milestones that guide the efforts that have been made and those that are yet are to be implemented.

Below are the key trends that are shaping and will undoubtedly mark at national and international level the course of the aerospace sector; major advances made base on the strategy, along with the skills ans capabilities developed so far.

4.1. Global Trends

The importance of analyzing global market trends for the A+D sector lies in gathering of strategic information to determine the most important market niches and evaluate the best way and the scenarios with which Mexico can gain greater advantage.

Following are the main trends which today mark the development of the aerospace industry from a social, technological, economic, political and legal environment analysis viewpoint.

Graph 4. Trends and Drivers

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Social					Brain drain						
		Mexico's demographic bonus									
							Confidence in Mexico as a partner in the use of technology and engineering				
		Passenger experience affects aircraft design									
Technological	Airframe & Systems	Use of nanocomposites in military and civil aviation									
		Conversion of hydraulic and pneumatic systems to electric systems									
		Riblets						Hybrid wing body			
		Wireless optical connections for IFE							Truss -bracedwing		
		Spiroidwingtip					Cruise-efficient STOL				
		Advanced fly-by-wire									
		MEA(More Electric Aircraft) architecture						Combat UCAVs replace military fleets in the world			
				Variable camber with new control surfaces							
				Energy harvesting devices							
				Natural laminar flow							
				Hybrid Laminar flow control							
	Engines	Engine replacement							Advanced 3rd gen core		
				New engine core concepts					Active s tability management		
		Geared turbofan					Open rotor / unducted fan				
		Advanced direct drive						Variable cycle			
		Counter-rotating fan						Adaptive / active flow control			
	Alternative Fuels	Biomass to fuel or biojet						Liquefied petroleum gas			
		Synthetic Paraffinic Kerosene						Liquid Methane			
		Biodiesel						Compressed natural gas			
		Furans							Ethanol		
		Transesterification fuels							Liquid hidrogen		
		Biodiesel									
		Butanola									
	Air Traffic Management	Data link Communication									
		Required time of arrival									
		Performance-based navigaion									
		Automatic dependent surveilance broadcast - OUT									
		Sys tem-wide information management									
		GNSS landing system via ground based augmentation system									
		Automatic dependent surveilance broadcast									
Economic		National investment in new material development (nanocomposites)									
								Integration by economic blocs (NASFTA and LATAM)			
		OEMs acknowledge Mexican aerospace manufacturing					Regional airline dominatio				
		Integrated aviation services hub (MRO)									
		KPO development in emerging economies									
		Use of off-the-shelf components for defense applications									
		Larger protectionism in developed economies									
Environmental			Research into alternative fuels								
						100% environmental manufacturing, assembly and materials					
			Research into quieter engines								
			Research into lighter composites				Offset of aircraft carbon footprint				
		Environmental standards and taxes on emissions in the EU									
Political and legal		Global acceptance of taxes on CO2 emissions									
		Arrival of more defense businesses following export control agreements									
		More competitive legal framwork (reforms)									

Engines

2013 will focus largely to supply the commercial market for engines. For single-aisle aircraft CFM Leap-1 engines and Pratt & Whitney PW1000G engine with will be chosen by OEMs for use in models A320neo, 737 MAX, the 919 Comac and the Bombardier C Series primarily. For wide-body aircraft, the Trent XWB on the A350 aircraft orders and deliveries will capture orders and deliveries this year" capture this year.

This trend is a commitment for the next few years and is focused primarily on maximizing profits for airlines as both the aircraft as well these engines have the latest technology in fuel efficiency.

In Mexico, companies like GE and Honeywell are conducting research and design of new turbines, including the turbine GenX, which saves almost 15% in fuel and has a 30% reduced carbon footprint. These design tests were performed in Querétaro at the GEIQ. The R&D of the next generation LEAP-X turbine was also carried out at this center.

Alternative fuels

The world's leading airlines search on ways to improve their results and the constant rise in fuel prices have shed new trends in performance improvements of aircraft, engines and fuels. There are alternatives based on the use of bio-fuels, synthetic fuels and aromatic composites, which, are environment friendly. Unfortunately the development and commercialization of these fuels is not so profitable even though investment in R&D in the areas of fuel efficiency will continue quite strongly in the coming years.

Mexico has not lagged behind in this area. As of July 1, 2012, the International Standard ASTM D7566 for the use of bio-fuels blended with conventional jet fuel has entered into force. Commercial airlines have the ability to operate flights with bio-fuels, as long as it meets this standard.

Mexican airline Interjet, was the first in the hemisphere to operate commercial flights with bio-fuel and this was only after two flights had been made in Europe, which places the Mexican aviation industry at the cutting edge globally. The fuel used was a mixture of 27% bio-jet fuel and 73% of conventional jet fuel which is within the ASTM D7566 standard.

Interjet will operate regular commercial flights with bio-fuel, although taking into account that the certified inventory available in Mexico is extremely limited, so it will be necessary to wait for them to be more and more constant.

Aeromexico made the first transoceanic flight on a widebody jet using bio-jet fuel, the first of its kind worldwide. Moreover, institutions such as ASA (the Mexican Airport Services) and CONACYT (the National Council of Science and Technology), have launched a project to operate a sustainable bio-jet fuel plant in the State of Chiapas.

Due to the fact that this is a production process that is just beginning, the actual cost of production of bio-jet fuel is much higher than the cost of conventional jet fuel, but oil prices tend inevitably to rise. It is expected that research to improve these bio-fuels will become greater every day and in the coming years should be in open competition with conventional fuels.

Dual and Restricted Use Technologies

The development of restricted high technologies of dual-use is the most lucrative for A+D sector,which is strategic in regions with a developed aerospace industry. At the same time, this sector faces budget constraints, concentration of resources on specific programs and require a more efficient supply chain in the defense sector.

In the case of Mexico, through its entry into the main export control systems such as those of the Wassenaar Arrangement, the group of nuclear suppliers and soon the Group of Australia, it has managed to strengthen the capture of investment projects which are continually more profitable and strategic, with greater potential for the promotion of industrial competitiveness through technical and financial compensation.

In this context, among the projects that start to emerge are combat aircraft, unmanned vehicles, next-generation materials and knowledge-intensive services (KPO's) for aerospace and defense, including software design and industrial processes for the sector.

New Materials: Quieter, Lighter and Cleaner Aircraft

The permanent efforts to create lighter, more resistant and quieter aircraft, has been a key factor for civil and defense aviation ,which have historically contributed to the R+D of new materials.

New materials such as nano-composites are classified as dual use, since they can be used by civil and military aeronautics. An effort has been made to improve the energy efficiency and range of the aircraft. They are continually being made lighter, quieter and "imperceptible" by radar or detection systems to perfect their use on the battlefield, control noise in large urban areas, optimize their resistance, and avoid their wearing out. At a global level, both the military and civil aerospace sectors have expanded into the manufacture of aircraft that generate fewer emissions, which has brought about the use of new materials, alternative fuels and more efficient engines.

In addition to new materials, in the panorama of trends can also be observed the return of aluminum . Metals suppliers say their final aluminum-lithium alloy can completely replace traditional aluminum and compete efficiently with the benefits of composites. The lower density of the new alloys provides a weight reduction of between 3 and 6 percent, and new designs can take advantage of its greater strength and corrosion resistance. An example of these is AirWare alloys, which are being used by Airbus in the A350 and Bombardier in its Series C

Mexico has research centers and specialized laboratories in new materials and nano-composites such as the Mexican Research Corporation in Materials (COMIMSA), Center for Research on Advanced Materials (CIMAV) and the Research Institute on Materials (IIM) from the National Autonomous University of Mexico

(UNAM), among others. This opens opportunities for the development of new materials, of cutting edge composite materials by joining international innovation networks in these areas. For example, the company National Helicopters and Aerial Vehicles (HELIVAN) is developing graphene[10], a carbon fiber that is 200 times more resistant than steel and which is used in the defense aerospace industry.

10 Aviation Week, 2012

Unmanned Airplanes

Unmanned Aerial Vehicles (UAV - Unmanned Aerial Vehicles) have experienced a meteoric rise in the last decade. A key component of the defense transformation of different nations. The new fiscal reality facing governments such as that of the U.S. are requiring more effective and less risky solutions to win military and paramilitary confrontations in the years to come.

The effectiveness of UAVs in military operations has been proven. The next generation of Unmanned Combat Aerial Vehicles or UCAV's) will be totally self reliant and have tactical combat capabilities which will progressively replace or complement global power military fleets.

11 Market Research Media, http://www.marketresearchmedia.com/?p=509

The market for military UAVs in the U.S. will grow at a CAGR of 12% to $18.7 billion in 2018. The report concludes that the United States market for military UAVs will generate $86.5 billion in revenue during the period 2013-2018.[11]

In Mexico some companies have focused on the manufacture and development of unmanned vehicles. An analysis of the trend towards UAVs indicates that Mexico has specialized manufacturing capacity, talent for R&D, and dual use international technology agreements needed to convert itself into one of the main suppliers for this market.

4.2. Strategy: Progress and Main lines

Aerospace sector strategy development and its tactical and operational implementation in the form of various tasks, milestones, projects and relevant activities has led us to position ourselves as one of the most important emerging players worldwide. And while the results of the implementation of the National Flight Plan are obvious, a "nothing to be improved" strategy, is a conformist strategy without major challenges, nor commitments.

Therefore, should be evaluated, the remaining tasks and challenges of a competitive strategy, while there is competition doing its job, it is eternally moving and challenging. The overall objective remains: the development of a domestic ecosystem of high added value and competitive integration into international networks of the aerospace sector and defense.

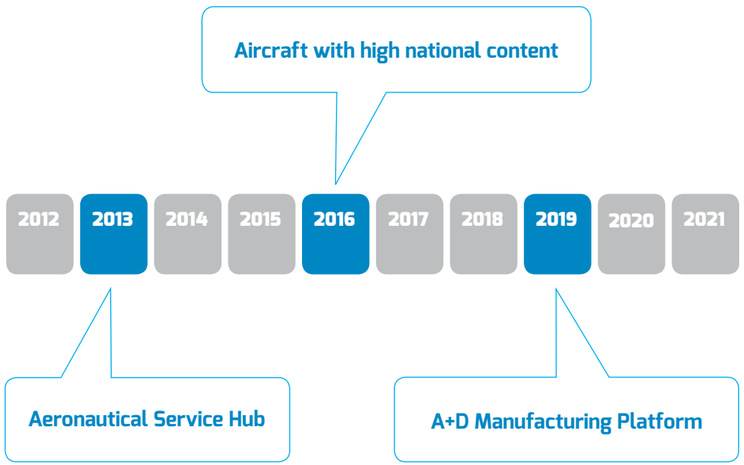
By 2013 the national strategy also retains its focus: to convert Mexico into a destination that addresses the full cycle of an aircraft, while regional strategies are aligned to the grand national strategy according to the productive vocational potential of the main cluster.

Graph 5. Aircraft lifecycle in Mexico

The National Plan Flight integrates three strategic milestones that were raised since its first release, which have given focus to high-value projects and lines of action of the triple helix, which in line with regional strategies, have enabled the successful completion of ambitious initiatives, and thus, the steady growth of the Mexican aerospace sector.

Going back into history a little, let us remember our strategic milestones:

Graph 6. Strategic milestones



Below are strategic projects based on trend analysis performed on each version of the National Flight Plan over the last three years, as well as their progress and strategies:

4.2.1. Global Quality Infrastructure

The National Quality System is based on the country's validation, certification, standards, methodology and testing capabilities. As a result, the national strategy covers several actions focused on strengthening them.

The implementation of best practices, process controls and use of talent are the basis for the aerospace industry in the country having the key links to generate high-quality companies and a value chain sector of a higher added value, leveraged by talent and innovation.

In this way the country has developed a global infrastructure in terms of quality testing laboratories and certification units according to the needs and requirements of the global aerospace industry, covering companies with AS9100 certifications, NADCAP processes and people.

The quality and safety systems are pillars of the Mexican aerospace system, whose products and services meet the highest international requirements.

4.2.1.1. Bilateral Aviation Safety Agreement (BASA)

Signing of the Bilateral Aviation Safety Agreement (BASA) in 2007 and its ratification in 2009 represents a mutual recognition of airworthiness certification systems between the Directorate General of Civil Aviation and the FAA, which authorizes the DGAC to certify parts, components, aviation systems and even complete aircraft manufactured and assembled in Mexico, destined for the United States or other markets, according to U.S. standards and in accordance with FAA regulations. *Implementation Procedures for Airworthiness* (IPA) are currently in place and are in the process of signing the MIP (*Maintenance Implementation Procedures*) chapter which will include maintenance and repair processes of aircraft and parts.

The continuity and full implementation of the BASA is in line with the strategy of providing products and services in Mexico to address the entire life cycle of an aircraft. This will allow companies to certify products manufactured and repaired as well as the maintenance performed in the national territory.

4.2.1.2. Development of Laboratories and Certification Programs

Mexico has a large network of research centers nationwide, which provide support to strategic sectors, including aerospace which occupies an important place. This network of laboratories consists of institutions like CIDESI, CIDETEQ, CENAM, CIATEQ, CINVESTAV, CIMAV among others, with coverage that includes the major aerospace clusters in Mexico.

In addition to this network of research centers and laboratories, the goal is to extend the spaces and testing technologies that provide technical services, infrastructure, technology assessment parts and equipment as well as technical and administrative support for product certifications and supplier development.

Aerospace clusters have also formed organizations that function as an important mechanism of coordination between industry and institutions of higher education and research. This is the case of the Querétaro Aerospace Research and Innovation Network (RIIAQ), which aims to contribute to the development and strengthening of the capacities of research, technological development and innovation, or Aerocluster in Monterrey, which seeks to transform the region into a center of excellence in innovation, engineering and procurement of parts and components in North America, so that one of its main objectives is to promote innovation and technology transfer between industry and academia.

Various initiatives and programs have been carried out to strengthen the network of laboratories and certification programs focused on aerospace:

The Mexico-European Union Program for Competitiveness and Innovation (PROCEI) managed by ProMéxico, has developed different projects in our country focused on strengthening the aerospace sector, which have included the preparation of studies, certification programs, supplier identification, consulting and infrastructure This has helped the national SME industry to strengthen its capacities and raise the level of its competitiveness.

Among the major PROCEI projects are the following:

4.2.1.2.1. "Strengthening technical support to enhance competitiveness of SMEs in the supply chain of the aviation sector in central Mexico"

The PROCEI project known as "strengthening technical support to enhance competitiveness of SMEs in the supply chain of the aviation sector in the center of Mexico" is managed by CIATEQ (Advanced Technology Center) and has two main lines of action:

1. The creation and equipping of the Testing and Aerospace Technology Laboratory (LabTA).

This laboratory will be completely focused on the aerospace industry and will work closely with 18 OEMs, with members of the Querétaro cluster and the SMEs comprising this industry in the center of the country. Its design was based on extensive research made of laboratories and similar facilities in Europe, Asia and North America, and its implementation considers the adaptation of models and tests according to the needs of industry in Mexico in the medium and long term, responding in this way to sector demand of the specialized capabilities which are complementary to those of the three centers that are part of this initiative (CIATEQ, CIDESI, CIDETEC).

For its first stage it is expected that LabTA will have different Aero testing structures, such as: environmental testing, nondestructive testing and materials behavior, among others.

ProMéxico through PROCEI is the driver of this initiative. It will contribute about 29% of total investment ($20 million pesos) in areas such as the acquisition of equipment, standards, databases and AS9100 laboratory certification. Besides the boost to the aerospace sector, these actions seek to support Mexican SMEs in the process of internationalization, having insertion axis in different markets such as innovation, technology transfer and competitiveness.

2. Diagnosis and certification of companies and research centers.

Its first phase consisted in carrying out a diagnosis of 51 metalworking sector companies belonging to 7 different states in the center of the republic to identify the feasibility of this group of companies achieving AS 9100 certification. Of these 50 SMEs, 20 will be selected to continue in a second accompanying phase and a third phase of AS9100 certification to join the aerospace sector supply chain.

The selection of companies to participate in the project was conducted through recommendations by major OEMs and the Tier 1 sector, with whom close work is being done to strengthen the national procurement chain. This initiative also will certify CIATEQ, CIDETEQ and, LabTA, thus promoting the productive linking of the region.

4.2.1.2.2 CATIA Training and Certification Center in software engineering and design

The National Electronics, Telecommunications and Information Technology Chamber (CANIETI) through the PROCEI project for "Strengthening the CATIA Training and Certification Center and in software engineering and design in the *Baja's Innovation and Technology Center* (BIT Center Tijuana)" has actively participated in generating industry procurement for the high-tech manufacturing sector, particularly electronics and aerospace, activities which have been identified as areas of opportunity in the sector.

Moreover, the Baja California Aerospace Cluster considers that one of the strategies to strengthen the sector is to have robust ICT services to meet their design requirements and engineering. For this reason, CANIETI shall consolidate during 2013, with support from PROCEI, a space for training and certification of engineers in software design and engineering market leadership to provide high-tech services directed at the aerospace sector. Every engineer and aerospace company will have access to the center and will be able to specialize themselves in the use of the "CATIA" tool.

Through awareness raising events conducted in Tijuana and Mexicali in the first quarter of 2013 it has been possible to identify specific needs related to software engineering and design for aerospace sector companies. As a result it was decided to expand the scope of the project and increase the number of people to trained and certified adding to the cities of Mexicali and Ensenada.

4.2.1.2.3 FP2010-448 National Development Consulting and Methodologies

The Monterrey Campus of the TEC de Monterrey spearheaded the "FP2010-448 National Development Consulting and methodologies" project between June 2010 through July 2012, coordinated with the triple helix of supporting 100 companies (18 micro-sized companies, 46 small, 36 medium-size companies) to prepare to achieve the quality system AS-9100 Rev certification.

Among the results obtained, there was a sales growth of 20 to 25% and between 10% and 12% growth in number of jobs and 27 companies were successfully integrated within the aerospace procurement chain (with 9 of the major trailblazing companies among which are: Bombardier, EATON, Honeywell, ITR, Safran and Eurocopter).

In this way the industry is boosted and the virtuous circle of training, implementation, certification and procurement is closed which the aerospace sector requires inside of their products and services with high added value.

4.2.1.2.4 AM Capabilities Improvement Project in Chihuahua

With the aim of increasing the degree of integration of the metal mechanical sector of the State of Chihuahua, to improve the quality of products parts assembled by SMEs, and ensure that these are integrated into international markets particularly the aviation sector, two lines of action were established: The first seeks to innovate, develop and improve product design and product parts, The second will certify that the parts involved are destined to the aviation industry.

Regarding the first line of action, a Fab Lab (Flexible Manufacturing Laboratory) will be installed, which will be located in the Park of Innovation and Technology Transfer (PIT2) of the Monterrey Technological Institute (ITESM) Chihuahua Campus. The Fab Lab is based on the model of the global network of laboratories at

the Massachusetts Institute of Technology (MIT) and is a space for experimentation and production that allows the generation of prototypes and short-run releases. It will be the first of its kind in Mexico and the fourth in Latin America. This space will allow SMEs to carry out innovation activities, design and development of new products.

With regard to the second line of action corresponding to the evaluation and certification of parts in accordance with the standards of the National Aerospace and Defense Contractors Accreditation Program (NADCAP), this will be conducted through the Center for Research in Advanced Materials (CIMAV), accredited with 13 different material tests, which will allow for NADCAP parts certification and consequently the insertion of these in the aviation market.

This project is in the human capital training phase and is being carried out prior to the installation of the first phase of the Fab Lab and the tender for the second phase of equipment acquisition. Furthermore, CIMAV is working on the areas of opportunity identified in the NADCAP per-audit.

4.2.1.3 DGAC Offices

As a result of the efforts made by the Directorate General of Civil Aviation to meet the growing demand for services related to the aerospace sector in different parts of the country, a regional DGAC office was established in Querétaro as one of the first which are planned to be opened throughout the country. Thus, the first decentralized DGAC has as priority the certification of aircraft parts manufactured in the country within the framework of the bilateral aviation safety agreement between Mexico and the United States (BASA).

4.2.2 The development of turbines in Mexico

Mexico has successfully developed a variety of motor activities, ranging from design, engineering and manufacturing of parts, units and systems through maintenance and repair. Major international players in Mexico have found the talent needed to drive high-value tasks related to the next generation of turbines.

Engine design and manufacturing activities in Mexico are performed by large international engine industry players. Companies like Honeywell, GE and Snecma, together with their supply chains, cover the vast majority of processes and skills needed to develop engines from their concept and design through manufacturing and repair.

Considering the large companies that currently operate in Mexico and their suppliers, they have manufacturing capabilities and the ability to repair large, medium and small engines, including next generation engines. The main companies engaged in this activity in Mexico are:

- *General Electric (Querétaro), focused on the repair and manufacture of large engines.*
- *Honeywell (Chihuahua) focused on the repair and manufacture of medium and small engines.*

- *SNECMA / SAFRAN (Querétaro), focused on the repair and manufacture of medium-sized engines.*
- *Churchill (Sonora) focused on the manufacture of blades for Rolls Royce and their application in new products.*
- *ITP (Querétaro) focused on the manufacture and repair of low-pressure turbines.*

As for the design of parts, components and/or turbines in Mexico, the leading companies are Honeywell, with its centers in Chihuahua and Mexicali, and GE and ITP in Querétaro, which SNECMA might join in the near future.

Although only one of these companies is located in Sonora, the state has a clear engine vocation, and is consolidating a cluster targeting this segment. Companies like Trac Tools of Mexico, UTAS, ESCO, Wallbar Engine Components are developing their capacities and several have drawn the attention of major international players like Rolls Royce, which in 2012 opened an acquisitions office in Guaymas, Sonora.

Even though Mexico has the capabilities needed to design and manufacture complete engines, turbine development can be promoted further through actions such as:

1. *Development of Advanced Mechanical Engineering Education Capacities with emphasis on 3D modeling (UNIGRAPHICS and CATIA 5).*
2. *Specialization in certified laboratories for endurance, life, metallographic and other tests.*
3. *Offset program for manufacturing and maintenance of engines in Mexico.*

Some success stories related to turbines in Mexico include:

The Mexicali Research & Technology Center

The Mexicali Aerospace and Technology Center (MRTC) of Honeywell is a center of engineering and integrated technology comprised of a design center, a laboratory integration system, and a testing attachment and business support team.

The MRTC is an important laboratory integration system, the first Mexican aerospace industry. It allows for full scale simulation of multiple aircraft systems, providing the ability to test their interoperability, control and technical maturity.

These facilities test a wide range of subsystems and electrical / mechanical products for next-generation aircraft in the air transportation market. Its testing annex supports a wide variety of electronic and/or mechanical activities and manufacturing processes as well as instrumentation test functions.

Honeywell Aerospace Chihuahua

Honeywell's Aerospace Chihuahua Manufacturing Operation consists of highly complex machining manufacturing facility. The facility hosts a Warehouse, Labs,

Quality Control Operations as well as Engineering. HCMO (Honeywell Chihuahua Manufacturing Operation) is one of the most advanced machining operations in the Aerospace industry. It features a start of the art Blade Manufacturing cell as well as numerous highly advanced Aerospace machining cells. The site manufactures a number of parts for Aerospace Engine and APUs including Engine assembly ducts, gears and shafts, blade manufacturing, impellers, nozzles, disks, stators, seals, nozzle segments, etc.

General Electric

GEIQ is the largest Global Engineering Center for GE Aviation and the second for GE Energy. The center achieved a significant expansion in 2011, hiring more than 240 engineers and designers and enabling the center to ramp up sales to US $80 million for the year. Some of the areas of specialization include Mechanical, Electric, Controls and Software Engineering.

In Aviation, GEIQ engineers participate today in the design of the new generation of aircraft engines, including the successful GEnX or the new LEAP-X. It also provides support to existing engines, such as the CFM56, in the areas of production, redesign and operation. In Energy they focus on diverse technologies ranging from steam and wind turbines, to generators or gas turbines, being in charge of Services for Latin America and also supporting local projects such as the installation and set up of GE turbines in Tamazunchale and Manzanillo.

Eurocopter

Within the Aerospace cluster in Querétaro, Eurocopter has a maintenance center to run small and medium inspections equivalent to 150-600 flight hours and one and two years of use for the Ecureuil (Squirrel AS350, AS355 and EC130) family of aircraft, which has the capacity to inspect six helicopters at the same time and is also equipped with helicopter AS365N3 specifications (Dolphin model). This center aims to provide a variety of services to meet required quality standards and develop as one of the best helicopter maintenance bases nationwide.

4.2.3. Aircraft with high domestic content

One of the most important milestones in the strategy is to have an aircraft take off from Mexico made with domestic parts and high Mexican engineering and integration contents. In order to do so, different companies have gradually increased their capabilities in design, engineering and manufacturing, and have currently conceptualized, designed, tested and produce complex structures, aerospace components and systems in Mexico.

Some of the most advanced companies involved in this strategic milestone are Bombardier, whose progress made with the Learjet 85 is very prominent. This aircraft, manufactured mainly from composite materials, is an example of collaboration in the context of the North American Free Trade Agreement (NAFTA), as it involves the company's plants in Mexico, Canada and the United States of America.

Currently, the Bombardier Aerospace plant in Querétaro, Mexico is responsible for manufacturing the fuselage; assemble the wings, the horizontal and vertical stabilizers, and the manufacture and installation of this innovative aircraft's electrical harnesses. The Learjet 85 is fully assembled in Wichita, KS in the United States. The Learjet 85 program's development in Mexico represents a major step forward, considering that the company began operations in 2006, and only seven years after its establishment in Mexico is manufacturing the components of a new aircraft, contributing to the development of the aerospace industry in Mexico.

Together with the technical skills, Mexico is developing all of the other conditions needed to achieve compliance with this milestone.

4.2.4. Defense Strategy

4.2.4.1. Strategic Trade

Mexico is a major player on the international stage in the production of industrial goods. It has become a responsible ally, reliable for the development, production and distribution of aerospace, defense and dual goods. Mexico is taking accelerated steps to do business in the defense and hi-tech and defense market by creating the conditions needed to provide certainty to the international community.

Based on a proper logical international business attraction, and in the context of security and control of information, processes, products and services, it will create significant opportunities to:

- *Attract investment, facilitating access to multinational corporations producing next generation technology and access to high technology contracts.*
- *Promote the development of new sectors in the diversity of goods and technologies.*
- *Transfer cutting edge technology and added value, strengthening national capacities.*
- *Boost major technology-based industries (aerospace and software industries).*
- *Provide legal certainty of foreign trade operations by allowing trade between countries that share the same control regimes.*

4.2.4.2. Export Control Regimes

Trust and eligibility conditions to participate in high technology and defense projects should also include mechanisms to attract businesses with the greatest potential for economic development, add value, improve Mexico's competitiveness and national innovation capabilities.

Mexico has become a promoter of strategic trade and created an interdepartmental group in which the members contribute their global market perspective,

identifying possible investment opportunities and international trade, focusing its business efforts and competitive intelligence on identifying potential projects to encourage our country's participation in defense markets and high technology (without restrictions to access to dual-use technology) to attract the benefits of economic and technological development implicit in these markets.

From this dynamic the need to enter the major export control regimes was identified, which called for modifying the system of national export controls.

Thus, the new export control system Mexico implemented in 2011 with the publication of the Decree that subjects conventional arms, dual-use goods, software and related technologies to permits prior to export.

4.2.4.2.1. Wassenaar Arrangement

The first version of the National Flight Plan highlighted the huge potential for the country's economic and technological development in the dual-use technologies and defense markets, both in the research, design, development and manufacturing processes and products, as in supply services associated with these industries.

On January 25th, 2012 Mexico officially joined the Wassenaar Arrangement, which has been established contribute to regional and international stability and security by promoting transparency and accountability in the transfer of conventional arms, goods and dual-use technologies.

Different ministries and organizations were coordinated to generate the new Mexican export control system and the conditions needed to enter this regime, identifying the greatest impact for the economic and technological development of our country, among the top five.

Mexico's joining the Wassenaar Arrangement has two important implications:

1) *Mexico is part of a community committed to non-proliferation of conventional weapons that agreed to promote a safe environment for trade in goods and technologies and restricted use between country members.*

2) *As part of this agreement, Mexico entered the club of high technology countries, which allows it to access new markets and cutting edge technology, while enhancing the country's competitiveness and attracting investment in various strategic sectors.*

Membership does not generate obligations related to technology or knowledge transfer among participating countries; however, it offers certainty to the international community and at the same time makes Mexico eligible as a reliable partner to develop business in the high technology market restricted to those who previously had no access.

The potential economic and technological development is huge since the moment Mexico joined the Wassenaar Arrangement, it is estimated that access to an additional export market could be of nearly US $11.3 billion per year.

However, it is necessary to formulate a strategy to maximize and capitalize on the potential benefits of being part of the Wassenaar Arrangement. This is why the Ministry of Economy and ProMéxico, along with the governments of different states have coordinated the creation of regional strategic plans that provide direction to further develop the aerospace industry while establishing the hi-tech competitive poles restricted, both in the research, design, development and manufacture of products, as in the supply services associated with this industry.

4.2.4.2.2. Other export control regimes

Although the Wassenaar Arrangement is the export control regime with the largest impact on the aerospace and defense industry in Mexico, the country has also sought admission to other regimes to increase competitiveness and international business opportunities.

Thus, on November 16th, 2012 Mexico became the 47th member of the Nuclear Suppliers Group established in 1974 that aims to contribute to non-proliferation of weapons and nuclear material by implementing guidelines to regulate the export of nuclear goods as well as software, technologies and related dual-use products.

With this new membership, the Mexican export industry becomes more competitive, operates in an environment of safety and strengthens its industrial platform to continue the development of cutting edge technology controlled in sectors that use nuclear items such as the generation of electricity and nuclear medicine, among others.

Mexico is currently preparing its application to join the Australia Group (AG), which consists of 41 members and focuses on the control of chemicals, biological agents and items and equipment to manufacture dual use chemical and biological substances in the chemical and biotechnology sectors.

4.2.4.3. Procurement of Equipment and Industrial Compensation Systems (OFFSET) and Government Procurement

As the detection of the potential benefits offered by export control regimes, since the first version of the National Flight Plan, the group comprised of industry, academia and government identified industrial offsets as a way to develop competitive industries, promote design capabilities, research and development, promote the generation of intellectual property in partnership with big corporations, assimilate and produce new technologies, all derived from large acquisitions made by the country, especially through government procurement.

Offsets are industrial compensation practices established as a condition to purchase contract negotiations for major acquisitions (e.g. the purchase of aircraft). These compensation practices are used in military and commercial purchases. *Offsets* can be direct (involving goods and services directly related to the items purchased) or indirect (involving goods and services unrelated to the items purchased) and include practices such as co-production, licensed production, subcontractor production, technology transfer, trade species, training and foreign direct investment among others.

As a result of this strategy, Mexico is currently undergoing the first approach to industrial policy offsets, which seek to attract new technologies, industrial and commercial development and improving the competitiveness of strategic national and regional projects.

4.2.4.4. From Buy American to Buy NAFTA

The Buy American Act in the United States, which considers all government acquisitions and the U.S. Department of Defense, restricts purchases from suppliers whose products do not have a minimum of 50% national content.

Article 1004 of the North American Free Trade Arrangement (NAFTA) bans the existence of protectionist domestic legislation in government acquisitions made by Mexico, Canada and/or the United States (this does not apply to Mexico, at this time). Because of this and aware of the benefits that will result from eliminating this restriction, Mexico intends to sign a Memorandum of Understanding (MoU) with the United States for exemption from the application of the Buy American Act in the U.S. Department of Defense purchases. This MoU will establish that the application of the restrictions imposed by the Buy American Act and the Balance of Payments Program for the purchase of products (Waiver 225.872-1). This MoU will be signed to guarantee reciprocal treatment in military purchases between Mexico and the United States.

4.2.4.5. Creation of a security block for North America

Several situations that have emerged in this region (the 9/11 attack, the Katrina Hurricane and the war against drug traffic, among other) have made Canada and the United States realize that they need Mexico's cooperation and participation to guarantee security in North America.

Certain trilateral processes, such as the Security and Prosperity Partnership (SSP) and cooperation on intelligence, military exercises, technical assistance and military training in cooperation with Mexico through the United States Northern Command (USNORTHCOM), are solid proof that Mexico is a key component to offer a comprehensive solution for shared problems (organized crime, terrorism, natural disasters) threatening security in the North America region.

For all three countries comprising the North America region, this type of cooperation initiatives on military matters shows a trend to create a common security block in the region. This allows convergence among them, to promote greater trade and economic integration, particularly in high-tech industries, along with the promotion of safety and the creation of higher living standards for the people living within these boundaries.

The integration into a North American security block is strongly tied to a regional economic integration in the field of dual-use technologies (civilian and military). Mexico's acceptance as a member of the Wassenaar Arrangement has proven that it is a reliable country for the integration of industrial processes that are sensitive to the defense and hi-tech industries, which makes the North American block more competitive on international markets.

4.2.4.6. Dual-use high technology platform - defense parks

The geostrategic position and the competitive and comparative advantages of Mexico, position it as the ideal place for the production of goods and the development of sensitive technologies, which could be used for commercial and development as well as for the production of goods and dual use technologies.

Mexico's participation as a member of the Wassenaar Arrangement presents new opportunities for attracting hi-tech civil and military projects. It is important to note that Mexico currently attracts 5% of the total number of licenses granted by the State Department of the United States of America for the production of dual-use goods.

Under these conditions, and considering the general factors that make Mexico a competitive and attractive country in the international arena, a particular strategy and associated policies were implemented to develop this industry and attract greater investment and high value technology.

One of the premises of the strategy is that the focus of the defense sector in specific poles of competitiveness will continuously attract advanced manufacturing companies, technology and talent thanks to its evolution and geographical position. The strategy thus foresees the creation and development of specialized parks that have the infrastructure, procedures and conditions set by international control regimes, while facilitating transactions and the logistics of the companies operating within. This can be achieved if the park is designed and operated as a special economic zone with a focus on dual-use industries and restricted technologies.

Specialized infrastructure for parks thus considers the following elements:

- *A Research and Development Center in dual-use and restricted technologies.*
- *A Technological Park, Incubator and Business Accelerator.*
- *Specialized Service Centers (Office of Export Controls of the Ministry of Economy, the Mexican Civil Aviation Authority (DGAC), and the National Metrology Center, among others).*
- *Laboratory tests available for both industry and academia certifying entities.*
- *A Technical Support Center for Information Technologies.*
- *Perimeter Security Controls for the concept of full adherence to the safety standards managed by companies in this field.*

The actions propounded, both in terms of the generation of public policy and infrastructure development are aligned with the overall strategy to boost high international competitiveness poles in this case, specializing in products and dual-use technologies.

4.2.5. Integral Aviation Services Center in Mexico

The global aerospace industry will bring structural changes in the way it does business over the next 10 years. Rising fuel and raw material costs, among other trends, will undoubtedly affect the profits earned by airlines, manufacturers, and companies engaged in maintenance and airline fleet repairs. The search for competitive regions, skilled labor and logistics offering cost advantages are the main business drivers for the establishment of comprehensive aviation hubs.

These Comprehensive Aeronautical Centers are expected to offer an ideal ecosystem for the industry's development, providing advantages in fields such as maintenance services, conversion and mature fleet management and decommissioning; integration of the supplier chain for spare parts and repair services, the establishment of preferential trade areas, and training and access to technicians, engineers, pilots, crew and ground support personnel, whose demand will increase in coming years.

For Mexico, it's geographical and business position in the hemisphere as the skills developed in advanced manufacturing and process engineering, offer an excellent opportunity to establish the country as one of the leading centers for global aeronautical services.

Mexico is therefore keenly interested in establishing an Aeronautical Service Center that integrates traditional business opportunities with next generation aircraft and engines, both in terms of maintenance and repair activities, and complementary activities to integrate national and international supply chains and address the full life cycle of an aircraft.

Mexico is working with key industry players, especially in the areas of intelligent fleet management mature, engine and airframe maintenance in order to operate this Integrated Aeronautical Center in Mexico.

One of the first results of the competitive conditions being offered by Mexico in this activity is the alliance between Aeromexico and Delta Airlines. In addition to the approach of major international players with the purpose of establishing strategic alliances with Mexican companies in creating the MRO hub. On the other hand, European and American companies have started to establish approaches to mature fleet restructuring and dismantling to complement the vision of the Integrated Aeronautical Center.

The strategy to define localization and commissioning will be demarcated by evaluating the different clusters in Mexico, which can still be implemented. The locations evaluated have the space needed to house a world-class hub and the best aircraft flows to validate the initial business case. Each airport evaluated has a developed industry around it, with the growth and capabilities to strengthen the suppliers needed.

Following are two of the major components that will be part of the hub.

4.2.5.1. Intelligent Management of Mature Fleets (TARMAC)

The aim is to establish a center dedicated to the last phase of the life cycle of an aircraft, where these can be removed, dismantled and recycled in safe and environmentally responsible conditions. This activity creates significant business lines through the extraction of materials which can be recycled, and the sale of valuable components that can still be reused, either directly, or after undergoing MRO processes.

The dismantling of aircraft that have completed their life cycle is a great business opportunity, especially after Airbus announced that 85% of all aircraft parts can be recovered, reused and recycled after 2015. Nearly 10,500 commercial aircraft are expected to reach the end of their useful lives over the next 20 years, and must be dismantled and recycled for environmental and public health purposes.

The proposal is to operate the project under the regulations established by the Aircraft Fleet Recycling Association (AFRA), whose purpose is to stop improper disposal practices for these means of transportation and institute a code of conduct for dismantling aircraft. Boeing and ten other companies created AFRA in 2006, which currently has close to 70 members, including Rolls Royce, Pratt & Whitney, Safran Group, Bombardier and Bell Helicopter.

4.2.5.2. International Aerospace Training Center

The development of an Aerospace Training Center has been propounded as part of the Aeronautical Services Hub to develop human capital and complement the efforts made by other national academic institutions with aerospace programs. This is intended to meet the strong current and future demand for trained personnel in various fields of the national and international aviation industry, and will thus seek to address various disciplines including aircraft operations, design, manufacturing and maintenance. This center will train pilots, crew and ground support personnel, engineers and technicians specialized in MRO, avionics and electronics, inspectors and auditors in accordance with international quality standards.

The training center will be developed for a specific purpose or as part of certain academic institutions with aerospace capabilities, depending on the Hub's location. However, aerospace companies currently established in Mexico have the support of the Mexican educational system, which has proven to be very successful in training technicians and engineers with expertise in maintenance, repair and overhaul of aircraft and their components.

For decades, the Mexican educational programs have produced professionals who have performed superbly in national MRO and aerospace manufacturing companies. The quality and international recognition of Mexican programs have made major global operators and companies pursue strategic alliances with the major players in Mexican aerospace education, to develop special programs and ensure their access to local talent sources. Mexico's experience in training professionals for the aerospace industry goes beyond the explosive growth in recent years, having hosted some of the most famous training centers in Latin America that train pilots, ground and air staff and MRO technicians, for example, evolving academic programs to implement sophisticated design and engineering focused on aeronautics.

To date they have developed the training skills required and the training of aviation personnel across the nation, such as strengthening of the Aeronautical University in Querétaro (UNAQ), the National Polytechnic Institute, and the Mexican Council of Aerospace Education (COMEA) among others.

Another example is CAE Systems, a leader in modeling, simulation and training for civil and commercial aviation now operating in the Air Simulation Training Center in the city of Toluca focused on training for helicopters and commercial aviation. This is the first training center with Advanced Simulation in Mexico, which called for a US $63 million investment[12]. The facilities in the Estado de México have four flight simulators (one for Airbus, one for Learjet that belongs to Bombardier, another one Bell Helicopters, and a last one Vivaaerobus, Magnicharter and Estafeta). Foreign pilots are expected to come to prepare these facilities in phase two.

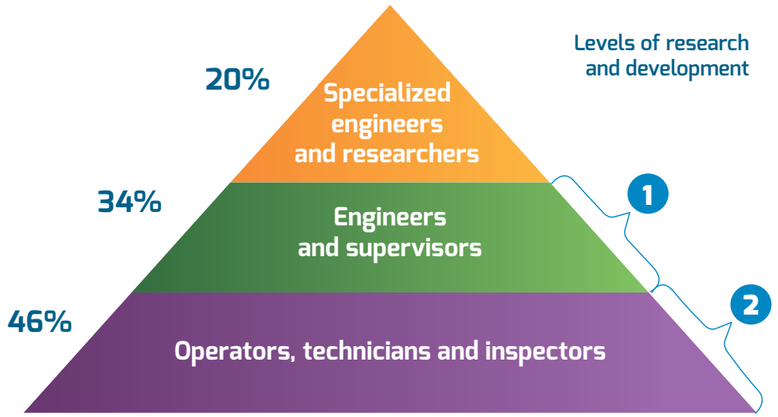
12 *http://eleconomista.com.mx/estados/2012/04/25/cae-abre-centro-simulacion-aerea-toluca*

Investments by companies like CAE allow domestic companies to save thousands of dollars a year in tickets for pilots who must take their annual training courses, which they had to do outside of Mexico until 2012.

4.2.6. Human Capital and training activities for the Aerospace Industry

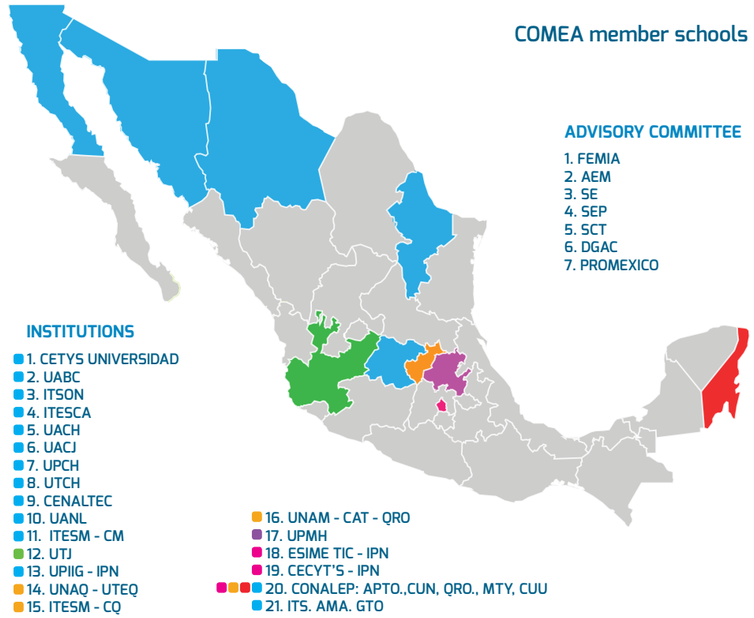
An essential factor for the development of any industry is the availability of human capital in terms of sufficiency and quality compared to the levels, skills and competences, to make it profitable, sustainable and competitive, especially if it is a high demand trade such as the aerospace industry. This is the reason why training human resources is a strategic activity for the sector that is very successful.

Graph 7. Pyramid of educational demand

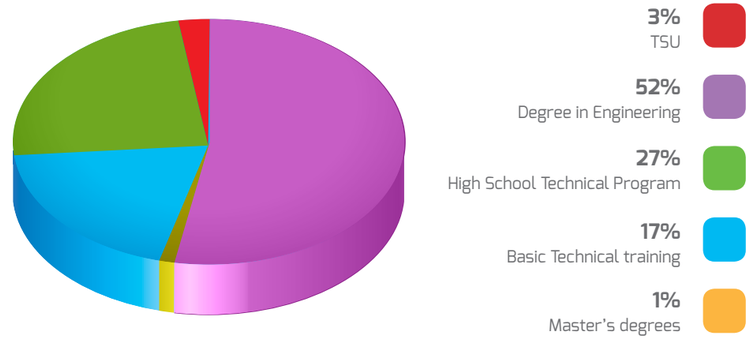


Currently the increased demand for human capital is concentrated mainly in the disciplines of machining, aerostructures, special and electro-mechanical processes, MRO, design and composite materials.

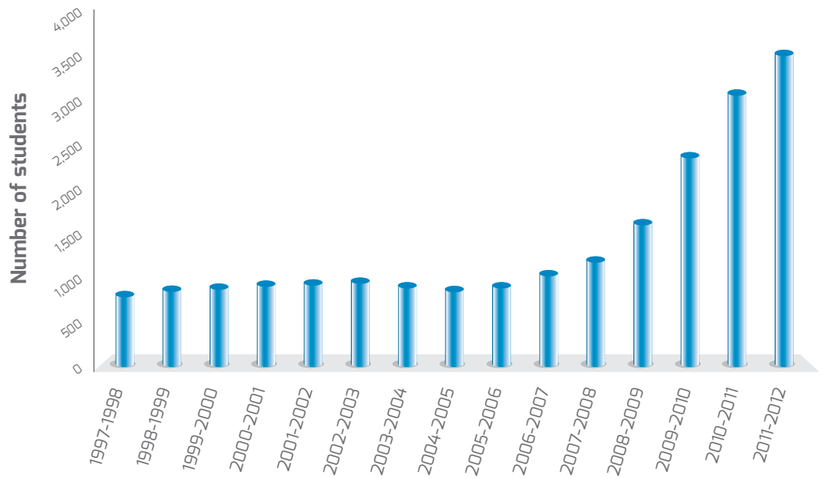
Graph 8. Aerospace Educational Coverage



Graph 9. Summary of Aerospace Industry educational institutions in Mexico



Graph 10. Engineering Enrollment - Aviation / Aerospace



Mexico has trained aeronautical engineers and technicians since 1937. The country currently has 21 educational institutions that offer 52 aerospace education programs, which range from basic courses, high school, technical careers, higher university studies, professional licenses, major in aerospace engineering and some masters' programs.

Due to the importance of aligning talent with the industry's current and future training needs, the strategy has created a sector working group to develop and promote a "Comprehensive Strategic Program Aerospace Education" to be defined by the triple helix: Government, Industry and Academia, coordinated by a committee represented and driven by linchpin entities such as the Mexican Federation of the Aerospace (FEMIA), the Mexican Space Agency (AEM), the Mexican Council of Aerospace Education (COMEA) , ProMéxico, and the Ministry of Education, among others.[13]

13 The information contained in this chapter titled "Human Capital and training activities for the Aerospace industry" was provided by COMEA

4.2.7. Mexican Space Agency

As a result of the importance of having a strategy to boost the space sector and the national need for this global positioning, the effort made by working groups in the triple helix resulted in the House of Representatives approving the bill to create the Mexican Space Agency (AEM) on April 20th, 2010.

The Law that gave birth to the Mexican Space Agency on July 30th, 2010, suggest the resumption of the efforts initiated by the Outer Space Commission (SENCO) in the 60s and by the Mexican Institute of Communications (IMC) in the 90s, mobilizing

industrial communities, academia and government to participate in a variety of fora for consultation and consensus which work led to the Mexico Space Policy, a sectoral policy, which was published in the Federal Official Gazette on July 13th, 2011.

In that same year, 2010, another process was completed that put Mexico at the technological forefront of the space field with the acquisition of Mexsat System, a constellation of three geostationary satellites for social coverage purposes (Bicentennial successfully launched in November 2012) and to support national security (Centenary in 2013 and Morelos III to be launched in 2014) with a total investment in the order of $20,000 million Mexican pesos and an operating budget of nearly $5,000 million pesos.

The recognition and commitment of the Mexican State for development of the space sector, coupled with the country's international credibility based on its financial and political stability, development and technological leadership in strategic sectors such as electronics, automotive, aeronautics and information technologies have allowed us to face great challenges to exploit this initial impetus for the formation of the space sector, the observation of the earth and satellite navigation.

With this perspective in mind, in 2011, the Mexican Space Agency and ProMéxico ran the first prospective analysis of the sector leading to Orbit Plan: Road map for the Mexican Space Industry. This plan selected four technologies in which it is recommended to invest to support the development of this industry:

a) *Modeling, simulation, and information processing systems;*

b) *Materials, structures, mechanical and manufacturing;*

c) *Communication and navigation; and*

d) *Scientific instruments, observatories and remote sensor systems.*

Obviously, these technologies apply both to the aeronautics and space sector and offer opportunities to develop synergies that open possibilities of moving from aeronautics to space with greater specialization and concentration on niche opportunities in the space economy.

Work is currently being done with trusted groups to develop each specific project to enable the successful achievement of milestones and their ties to the proper development of the sector's national strategy.

4.2.8. Development of Suppliers for the Aerospace and Advanced Manufacturing Industries

4.2.8.1. Survey on National Advanced Manufacturing

With the goal of boosting the competitiveness clusters to detonate high added value and its development, the industry is planning a large national inventory of advanced manufacturing, to define the supply status in different high value and physical distribution processes in Mexico. This study aims to lay the foundation for

identifying gaps and opportunities in the supply chain and suppliers with the potential to be developed on a larger scale.

The survey will focus on the major manufacturing regions of the country, which account for most of the capabilities of design, engineering and advanced manufacturing.

This national survey standardized between regions also allows the regional capacities to understand the definition of predominant productive vocations and facilitate the definition of vocations for the different poles of advanced manufacturing competitiveness nationwide. The aerospace companies may use this study to strengthen, enhance and extend its national supply chains.

A diverse number of companies are committed to this initiative and recognize it as a high-impact tool will allow them to learn the different productive ecosystems, location and their current capabilities and potential. The study will provide useful information for decision-making process, although it will initially help the procurement division and supplier development while also serving as a base for expansion in operation analysis and attracting new development areas.

4.2.8.2. Supplier Development / The Sourcing Council

Mexico has implemented different programs aimed at developing suppliers to strengthen the national productive chain.

One was led by the Ministry of Economy in cooperation with the United Nations Program for Development (UNDP) and resulted in the joint suppliers' development model. This program is based on the formation of certified consultants with the needed skills to improve production chains.

On the other hand, the methodology implemented in the ProMéxico Transnational Corporations Partnerships (ACT, acronym in Spanish) model that seeks to leverage the strong interest of large companies established in Mexico to grow their business in the country, particularly through greater national supply and transfer operations.

Application of the ACT model proposes the integration of the supply chain in the aerospace sector by identifying the main products imported by OEMs, the establishment of inquiry lines to determine qualified national supply certified by the standards required and if the current installed capacity of these companies can supply these requirements. In the absence of national supplies, the system supports a program to attract transfer operation projects for the establishment of international supply companies in Mexico.

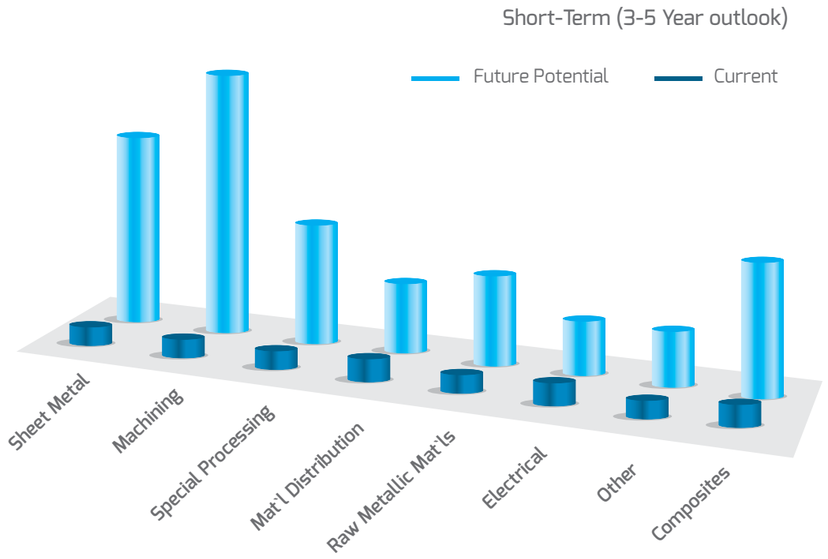
Another important initiative mentioned in the first version of the Flight Plan (due to the need for suppliers with the determined quality and relevance) was the establishment of a Sourcing Council for supplier development. Since the creation of the Sourcing Council, which focuses on the development of suppliers specialized in the aerospace sector, the results focused on coordinating the efforts made by a group of major companies in the industry to create multi-disciplinary collaboration spaces, favor alliances and collaboration among members (fostering complementarity). This Council is currently comprised by: Eaton, Grupo Safran, Bombardier, Honeywell, Bell Helicopter and Rockwell Collins.

This Council's first project included creating a map of capacities of member companies and identifying specific needs to strengthen the industry. Major accomplishments related to the following were generated as a result of joint actions aimed at developing suppliers:

- *Detection of missing links in the supply chain*
- *Qualified national suppliers certified by the required standards in their work processes*
- *Capacity to create talent attraction programs*
- *The establishment of international supply companies in Mexico*

Studies by the Sourcing Council identify the processes listed in the chart as those with the highest current demand. The graph also shows the estimated proportion of demand growth of these processes in Mexico from three to five years into the future, considering only the requirements of the companies that comprise this Council today.

Graph 11. Increased Purchasing Demands



As seen above, such an increase in demand justifies national initiatives focused on supplier development and initiatives to complement national supply chains.

4.2.9. Logistics Development

The first version proposed the development of logistics as a key factor to improve competitiveness in the industry, which represents a great opportunity to promote the aerospace industry (and general manufacturing) and turn the country into the logistics hub of the Americas. While other programs have been launched to support and encourage the sector's competitiveness through trade facilitation, there is still much to be done in developing logistics networks, and infrastructure projects to create a harmonized and efficient logistics North American platform.

The first version of the National Flight Plan defined the following strategies:

- *Promote the creation of more and better logistic service offerings in Mexico.*
- *Promote the incorporation of best practices in corporate logistics management.*
- *Position Mexico internationally as a world-class logistics center.*
- *Promote adjustments in operations logistics infrastructure to achieve trade facilitation.*
- *Promote the certification of logistics operators.*
- *Promote increased human capital training in logistics capabilities.*
- *Improve coordination between federal and local governments with the private sector.*

Some actions carried out by different players in the aerospace sector have helped make progress in certain strategic lines for the development of logistics. The Federal Government, state governments, the Ministry of Economy, the Ministry of Finance and Public Credit, the Bank of Mexico and the Federal Competition Commission, among other agencies, have supported the progress of various projects aligned to promote the development of logistics.

4.2.9.1. Infrastructure

Besides the above actions, the Ministry of Economy launched programs such as the 2008-2012 Competitiveness Agenda Logistics (ACL, acronym in Spanish) and Competitiveness in Logistics and Supply Centrals (PROLOGYCA), which were created to establish a logistics platform that facilitates trade within and to the rest of the world, with the intention of promoting the supply of more efficient logistics services, by supporting projects that promote competitiveness and sustainability of the logistics infrastructure and related services. While these initiatives are a reality, their application must ensure that projects derived directly from them help strengthen existing logistics networks and foster links while creating new networks aligned with the national strategy.

4.2.9.2. Public Policy and intervention mechanisms

The different versions of the Flight Plan have noted that in order for local chains to effectively integrate the global supply chains, work must be done on regulatory initiatives that focus on eliminating or minimizing bottlenecks or trade inhibitors.

There is a variety of programs that promote international business, including the following:

a) IMMEX

It is an instrument used to temporarily import the goods needed in industrial process or services for the production, processing or repair of foreign goods for export or export services, without having to pay the general import tax, value added tax and antidumping duties, if applicable. These activities are completely free of value added and other taxes.

b) Drawback

This program allows beneficiaries to recover the amount of tax paid on imported inputs, raw materials, parts and components, packaging and containers, fuel, lubricants and other materials incorporated into the exported product, or the importation of goods that are returned in the same state, as well as goods for repair or alteration.

c) Trade facilitation

The World Trade Organization (WTO), the World Bank (WB) and the Organization for Economic Cooperation and Development (OECD) coined the term 'trade facilitation' that refers to the simplification and harmonization of international trade procedures to accelerate the exchange of goods and services between countries.

Mexico has been part of the creation of programs to boost such term and different sectors in the country have benefited from this, most notably the aerospace industry, because the implementation of the programs has generated concrete actions decreased operating costs and production in Mexico.

The trade facilitation program in our country is based on the following areas:

a. *Tariff simplification processes and rethinking exception schemes.*

The Ministry of Finance established a program to gradually reduce tariffs, with the implementation of a policy that looks to simplify the country's tariff levels to make them similar to those of its trading partners, including the United States. This measure allowed it to generate savings to businesses in excess of US $1 billion for non-payment of these fees.

A country with a complex tariff structure has negative implications on the dynamics of foreign trade, reducing trade flows but also hindering transactions due to classification errors based on very different tariff levels for similar products.

The Customs and foreign trade facilitation has allowed for open trade with countries with which the country doesn't have trade agreements, so companies that produce in Mexico can have access to a wider range of inputs and capital goods at competitive prices, thus becoming more efficient in the production of final goods offered both domestically and abroad.

According to the Global Competitiveness Ranking prepared by the International Institute for Management Development, Mexico has climbed 10 places in just two years. It stands out as the only country in Latin America that moved forward in this ranking, moving ahead of countries like Turkey, Brazil and Russia. This was achieved thanks to the tariff simplification processes and rethinking exception schemas.

b. *Customs and foreign trade facilitation.*

The customs facilitation and trade among other things includes the simplification and streamlining of customs clearance procedures, standard reviews and their standardization with international standards.

Mexico annually processes approximately 10 million more application, more than one million import permits and more than 37,000 export permits. There are currently more than 60,000 active users of foreign trade; 40 different documents, 165 procedures, 200 pieces of information and more than 30 players involved ranging from government, exporters, importers and shippers, among others.

In order to provide information and move forward on trade issues in Mexico, the Ministry of Economy created the SIICEX portal www.siicex.gob.mx as a free tool that provides access to information provided by the Federal Government with regard to foreign trade. The portal targets entrepreneurs, importers, exporters and anyone interested in the subject matter. Some of the information users can query on the website include laws and regulations related to foreign trade treaties and trade agreements Mexico has signed with other countries; Development Programs decrees, the Tariff Law of the General Import and Export Tax (TIGIE), quota agreements and permits, and the corresponding formats for each one, plus statistical information, classification rates that include information on tariff and non-tariff issues of foreign trade, and publications in the Federal Official Gazette related to foreign trade.

The Foreign Trade Single Window was created as part of the SIICEX portal at ventanillaunica.gob.mx to streamline and simplify information flows between trade and government, help companies optimize time and reduce long and complicated procedures in the process and trade inquiries; reduce time on administrative processes, help obtain pre-clearance information, facilitating information searches, affect the country's competitiveness level with simple, swift and safe processes, while also eliminating courier and freight costs, and helping reduce costs in physical storage spaces.

This is the first global multilateral arrangement on export controls for conventional weapons and sensitive dual-use (civil and military) goods and technologies. Mexico's entry into these export control regimes can help it make the transition from a manufacturing country to one that designs, builds and manufactures dual-use goods, software, technology, weapons and explosives.

d) Creation of the 9806.00.06 and 05 tariff sections corresponding to the aerospace sector.

The 9806.00.06 tariff was created to have tariff benefits for imported inputs in the Mexican aviation sector and make it competitive. The description of the fraction is as follows:

"Goods for the assembly or manufacture of aircraft or aircraft parts, when companies have the Certificate of Approval to Produce issued by the Ministry of Communications and Transportation"

This initiative was created to facilitate the operation and further the development of aerospace companies that import machinery, equipment, tools, materials, parts and aircraft components. This tariff section thus allows for free imports to assemble and manufacture aircraft or aircraft parts, when companies have the Certificate of Approval to Produce issued by the Ministry of Communications and Transportation."

There is also Section 9806.00.05 corresponding to the "goods for repair or maintenance of aircraft or aircraft parts," which benefits MRO activity as imports under this item are also free of tariffs[14] and have administrative advantages.

14 *www.jmcti.org/kaigai/Latin/2006/2006_10/2006_10_M01.pdf*

This section has benefited most companies regardless of their activities, whether engaged in the design and development of parts, assembly or manufacture of harnesses and wires, airframe parts, components for landing systems, machining and metal turbine parts, precision equipment, audio and video systems, electronic components, etc., or repair work and maintenance and repair of aircraft interiors, mechanical and electrical parts, repair and maintenance of turbines, among others.

4.2.9.3. Special Economic Zones

In previous versions of flight plan, the working group identified the opportunity to streamline the logistical component of the supply chain, to simplify customs clearance procedures and facilitate the integration of productive chains and create cooperative conditions for certain manufacturing or service export activities by promoting special economic zones focused on aerospace activities.

This had led to collective efforts made with the Ministry of Finance and Public Credit, to adapt the existing economic zones, or create new ones, according to international industry dynamics to generate competitive advantages.

In Mexico, the Special Economic Zones (SEZs) are located in areas defined for the realization of industrial and service activities, and typically offer incentives to foreign investors with expectations of high economic returns, markets products for reprocessing, tax exemptions, favorable infrastructure conditions, administrative facilities, skilled labor and economic growth for the development of domestic markets.

Some of these areas or bonded areas feature a customs procedure which allows the introduction of foreign goods into Mexico for a limited time, to be handled, stored, kept, exhibited, sold, distributed, produced, processed or repaired. The implementation of this schema will encourage programs to boost exports and allows the aerospace industry to further develop especially in terms of MRO issues.

Some of the major SEZs in Mexico are: Guanajuato Puerto Interior (Guanajuato), Puerto Fronterizo Colombia (Nuevo León), Logistik Free Trade Zone (San Luis Potosí), Zona Franca (Baja California) and Refieson (a bonded compound located in the state of Sonora).

Overall, Mexican aerospace companies can gain advantages by establishing within an enclosure or special economic zone (EEZ) or operate through them; however, there are some that may receive greater benefits, depending on their activities, such as MRO or high-tech dual-use that need to operate in highly efficient logistics environments to be competitive and able to meet the specific needs of the productive activity. Therefore, although none of the existing SEZs in Mexico are specifically oriented to aerospace, there are conditions for their development, so progress has been made regarding SEZs as part of MRO Hub and competitiveness poles with a vocation for high technology and dual-use goods. Thus, the planning of special economic zones are intended to be part of the poles of competitiveness to guide the industry towards better management of key links in the production chain, so they can diversify and complement the industrial base, promote the evolution to knowledge-intensive industries and insert national companies in the global chains.

4.2.10. Engineering Council

The previous version of the NFP introduced the proposed creation of an Engineering Council to represent the interests of major corporations and organizations providing knowledge-intensive services (engineering). This was due to the country's need to form specialized professionals, manage talent in science and engineering, and create the right conditions to develop projects focused on the development of knowledge, all of them challenges that have consistently come up during the development of sectoral and regional strategies.

It is thus crucial to create an Engineering Council that manages the establishment of international standards and actions to be followed by the different companies that work on the design, engineering and development of new products with intensive knowledge creation.

During 2012, progress was made in coordinating the initial group comprised of world-class companies including: Intel, Honeywell, Skyworks, Ford, Mabe and HP among others. Although the Council is in the process of formation, the companies forming part of the group are performing common actions targeting the real, current and future needs of the high-tech industries and Mexico's strategic sectors.

4.2.11. Engineering City

Considering the definition of competitiveness as the ability to attract and retain investment and talent, this project raised by the working group shortly after the release of the third version of the PVN, considers creating conditions as part of the strategy of poles competitiveness to retain senior professionals once they have been identified or developed.

Different national clusters that have high concentrations of engineering talent have advanced manufacturing capabilities that are suitable to business environments and attractive working conditions for any professional; however, the quality of life professionals live outside of the company complicates retaining talent in those places.

The current national strategy, in conjunction with regional strategies, seeks to generate clusters in the whole ecosystem to permit the development of high-level industrial growth and holistic talent development, promoting quality of life, access to services and conditions for social and family life.

Different companies that have fostered the growth of the aerospace industry over the years and generated with more value-added activities, are very committed to this vision and currently collaborating with municipal, state and federal governments to generate ecosystems that would enhance industrial activity and training of talent, improve the quality of life of professionals. These initiatives aim to facilitate the retention of advanced talent through a good mix between working conditions and environment in which professionals and families are immersed (housing, transportation, culture, recreation, accessibility, landscaping, services, etc.).

4.2.12. Examples of the progress made on Specific Projects

The different versions of the NFP have defined as a priority; the attraction of aerospace investment addressed specifically to processes and technologies that provide high value and generate more integrated supply chains, and the growth of the existing industry nationwide. Some examples of this include the opening the SNECMA plant, focused on the manufacture of steel and titanium parts, forging parts and configuration of a network of suppliers and contractors, the opening of the Aernnova Aeronautical structures plant and forthcoming opening of its composites manufacturing plant, the growth of the UTAS Sonora plant focused on new processes that include the manufacture of turbine blades and nozzles for tooling components, among others. These are some examples of the results obtained from defining the strategy, and are the first of many more that will characterize aeronautical development in Mexico.

Investment projects also consider opening laboratories, research centers and certification units. Some of these are described in detail as follows:

4.2.12.1. Honeywell's Advanced Design and Engineering Campus in Mexicali

Honeywell has developed significant capabilities in engineering, aerospace design and manufacturing in Mexicali. As referenced in Section on Turbine Development in Mexico, Honeywell has an Advanced Engineering and Design Campus in that city that performs scale simulation activities for multiple aircraft systems and gives engineers the ability to test interoperability, control and maturity. Complementing the Mexicali Research and Technology Center (MRTC), Honeywell manufactures heat exchangers and electromechanical components in Mexicali incorporated into commercial aircraft like the Boeing 737, Boeing 787 and the Airbus A350 XWB, and Gulfstream business jets such as the as Gulfstream GV model.

4.2.12.2. The Messier-Dowty Industrial plant in Mexico

This project, which refers to a new Snecma manufacturing plant in Mexico, was mentioned in the first NFP. It opened on March 17th, 2010 and represented an investment of US $150 million and 500 new jobs.[15]

15 *http://eleconomista.com.mx/estados/2012/03/14/sames-echo-andar-otra-planta-queretaro%*

This development increased its volume of main parts, the manufacture of steel and titanium parts for manufacturing, and forged parts while simultaneously developing a local network of suppliers and skilled subcontractors.

4.2.12.3. The Aernnova Project in Mexico[16]

16 www.aernnova.com/user/sp/news.php?id=36

The first version of the NFP also mentioned the investment project announced by Aernnova, which is now a reality. The Aircraft Structures plant in Querétaro, has a production area of close to 129 acres (12,400 sq meters) focused on assembling large fully equipped aerostructures as fuselage sections, wings, stabilizers, among others, and prepare them for their direct integration into the customer's final assembly line. The plant currently assembles aircraft structures for companies like Embraer, Bombardier and Sikorsky.

This plant has full management responsibility for the aerostructures produced, which allows it to address the assembly activities and taking responsibility for the engineering, management of the supply chain, and development and approval of the supply chain suppliers.

The metal component plant in Querétaro also produces metal parts and machining technology and fully finished aeronautical parts ready for integration into the assembly plant structure lines.

The Aernnova project in Querétaro called for a US $84 million investment and created 1,070 jobs (810 workers and 260 specialized technicians, engineers and managers).

Aernnova has also presented its plans to open a carbon fiber components (Composites) manufacturing plant and the creation of a Center for Aerospace Design Engineering (structures and systems).

With these investments the Aernnova project in Mexico will reach US $134 million, creating 1,624 jobs, of which 320 are engineers and graduates.

These projects foster investment, job creation and especially encourage technology transfers in engineering and manufacturing processes while also encouraging productive ecosystems for regional development through new suppliers, adding new design capabilities, the manufacturing of components and the development of higher value-added products.

4.2.12.4. Goodrich plant growth project (UTAS) in Guaymas

The first version of the NFP raised the growth of the plant in Guaymas, Sonora. The main products manufactured in the new building are turbine blades and tooling components for injectors, as completely new processes for the region including non-destructive testing, digital x-rays, laser welding and super plastic shaping. These processes are an essential part of UTAS in Mexico.

In late 2011, Goodrich received the Best Practices Award from Coparmex in the category of Community Involvement by large companies. In late 2012, the company opened the "Aerospace Engineering Center" in Mexicali, which was also included in the first version of the NFP, which aims to develop cutting-edge aerospace technology in Baja California, leveraging the human talent that lives in the region.

The company's participation is not limited to operation and production in Mexico. The CEO is the president of an aerospace cluster in Baja California, and actively engaged in the development of his state's regional strategy, which was defined in the Regional Road Map of the State of Baja California (coordinated and organized by ProMéxico).

Goodrich is an example of a strategic investment designed, which has benefited both the company and the country, leaving economic, social and technological spill. Strategic investments that were a simple vision five years ago are now a reality.

Goodrich by UTC in 2012 to form the UTC Aerospace Systems, a corporation that has reiterated his interest in continuing its development in Mexico.

4.2.13. Regional Strategies

As part of the next stage of development of the aerospace and defense industries in Mexico, an agreement was made to define strategies to identify and develop the production vocations of the country's aerospace clusters.

These strategies seek to activate competitiveness clusters; that is to say, ecosystems for high-level innovation and coordination to raise the competitiveness of regions and harmoniously work with different sectors to support innovation, collaboration and competition. Boosting competitiveness in the clusters is intended to make sure the companies that comprise them, have advantages in terms of access to a broader base of suppliers, specialized support services, talent sources, access to knowledge, technologies or markets, among others, generating benefits that attract both similar and complementary companies. In addition to local benefits, the idea is to make sure the poles facilitate efficient insertion in the production and innovation networks both domestically and abroad.

Thus, regional strategies, in addition to aligning with the national strategy, consider three pillars as enablers of competitiveness in the region:

1. *Innovation system, based on the region's ability to generate innovation at a cross regional and sectoral level of their vocation.*
2. *Cluster dynamics, based on the concentration of the agglomeration of companies, universities, suppliers and institutions, with the ability to generate a value chain.*
3. *Triple helix, focused on working together with academia, government, and industry.*

Regional strategies have been developed under this perspective, which are interrelated and complementary to each other in line with the national vision.

Following are the most important regions in the Mexican aerospace industry, in terms of exports and cluster coordination.

A. Baja California

The development of the aerospace industry in Baja California began over 40 years of manufacturing activities. It is one of the most important states for the Mexican aerospace industry. It has about 60 companies focused on the industry that have reported exports in the amount of US $1.391 billion annually, representing nearly 28% of national exports.

The United States of America attracts the majority of exports from Baja California and the rest goes to Canada, England, France and Germany, among other countries. It should be noted that exports from this state have maintained steady growth since 2002.

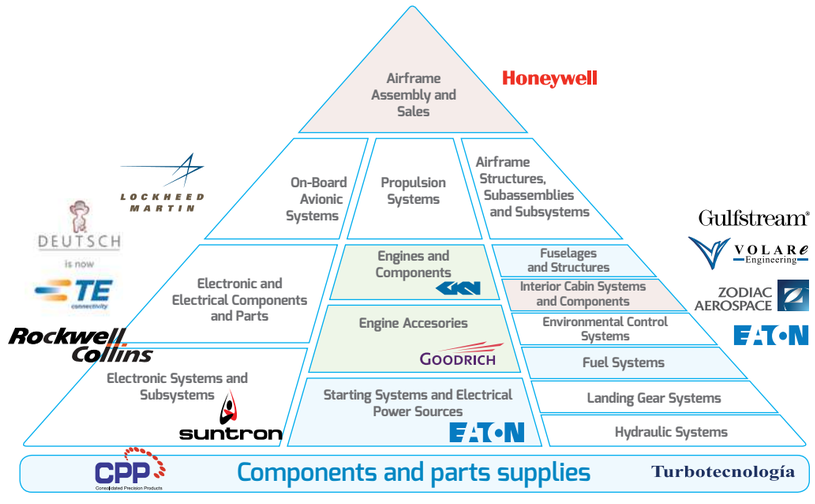
Based on the strategy developed with industry, academia and government, Baja California will focus its innovation capabilities on high value knowledge-based services (Knowledge Processing Outsourcing or KPO) for the aerospace and defense (A+D) industries and encourage their potential by developing airplane body systems and power plants.

Baja California has 24,349 students enrolled in engineering and technology courses from a universe of nearly 905,441 students nationwide, as one of the states with the largest number of students in these areas.[17]

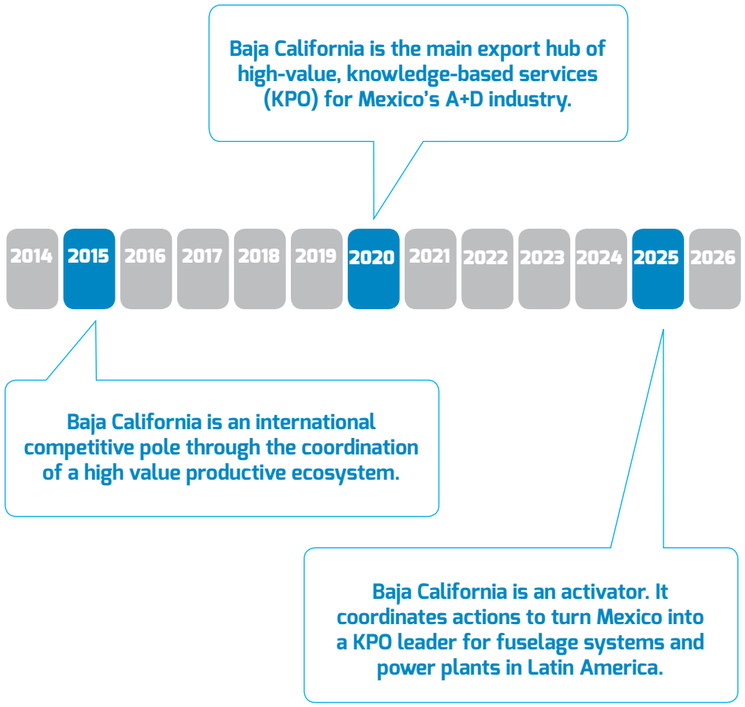
This state is seen as a cluster in this sector that defines its transversal capabilities.

The strategic milestone the state is working to achieve is described as follows:

Graph 11. Capabilities of the aerospace and defense sector in Baja California



Graph 12. Timeline of the capabilities of the aerospace and defense sector in Baja california



Progress aligned with the Baja California regional strategy:

The companies comprising the Aerospace Cluster have taken specific actions working with the three levels of government, academia and specialized training centers to develop talent fully aligned with production requirements, quality and certification of new products in the region with emphasis on specialized technical levels and professional technicians, while developing locally specialized engineering level, to support the growth of existing industrial operations such as expanding new areas of production.

They also seek, with the active participation of the national aviation authority (DGAC), to work on the establishment of a certification office in the region to promote actions under the BASA agreement.

With regard to the education sector, the talent shortage faced by the global aerospace industry opens a window of opportunity for Baja California. Thus, the Autonomous University of Baja California (UABC) launched the Aerospace and Enginee-

17 *http://mim.promexico.gob.mx/wb/mim/seleccion_de_indicadores*

ring Center five years ago, in addition to its engineering campus that has one of the best laboratories specialized on composites, which was built in a collaborative effort with Honeywell Aerospace. One of the Center's latest achievements is the launch of an experimental rocket made by the students, in collaboration with experts from the San Jose State University and NASA oversight.

Another important educational institution is the Cetys University. It is an institution certified by the Western Association of Schools and Colleges (WASC) and offers a program focused on aeronautical engineering and a master's degree in aerospace engineering. This university is working on the construction of a laboratory scale prototype aircraft and car models, for which it has formed three research teams comprised of students, teachers and engineers from the local industry.

Technically, the Tijuana University of Technology (UTT) has a robust outreach program with aerospace companies. The institution has a mechatronics engineering program and two professional technical programs in mechatronics and the manufacturing aerospace harnesses, which were adapted to the needs of the local industry.

This University recently opened the Product Lifecycle Management Lab, the fourth of its kind in Mexico. This laboratory includes next-generation software that serves to control the manufacturing process of the virtual product, ranging from the conception to industrial design, testing, manufacture, delivery and customer service aspects. This laboratory will allow companies in the region to simulate manufacturing processes to reduce costs, tuning and errors.

The CONALEP, one of the country's more important technical schools is also present in the state. In coordination with the Baja California Aerospace Cluster, it recently opened its precision machining center fully dedicated to meeting the needs of the aerospace industry in the region. This center is the first of four the state plans to open.

The center was partially funded by local businesses like Zodiac and Solar Turbines, which supported the CONALEP with the installation of equipment and got involved in developing the training programs to ensure the technical content and design, and compliance with the AS9100 rules and regulations.

The mega CaliBaja Binational region is comprised of the San Diego and Imperial counties next to Baja California, Mexico. This mega-region provides unique opportunities for business investment as it offers global companies easier access and advantages based on its varied geography and binational location with access to intellectual and scientific resources, an established base of experts experienced in production, extensive infrastructure and natural resources, business incentives offered by both nations, and room for expansion.

For more information about the project, please see the State's strategy in the MRT Baja California flight plan.
www.promexico.gob.mx/work/models/ProMéxico/Resource/1983/1/images/MRT_Baja_California_2012_esp.pdf

B. Chihuahua

Chihuahua is one of the most developed states with potential for our country's aerospace and defense industry thanks to its industrial capacity and advanced manufacturing. Chihuahua has 28 companies engaged in the industry, four of which are original equipment manufacturers (OEMs).

1) ***Cessna:*** *Harnesses for electrical systems, structural components for airframes, wings and cabins. Commercial and private aviation. Main processes: Electrical assembly, lamination processes, die-shaped, riveted, application and curing of chemical compounds. Cessna has 870 employees. It was the first company to start patenting aerospace processes in Mexico.*

2) ***Textron International Mexico:*** *Components and the assembly of structural elements for helicopter fuselages and cabins and electrical harnesses. Commercial and private aviation. Main processes: Machined, formed, application of chemical, electrical and mechanical assembly. Textron has 360 employees. It currently assembles more than 60% of the complete helicopter process.*

3) ***Beechcraft:*** *Structural components for airframes, wings and cabins. Commercial, military and private aviation. Main processes: Forging, die-formed, riveting, assembly and integrity tests. Beechcraft has 900 employees.*

4) ***Honeywell:*** *Parts and components for turbines. Commercial and military aviation. Main processes: High precision machining CNC multi-axis, heat and surface treatment, non-destructive integrity testing. Honeywell has 1,200 employees.*

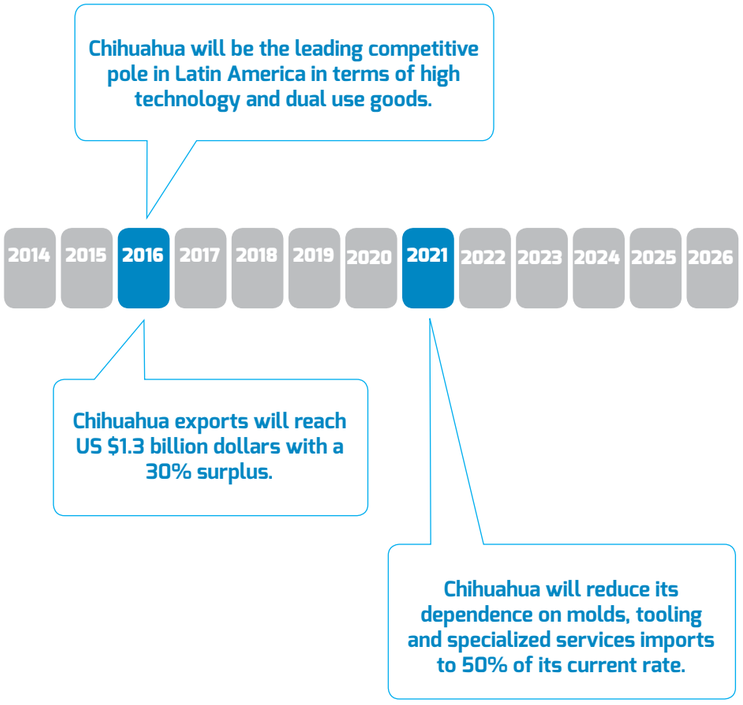
In 2012, Chihuahua exports totaled US $568 million, representing nearly 11% of exports in the sector nationally. Chihuahua's exports are destined mainly for the United States, Germany, France and Canada.

Chihuahua has 59 universities and technical schools, 65 colleges and two research and development centers that provide the talent needed to serve this industry. The state graduates close to 3,000 engineers and 1,500 technicians every year.
Chihuahua has the only Center for Research in advanced materials, nanotechnology and metrology in Mexico facilitating the growth and development of the aerospace industry.

With the development of MRT Chihuahua Flight Plan, the industry, academia and government determined the next steps based on the strategy, which strategic milestones focus their innovation capabilities on the manufacture and assembly of fuselage and parts, engine and engine parts, harness design and engineering, precision machining, seats and components, flexible fuel tanks and emergency systems such as slides and life rafts.

As a result of the integration of the triple helix, Chihuahua has established itself as a major industry leader. The Chihuahua Aerospace Cluster has identified six main lines of action focused on Education, Sourcing, Certification, Technology, Infrastructure and Promotion. One of the main initiatives focuses on the establishment of a Center for Aircraft Maintenance, Repair and Overhauls (MRO) in the city.

Graph 13. Timeline of the capabilities of the aerospace and defense sector in Chihuahua



Chihuahua currently offers more than 8,300 direct jobs in the industry, and a total of US $900 million in foreign and local investment. Other predominate capacities include composites, sheet metal, aerostructures, forging, casting, and secondary treatments. Chihuahua has a major Engineering and Design Center backed by an international group with the strongest presence in Mexico.

Today, aircraft parts manufactured and assembled in Chihuahua are used for the commercial, private and military aircraft manufactured by more than ten OEMs and used by more than 60 airlines worldwide, with international certifications like NADCAP, AS9100, CAA, FAA, and EASA, among others.

Chihuahua is ready to meet the growing demand in the aerospace industry worldwide.

To learn more about the aerospace industry in Chihuahua, go to ***www.clusteraeroespacialchihuahua.com*** or ***http://www.promexico.gob.mx/work/models/ProMéxico/Resource/1983/1/images/MRT_Chihuahua_2012_esp.pdf***

C. Sonora

Sonora is home to one of the nation's leading aeronautical integrated tool and die clusters. With casting, machining and special processes, Sonora has become a center of excellence in the manufacture of blades and turbine components and aeroengines.

Capabilities in the aviation sector specifically began with electronic assemblies such as connectors and harnesses. Today, Sonora grows in complexity and technology in composite materials, aerostructures and the availability of special processes.

The following are just some of the processes Sonora offers today, some of which are unique on a national scale.

- *Investment Casting (lost wax smelting)*
- *Die Casting (pressure casting)*
- *Sand Casting (sand mold casting)*
- *Heat treatment, Vacuum Heat Treating, Passivation, Brazing, Sintering, CAD Plating, (heat treatments)*
- *Surface Treatment, HVOF Spray, VPA, Plasma Spray, Platinum Plating, Gold Plating, Sulfuric Anodise, Chromic Anodise, Prime & Paint (surface treatments)*

Sonora currently has over 48 enterprises and support entities in the aerospace sector and has exports of nearly US $174 million, with the United States being the main destiny of said exports. At the same time, Sonora has an important talent source, as it has 29,203 students enrolled in engineering and technology programs.

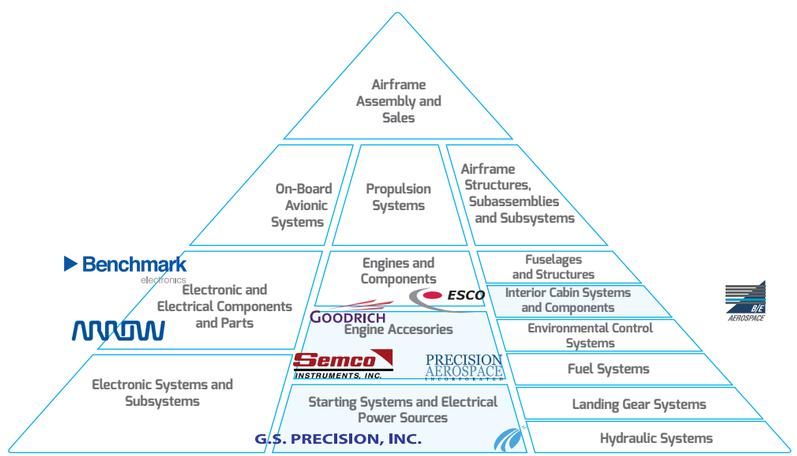
This state recently opened the "Institute of Advanced Manufacturing and Aerospace of Sonora" in the capital city of Hermosillo in response to the growing demand for trained technicians due to new investments and expansion in the aeronautical sector statewide.

"IMAAS" is a public school that will provide courses and programs required by the industry such as:

- *Aerostructure Assembly*
- *CNC Machining*
- *Sheet Metal*
- *Composites*
- *Tooling*

The state's strategy for the aerospace sector is designed to maximize its potential for manufacturing turbine blades and engine components, leveraging cost competitiveness in the value chain, thanks to its geographic location and characteristic business model based on the generation of current talent as well as its potential as an integrated supply chain.

Graph 14. Capabilities of the aerospace and defense sector in Sonora



Graph 15. Timeline of the capabilities of the aerospace and defense sector in Sonora

Some of the latest developments in the aviation sector in Sonora include the following:

- *Establishment of the Institute of Advanced Manufacturing and Aerospace Sonora "IMAAS"*
- *Establishment of a French company that will assemble doors for the Boeing 787 and create 400 jobs by the year 2015*
- *Establishment of a U.S. company that will have surface treatments such as HVOF Spray, VPA, Plasma Spray, among others.*
- *Establishing of a Mexican company south of Sonora for the repair of aerostructures (MRO).*

D. Querétaro

Querétaro has become a strategic point for the aerospace industry in the world because of the heavy investment it has attracted in recent years. This success stems from a coordinated relationship between the state government and the industry, through clear support mechanisms that triggered important strategic projects such as the following:

- ***The Aeronautical University of Querétaro (UNAQ)** is the main key to generate specialized human resources and its relationship with companies, which has allowed it to design curricula relevant to each customer's needs. The UNAQ offers four educational levels: basic technical superior level technicians (384), engineering (411), and post graduate (40).[18] The school has graduated 2,851 students since 2006 and it expects to have 6,500 aeronautic graduates by 2016.*
- ***Testing and Aerospace Technology Laboratory (LABTA):** this is A unique project in Latin America, consisting of three research centers, linking their specialties to present a comprehensive range of laboratory tests and services that strengthen the development of the procurement chain. The installed capacity of LABTA will assess the durability which components and materials used in aircraft need for tests that reproduce operating conditions in flight.*
- ***The Querétaro Aerocluster:** Its goal is to contribute to the development and strengthening of the sector's capacities comprised of 30 manufacturing companies and suppliers of structures, parts and components, three MRO firms, five design and engineering centers, three innovation and development centers, five service companies, three educational institutions, and one innovation and research network.*

Today the Querétaro Aerospace Sector offers new investment opportunities for aircraft operations under an appropriate infrastructure and optimum business conditions, especially those designed to complement the procurement chain in complex machining processes, surface coating, heat treatment, sheet metal, forging and casting.

Querétaro's major exports are concentrated in goods for assembly or manufacture of aircraft or aircraft parts, turbojets with thrusts exceeding 25 kN, landing gear and parts and goods made to repair or maintain aircraft or aircraft parts.

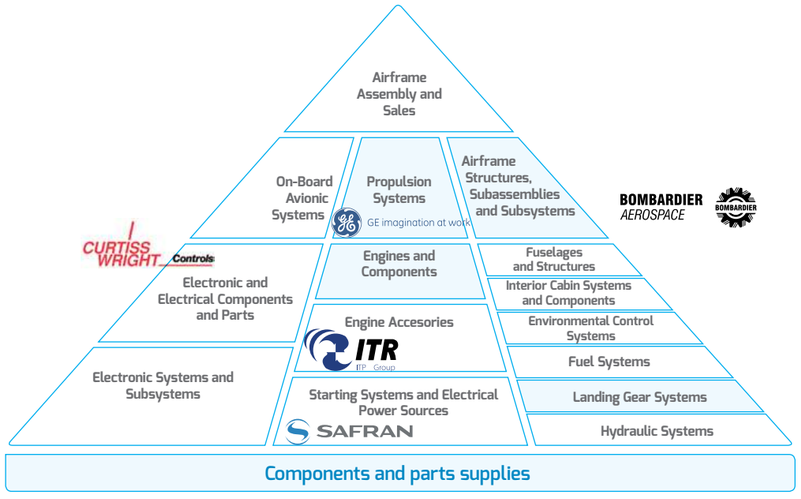
18 *www.unaq.edu.mx/index.php/noticias-y-eventos/54-mas-de-850-estudiantes-inician-hoy-en-la-unaq-el-cuatrimestre-septiembre-diciembre-2012*

Querétaro has primarily focused on products and process machining of complex components, manufacturing of aerostructures, engine component manufacturing, the manufacture of braking systems, MRO for propulsion engines, landing gear manufacturing and MRO, technical treatments and manufacturing of components for complex materials.

Querétaro has 34 companies and aerospace support firms and has recorded US $673 million in exports (13%). The Querétaro aerospace sector is primarily comprised of the following companies: Bombardier, Safran Group (Messier-Bugatti-Dowty and Snecma), Eurocopter, Brovedani Reme, Elimco Prettl Aerospace, Galnik, GE Infrastructure, Galnik, Cryo, NDT Export Mexico and ITP, most of which have received AS 9001, ISO 9001, ISO 14001 and NADCAP certifications.

As an important linkage mechanism between the industry and the institutions of higher education and research, the region has RIIAQ - the Querétaro Aerospace Research and Innovation Network, whose objective is to contribute to developing and strengthening research capabilities, and technological and innovative development processes.

Graph 14. Capabilities of the aerospace and defense sector in Querétaro



E. Nuevo León

The state of Nuevo Leon is known for its significant industrial development, as a leader in advanced manufacturing. Its geographical location, combined with its highly qualified human capital and its procurement network, makes it an ideal place to do business in Mexico and North America.

Contributing 8% of GDP and 11% of all manufactured goods in Mexico, Nuevo León has developed and consolidated various industries including the automotive industry, metalwork, appliances and aerospace. With multi-sector industrial experience with more than 100 years of history, Nuevo León has a vast network of suppliers which has allowed it transform in recent years from basic to advanced manufacturing, capable of supplying highly specialized sectors such as aeronautics.

The state currently has 28 companies engaged in the aviation industry, which exports its products primarily to the NAFTA market. This sector exports a total of US $555 million per year, with steady growth in the past five years, and the vast majority of companies operate with 100% Mexican capital. The state also has success stories like FRISA, a 100% Mexican high technology company that made inroads into the global market by placing its forged rings into the world's leading aircraft engine manufacturers.

Created in 2008, the aerospace cluster of Nuevo Leon aims to promote regional integration and growth of the aviation sector in the state. In line with the national development plan in the aerospace sector, the Nuevo León strategy involves the integration of local suppliers in the aviation industry value chain through the development and conversion of parts suppliers that manufacture high added value items for the major OEMs and Tier 1 companies currently operating in Mexico. In the medium term, the goal is to export aerospace components to North America, Europe and major market leaders in the industry.

Moreover, a great strength of the state is its ability to host major MRO centers. It has an international airport with the ability to host a comprehensive commercial aircraft maintenance workshop. Furthermore, the Aeropuerto del Norte, which is the only private airport in Mexico, has more than 25 aircraft maintenance and repair shops, being the second largest airport in Mexico and Central America for corporate aviation operations. The Nuevo León aerospace cluster also works on the integration and promotion of those enterprises.

One of the keys to economic success that has positioned Nuevo Leon as an industrial capital of Mexico and an attractive destination for business is the quality and excellence of its highly competitive educational institutions, graduating more than 6,000 engineers annually. As part of the effort to develop the region as an aeronautical pole, Nuevo León highlights the following programs:

- *A career in aerospace engineering with three majors: design and manufacturing, aircraft maintenance and air transportation of the Autonomous University of Nuevo León (UANL). In 2012 it launched a master's degree in aerospace engineering.*

- *A double master's degree in aerospace engineering and lightweight technologies from the Monterrey Tech (ITESM) with Steinbeis University out of Berlin, Germany, with support from the partnership with the Baden-Württemberg aerospace companies.*
- *Technical schools and customized programs for state technical institutes. They have developed careers and specialties in engines, CNC machining, and welding on advanced materials among others.*

Advances in Nuevo León's aerospace strategy include the following achievements:

- *In 2012, the UANL inaugurated the Center for Research and Innovation in Aerospace Engineering, representing a US $20 million investment for a total area of 10,000 square meters. The center has 15 laboratories, including research and development of advanced materials, a flight simulator and a wind tunnel. The center also provides technology services to the industry.*
- *Another line of action and state coordination is the integration of consolidated companies in other sectors, such as automotive or medical equipment to the value chain in the aerospace sector, supporting them with industry-specific requirements and certifications. Today there are 12 Nuevo Leon AS9100 certified companies, and the objective of the current program is to certify six more companies before the end of 2013 and ten more by the end of 2015.*
- *Nuevo Leon has the first NADCAP certified private laboratory in Latin America for testing and metrology for the aviation industry.*

4.3. Conclusions

In the last eight years, the growing number of investment projects in the aerospace sector have transformed Mexico into one of the most competitive and strategic destinations for manufacturing and sub-contracting services and industrial processes for the sector. The increasing development of design and engineering capabilities has allowed it to attract high value projects related to the main commercial programs, while its market potential for defense and dual use attracts the attention of major international players.

A great part of the success is the result of the application of methodologies that allowed the coordination of the most important players in defining the strategies to develop the sector. This paper presents the fourth version of the NFP and its application to three regional road maps. Its third version had to do with sustenance and synthesis of the Strategic Pro-Aéreo Aerospace Industry Program while this edition becomes its linking element and basis for the development of the national strategy (road map) of the Mexican space industry.

The benefits of the linkage processes expressed in this road map have high strategic value. These are geared to create greater business opportunities for Mexico's commercial partners, in the linkage of value chains, and primarily in the creation of social and economic wellness through the generation of well paid and stable job opportunities for Mexican talent.

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OIL QTYS
FUEL QUANTITY

- **·** Capabilities & Certifications
- **C** Coatings
- **CHP** Chemical Processing
- **D** Design
- **E&D** Engineering & Design
- **HT** Heat Treatment
- **R+D** Research & Development
- **M** Manufacture
- **MRO** Maintenance, Repair & Overhaul
- **MT** Material Testing
- **NDT** Non-destructive Testing
- **NM&SE** Non-conventional Machining and Surface Enhancement
- **W** Welding

COMPANY	Aeroengines: Propelers / Rotors / Power Plant[1] (Parts & Components)	Fuselage: Nacelles / Pylons / Stabilizers	Aircraft Construction Assembly	Avionics<2	Landing Gear	Wings	Computer System Software / Information Systems	Electrical Power / Airborne Auxiliary Power	Electrical Cable Accessories / Harnesses	Aircraft Interior Equipment Furnishing	Autoflight Systems & Equipment	Communication Systems & Equipment	Control Systems & Equipment / Flight Controls	Fuel & Fuel Systems	Hydraulic Systems & Hydraulic Power	Indicating / Recording Systems	Safety & Survival Equipment	Air Conditioning	Fire, Ice & Rain Protection	Lights	Oxygen	Pneumatic	Vacuum	Water / Waste / Water Ballast	Windows	Central Maintenance System	Inert Gas System	Cargo & Accesory Systems	Fasteners	Space Systems & Equipment	Armament & Related Equipment: Missile Related Products	Technical Textiles	Others
Aguascalientes																																	
Sensata Technologies de México, S. de R.L. de C.V.																																	
Baja California																																	
Aerodesign de México, S.A. de C.V.										M																							
Aerospace Coatings International (Industrial Vallera de Mexicali, S.A. de C.V.)		MRO																															
Allied Tool & Die Company																																	
All-power Manufacturing Co. (Co-production de México, S.A. de C.V.)																																	
Anodimex de México, S. de R.L. de C.V.																																	·
Ensambles del Pacífico, S. de R.L. de C.V.								M	M																								
Asteelflash Group																																	
BAP Aerospace de México, S. de R.L. de C.V.																																	·
BC Manufacturing, S. de R.L. de C.V.																																	
Bourns de México, S.A. de C.V. (Planta Agua Caliente)																																	
Chromalloy, S.A. de C.V. (Chromalloy Aerospace)	M/MRO																																
Remec México, S.A. de C.V.															M																		·
Compoende Aeronáutica de México, S.A. de C.V.	R+D																																
Consolidated Precision Products, S. de R.L. de C.V.																																	
Crissair de México, S.A. de C.V.															M																		
Custom Sensors and Technologies Aerospace de México	M							M	M					M	M																		
Delphi Connection Systems Tijuana, S.A. de C.V.								M	M																								
Deutsch Servicios,S. de R.L. de C.V																																	
Dynamic Resources Group Tecate Llc., S.A. de C.V.																																	
Eaton Industries, S. de R.L. de C.V.	M							M	M					M	M																		
Electro-ópticas Superior, S.A. de C.V.																																	
Empresas L.M., S.A. de C.V.								M	M																								
Ensambladores Electrónicos de México, S. de R.L. de C.V.				M				M	M																								
FSI de Baja, S.A. de C.V.																																	
GKN Aerospace Chem-tronics, Inc.	M/MRO																																
Goodrich Aerospace de México, S. de R.L. de C.V.	M	M																															
Hartwell Dzus, S.A. de C.V.																																	
Honeywell Aerospace de México, S. de R.L. de C.V.	M		M	MRO				M	M/MRO				M	M	M			M			M			M			M						
Hutchinson Seal de México, S.A. de C.V.															M																		
Interiores Aéreos, S.A. de C.V. (Gulfstream)	M	M		M					M																								
Jonathan Mfg. de México, S. de R.L. de C.V.		M																															
Lat Aero-Espacial, S.A. de C.V.																																	
Leach International México, S. de R.L. de C.V.																																	
LMI Aerospace																																	
Máquinas, Accesorios y Herramientas de Tijuana, S.A.																																	
Martek Power (Cooper)																																	

COMPANY	Machinery Manufacture - CNC & Precision Engineering: Rough: Turning	Rough: Milling	Machinery Manufacture - CNC & Precision Engineering	Machinery Manufacture - CNC & Precision Engineering: Finish: Turning	Finish: Honing	Computer Systems Software: MBD: CATIA V5	CAD / CAM / CAE	Forging & Aerostructure Fabrication Forming: Forging	Labor Work: Deburring	Shot Peen	Grit Blasting (Surface Prep)	Treatment Processes: Heat Treat: Quench & Temper	Stress Relieving	Solution + Age	Surface Treatments: Chrome Plate	HVOF Spray	Cad Plating	MCAC	Sulfuric Anodise	Chromic Anodise	Prime & Paint	Testing & Certification: NDT: MPI	LPI	Acid Etch	MCL: Chemical	Mechanical	Tooling	Transformation Processes: Castings (Fundiciones): Investment	Die	Sand	Joint Processes: Soldering & Welding	Adhesives	Others (Otros)	Materials: Raw Materials: Material Range: Stainless Steel	Steel	300M or Equivalent	Aluminum	Titanium	Delran	Composites
Aguascalientes																																								
Sensata Technologies de México, S. de R.L. de C.V.																																								
Baja California																																								
Aerodesign de México, S.A. de C.V.	M	M		M	M	M	M		M				M								M										M	M		M			M			M
Aerospace Coatings International (Industrial Vallera de Mexicali, S.A. de C.V.)																					·										·	·								
Allied Tool & Die Company																	·		·	·														·			·			
All-power Manufacturing Co. (Co-production de México, S.A. de C.V.)																																								
Anodimex de México, S. de R.L. de C.V.																	·		·	·														·			·			
Ensambles del Pacífico, S. de R.L. de C.V.	·	·		·	·	·																																		
Asteelflash Group																																								
BAP Aerospace de México, S. de R.L. de C.V.											·						R+D		·	·	R+D	R+D	·	·	·	R+D														
BC Manufacturing, S. de R.L. de C.V.																																								
Bourns de México, S.A. de C.V. (Planta Agua Caliente)																																								
Chromalloy, S.A. de C.V. (Chromalloy Aerospace)																																								
Remec México, S.A. de C.V.		·							·																		·										·			
Compoende Aeronáutica de México, S.A. de C.V.	·	·		·																																				
Consolidated Precision Products, S. de R.L. de C.V.									·		·												·								·									
Crissair de México, S.A. de C.V.																																								
Custom Sensors and Technologies Aerospace de México						·	·					·	·	·							·	·	·								·			·	·	·	·	·		
Delphi Connection Systems Tijuana, S.A. de C.V.	·	·		·	·																																			
Deutsch Servicios,S. de R.L. de C.V																																								
Dynamic Resources Group Tecate Llc., S.A. de C.V.	·	·		·	·																						M													
Eaton Industries, S. de R.L. de C.V.						·	·					·	·	·							·	·	·								·			·	·	·	·	·		
Electro-ópticas Superior, S.A. de C.V.																																								
Empresas L.M., S.A. de C.V.	·	·		·	·																·																			
Ensambladores Electrónicos de México, S. de R.L. de C.V.																																								
FSI de Baja, S.A. de C.V.																																								
GKN Aerospace Chem-tronics, Inc.																																								
Goodrich Aerospace de México, S. de R.L. de C.V.																												·	·	·										
Hartwell Dzus, S.A. de C.V.																																								
Honeywell Aerospace de México, S. de R.L. de C.V.		·		·		·	·		·		·	·		·						·	·		·	·	·		·				·	·		·	·		·	·		·
Hutchinson Seal de México, S.A. de C.V.																					·										·	·								
Interiores Aéreos, S.A. de C.V. (Gulfstream)						·																																		
Jonathan Mfg. de México, S. de R.L. de C.V.																																								
Lat Aero-Espacial, S.A. de C.V.																					·										·	·								
Leach International México, S. de R.L. de C.V.																																								
LMI Aerospace								·																																
Máquinas, Accesorios y Herramientas de Tijuana, S.A.																																								
Martek Power (Cooper)																																								

COMPANY	Services: Maintenance, Repair & Overhaul (MRO)	Raw Material Suppliers	Testing & Certification Services	Ground Support & Air Field Equipment	Consultancy, Finance & Logistics	HR Manpower	Stock Solutions	Flight Training	Research, Design & Development (RDD)	Training Skills, Universities, Colleges & Institutes	Certifications: AS9100	AS9100B	AS9199	NADCAP	ISO 9000:2000	ISO 9001:2000	ISO 9001:2008	TS 16949:2002	FAA	DGAC	ITAR	MIL
Aguascalientes																						
Sensata Technologies de México, S. de R.L. de C.V.																						
Baja California																						
Aerodesign de México, S.A. de C.V.		M								M	·			·						·		
Aerospace Coatings International (Industrial Vallera de Mexicali, S.A. de C.V.)																						
Allied Tool & Die Company		M														·	·					
All-power Manufacturing Co. (Co-production de México, S.A. de C.V.)																						
Anodimex de México, S. de R.L. de C.V.		M														·	·					
Ensambles del Pacífico, S. de R.L. de C.V.															·							
Asteelflash Group		M										·		·		·		·				
BAP Aerospace de México, S. de R.L. de C.V.						M												·				
BC Manufacturing, S. de R.L. de C.V.			·																			
Bourns de México, S.A. de C.V. (Planta Agua Caliente)																						
Chromalloy, S.A. de C.V. (Chromalloy Aerospace)	·										·			·								
Remec México, S.A. de C.V.			·									·					·				·	
Compoende Aeronáutica de México, S.A. de C.V.																						
Consolidated Precision Products, S. de R.L. de C.V.			·								·			·								
Crissair de México, S.A. de C.V.												·										
Custom Sensors and Technologies Aerospace de México											·			1					·	·	·	·
Delphi Connection Systems Tijuana, S.A. de C.V.											·			·				·				·
Deutsch Servicios,S. de R.L. de C.V																						
Dynamic Resources Group Tecate Llc., S.A. de C.V.											·											
Eaton Industries, S. de R.L. de C.V.														1					·	·	·	·
Electro-ópticas Superior, S.A. de C.V.																						
Empresas L.M., S.A. de C.V.												·				·						
Ensambladores Electrónicos de México, S. de R.L. de C.V.											·			·								
FSI de Baja, S.A. de C.V.																						
GKN Aerospace Chem-tronics, Inc.											·			·								
Goodrich Aerospace de México, S. de R.L. de C.V.											·	·		·								
Hartwell Dzus, S.A. de C.V.		M																				
Honeywell Aerospace de México, S. de R.L. de C.V.	·	·	·		·	·			·	·		·		·		·			·	·	·	
Hutchinson Seal de México, S.A. de C.V.											·			·								
Interiores Aéreos, S.A. de C.V. (Gulfstream)											·			·								
Jonathan Mfg. de México, S. de R.L. de C.V.											·											
Lat Aero-Espacial, S.A. de C.V.		M																				
Leach International México, S. de R.L. de C.V.																						
LMI Aerospace		M									·			·								
Máquinas, Accesorios y Herramientas de Tijuana, S.A.		M																				
Martek Power (Cooper)																						

1.- NDT / HT / CHP / W

• Capabilities & Certifications
C Coatings
CHP Chemical Processing
D Design
E&D Engineering & Design
HT Heat Treatment
R+D Research & Development
M Manufacture
MRO Maintenance, Repair & Overhaul
MT Material Testing
NDT Non-destructive Testing
NM&SE Non-conventional Machining and Surface Enhancement
W Welding

COMPANY	Aeroengines: Propellers / Rotors / Power Plant (Parts & Components)	Fuselage: Nacelles / Pylons / Stabilizers	Aircraft Construction Assembly	Avionics	Landing Gear	Wings	Computer System Software / Information Systems	Electrical Power / Airborne Auxiliary Power	Electrical Cable Accessories / Harnesses	Aircraft Interior Equipment Furnishing	Autoflight Systems & Equipment	Communication Systems & Equipment	Control Systems & Equipment / Flight Controls	Fuel & Fuel Systems	Hydraulic Systems & Hydraulic Power	Indicating / Recording Systems	Safety & Survival Equipment	Air Conditioning	Fire, Ice & Rain Protection	Lights	Oxygen	Pneumatic	Vacuum	Water / Waste / Water Ballast	Windows	Central Maintenance System	Inert Gas System	Cargo & Accessory Systems	Fasteners	Space Systems & Equipment	Armament & Related Equipment: Missile Related Products	Technical Textiles	Others
Baja California																																	
MTI de Baja																																	
Nex Tech Aerospace	M	M	M			M																											
North American Production Sharing de México, S.A. de C.V.																																	
Oncore de México, S.A. de C.V.																																	
Orcon de México, S.A. de C.V.	M/ MRO/ R+D	M/ MRO								M/ MRO/ R+D																							
Parker Hannifin, S. de R.L. de C.V.															M																		
Placas Termodinámicas																																	
Procesos Térmicos y Especiales de Mexicali, S. de R.L. de C.V.																																	
River Manufacturing International																																	
Rkern Manufacturing de México, S. de R.L. de C.V.																																	
Seacon Global Production, S. de R.L. de C.V.																																	
Segó Precisión de México, S. de R.L. de C.V.	M	M													M																		
Suntek Manufacturing Technologies, S.A. de C.V.								M	M																								
Suntron de México, S. de R.L. de C.V.				M					M		M	M	M																				
Switch Luz, S.A.									M																								
TDI - Transistor Devices de México, S.A. de C.V.				M																													
Technology and Industrial Services de México																																	
Teledyne Microelectric Technologies																																	
Transmex International, S.A.				M				M	M		M	M	M			M			M	M							M			M	M		
Tyco Electronics Tecnologías, S.A. de C.V.				M				M	M																								
Vescio Manufacturing International																																	
Volare Engineering, S. de R.L. de C.V.										R+D																							•
Chihuahua																																	
Textron International Mexico / Intermex Manufactura de Chihuahua, S.A. de C.V.		M	M						M																								
A.E. Petsche Co.																																	
Arnprior Aerospace, Inc.	M																																
Cambrian Industries																																	
Capsonic, S.A. de C.V.								M																									
CAV Aerospace	M		M																														
CAV Aerospace Limited - Ice Protection																																	
Cessna México, S. de R.L. de C.V.		M						M	M																								
Fokker Aerostructures						M																											
Hawker Beechcraft Corp.		M							M																								
Honeywell Aerospace de México, S.A. de C.V.	M																																
JBT AeroTech								M	M																								
Kaman Aerospace	M		M																														
KeyTronic Juárez, S.A. de C.V.																																	
Labinal de México, S.A. de C.V.									M/ R+D																								

COMPANY	Machinery Manufacture - CNC & Precision Engineering: Rough: Turning	Machinery Manufacture - CNC & Precision Engineering: Rough: Milling	Machinery Manufacture - CNC & Precision Engineering: Finish: Turning	Machinery Manufacture - CNC & Precision Engineering: Finish: Honing	Computer Systems Software: MBD: CATIA V5	Computer Systems Software: MBD: CAD / CAM / CAE	Forging & Aerostructure Fabrication Forming: Forging	Labor Work: Deburring	Labor Work: Shot Peen	Labor Work: Grit Blasting (Surface Prep)	Treatment Processes: Heat Treat: Quench & Temper	Treatment Processes: Heat Treat: Stress Relieving	Treatment Processes: Heat Treat: Solution + Age	Treatment Processes: Surface Treatments: Chrome Plate	Treatment Processes: Surface Treatments: HVOF Spray	Treatment Processes: Surface Treatments: Cad Plating	Treatment Processes: Surface Treatments: MCAC	Treatment Processes: Surface Treatments: Sulfuric Anodise	Treatment Processes: Surface Treatments: Chromic Anodise	Treatment Processes: Surface Treatments: Prime & Paint	Testing & Certification: NDT: MPI	Testing & Certification: NDT: LPI	Testing & Certification: NDT: Acid Etch	Testing & Certification: MCL: Chemical	Testing & Certification: MCL: Mechanical	Tooling
Baja California																										
MTI de Baja																										
Nex Tech Aerospace																										
North American Production Sharing de México, S.A. de C.V.																										
Oncore de México, S.A. de C.V.																										
Orcon de México, S.A. de C.V.					•	•																				
Parker Hannifin, S. de R.L. de C.V.																				•						
Placas Termodinámicas																										
Procesos Térmicos y Especiales de Mexicali, S. de R.L. de C.V.																										
River Manufacturing International	•	•	•			•	•	•																		M
Rkern Manufacturing de México, S. de R.L. de C.V.	M	M	M	M				M																		M
Seacon Global Production, S. de R.L. de C.V.																										
Segó Precisión de México, S. de R.L. de C.V.	•	•	•			•	•	•																		M
Suntek Manufacturing Technologies, S.A. de C.V.																										
Suntron de México, S. de R.L. de C.V.																										
Switch Luz, S.A.																										
TDI - Transistor Devices de México, S.A. de C.V.																										
Technology and Industrial Services de México																										
Teledyne Microelectric Technologies																										
Transmex International, S.A.																										
Tyco Electronics Tecnologías, S.A. de C.V.																										
Vescio Manufacturing International																										
Volare Engineering, S. de R.L. de C.V.	M	M	M		•																					
Chihuahua																										
Textron International Mexico / Intermex Manufactura de Chihuahua, S.A. de C.V.					•			•												•		•				
A.E. Petsche Co.																										
Arnprior Aerospace, Inc.																		•		•						
Cambrian Industries	•	•	•			•																				
Capsonic, S.A. de C.V.																										
CAV Aerospace				•	•	•	•	•			•	•	•													
CAV Aerospace Limited - Ice Protection																										
Cessna México, S. de R.L. de C.V.							•																			
Fokker Aerostructures																										
Hawker Beechcraft Corp.	•	•	•		•	•	•	•		•	•	•	•							•						M
Honeywell Aerospace de México, S.A. de C.V.	•	•	•	•	•	•		•	•	•	•	•			•		•	•	•	•	•	•	•	•	•	
JBT AeroTech																										
Kaman Aerospace																										
KeyTronic Juárez, S.A. de C.V.																										
Labinal de México, S.A. de C.V.			•	•	•																					

COMPANY	Transformation Processes: Castings (Fundiciones): Investment	Transformation Processes: Castings (Fundiciones): Die	Transformation Processes: Castings (Fundiciones): Sand	Transformation Processes: Joint Processes: Soldering & Welding	Transformation Processes: Joint Processes: Adhesives	Transformation Processes: Others (Otros)	Materials: Raw Materials: Material Range: Stainless Steel	Materials: Steel	Materials: 300M or Equivalent	Materials: Aluminum	Materials: Titanium	Materials: Delran	Materials: Composites	Services: Maintenance, Repair & Overhaul (MRO)	Services: Raw Material Suppliers	Services: Testing & Certification Services	Services: Ground Support & Air Field Equipment	Services: Consultancy, Finance & Logistics	Services: HR Manpower	Services: Stock Solutions	Services: Flight Training	Services: Research, Design & Development (RDD)	Services: Training Skills, Universities, Colleges & Institutes	Certifications: AS9100	Certifications: AS9100B	Certifications: AS9199	Certifications: NADCAP	Certifications: ISO 9000:2000	Certifications: ISO 9001:2000	Certifications: ISO 9001:2008	Certifications: TS 16949:2002	Certifications: FAA	Certifications: DGAC	Certifications: ITAR	Certifications: MIL
Baja California																																			
MTI de Baja																																			
Nex Tech Aerospace																								•											
North American Production Sharing de México, S.A. de C.V.																																			
Oncore de México, S.A. de C.V.																																			
Orcon de México, S.A. de C.V.						•																			•										
Parker Hannifin, S. de R.L. de C.V.				•	•																														
Placas Termodinámicas																																			
Procesos Térmicos y Especiales de Mexicali, S. de R.L. de C.V.																																			
River Manufacturing International							•	•		•	•				M														•						
Rkern Manufacturing de México, S. de R.L. de C.V.																								•											
Seacon Global Production, S. de R.L. de C.V.																																			
Segó Precisión de México, S. de R.L. de C.V.	•		•	•			•	•	•	•	•	•	•																						
Suntek Manufacturing Technologies, S.A. de C.V.																								•											
Suntron de México, S. de R.L. de C.V.																								•						•				•	
Switch Luz, S.A.																																			
TDI - Transistor Devices de México, S.A. de C.V.																																			
Technology and Industrial Services de México															M			•					•												
Teledyne Microelectric Technologies																																			
Transmex International, S.A.																	M/•							•				•				•		•	•
Tyco Electronics Tecnologías, S.A. de C.V.																											•								
Vescio Manufacturing International																																			
Volare Engineering, S. de R.L. de C.V.																			•			•	•	•						•					
Chihuahua																																			
Textron International Mexico / Intermex Manufactura de Chihuahua, S.A. de C.V.					•	•				•	•		•											•						•			•		
A.E. Petsche Co.																		•		•															
Arnprior Aerospace, Inc.							•	•		•	•	•															•								
Cambrian Industries																								•				•							
Capsonic, S.A. de C.V.																								•			•				•				
CAV Aerospace									•	•	•											•			•		•		•				•		
CAV Aerospace Limited - Ice Protection																																			
Cessna México, S. de R.L. de C.V.																																			
Fokker Aerostructures																								•								•	•		
Hawker Beechcraft Corp.				•	•		•	•		•				•	M					•			•	•								•	•	•	
Honeywell Aerospace de México, S.A. de C.V.							•	•	•		•													•			•					•	•		
JBT AeroTech																																			
Kaman Aerospace										•														•			•	•					•		
KeyTronic Juárez, S.A. de C.V.																																			
Labinal de México, S.A. de C.V.																						•			•				•				•		

· Capabilities & Certifications
C Coatings
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NDT Non-destructive Testing
NM&SE Non-conventional Machining and Surface Enhancement
W Welding

COMPANY	Aeroengines: Propelers / Rotors / Power Plant[1] (Parts & Components)	Fuselage: Nacelles / Pylons / Stabilizers	Aircraft Construction Assembly	Avionics[2]	Landing Gear	Wings	Computer System Software / Information Systems	Electrical Power / Airborne Auxiliary Power	Electrical Cable Accessories / Harnesses	Aircraft Interior Equipment Furnishing	Autoflight Systems & Equipment	Communication Systems & Equipment	Control Systems & Equipment / Flight Controls	Fuel & Fuel Systems	Hydraulic Systems & Hydraulic Power	Indicating / Recording Systems	Safety & Survival Equipment	Air Conditioning	Fire, Ice & Rain Protection	Lights	Oxygen	Pneumatic	Vacuum	Water / Waste / Water Ballast	Windows	Central Maintenance System	Inert Gas System	Cargo & Accesory Systems	Fasteners	Space Systems & Equipment	Armament & Related Equipment: Missile Related Products	Technical Textiles	Others
Chihuahua																																	
Forges de Bologne México	M																																
Safran Engineering Services Mexico				R+D					R+D						R+D	R+D																	R+D
Servicios y Operaciones Integrales, S.A. de C.V.	M									M							M												M				
SGI de México, S.A. de C.V.								M																									
Sippican de México, S. de R.L. de C.V.																																	
Metal Finishing Co.	M																																
The Nordam Group	MRO									M																							
Tighitco Latinoamérica, S.A. de C.V.	M																																
Zodiac Aerosafety Systems / Air Cruisers (Grupo American Industries, S.A. de C.V.)																	M																
Zodiac Elastomer of America / Amfuel (Grupo American Industries, S.A. de C.V.)										M							M																
Zodiac Interconnect America / Icore International (Grupo American Industries, S.A. de C.V.)																	M																
Zodiac Lighting Solution / IDD Aerospace (Grupo American Industries, S.A. de C.V.)																	M																
Zodiac Seat United States / Weber Aircraft (Grupo American Industries, S.A. de C.V.)																	M																
Coahuila																																	
Exova de México, S.A. de C.V.																																	
GSC Internacional, S. de R.L. de C.V.																																	
Howmet de México, S. de R.L. de C.V.																																	
Parkway Productos de México, S. de R.L. de C.V.	M																																
Saltillo Jet Center, S. de R.L. de C.V.				MRO																													
Senior Aerospace Ketema, S.A. de C.V. (Manufacturas Zapalinamé, S.A. de C.V.)	M																																
Unison Industries, S.A. de C.V.	M				MRO				M								MRO																
Mexico City																																	
Aerovías de México, S.A. de C.V.	MRO			MRO	MRO	MRO		MRO	MRO	MRO	MRO	MRO	MRO	MRO	MRO	MRO	MRO	MRO				MRO											
Mexicana MRO Services																																	
Eurocopter de México, S.A. de C.V.																																	
Gima Aerospace, S. de R.L. de C.V.	MRO	MRO		MRO						MRO																							
Safran de México																																	
Senermex, Ingeniería y Sistemas, S.A. de C.V.	R+D	R+D		R+D	R+D	R+D		R+D	R+D		R+D		R+D					R+D										R+D		R+D	R+D		R+D
Servicio Técnico Aéreo de México, S.A.																																	
Tata Technologies de México, S.A. de C.V.																																	
Durango																																	
Draka Durango, S. de R.L. de C.V.									M																								
Estado de México																																	
Ingenieros en Aeronáutica y Arquitectos Interioristas de Aeronaves, S.A. de C.V.	MRO		M+D					MRO	MRO	M								MRO	M						MRO				MRO				·
Aerovics, S.A. de C.V.																																	·
Centro de Servicio Avemex, S.A. de C.V.	MRO			MRO	MRO	MRO		MRO	MRO	MRO	MRO	MRO	MRO	MRO	MRO	MRO	MRO													MRO			
Dupart México, S.A. de C.V.																																	
Henkel Capital, S.A. de C.V.																																	

COMPANY	Machinery Manufacture - CNC & Precision Engineering: Rough: Turning	Rough: Milling	Machinery Manufacture - CNC & Precision Engineering: Finish: Turning	Finish: Honing	Computer Systems Software: MBD: CATIA V5	CAD / CAM / CAE	Forging & Aerostructure Fabrication Forming: Forging	Labor Work: Deburring	Shot Peen	Grit Blasting (Surface Prep)	Treatment Processes: Heat Treat: Quench & Temper	Stress Relieving	Solution + Age	Surface Treatments: Chrome Plate	HVOF Spray	Cad Plating	MCAC	Sulfuric Anodise	Chromic Anodise	Prime & Paint	Testing & Certification: NDT: MPI	LPI	Acid Etch	MCL: Chemical	Mechanical	Tooling
Chihuahua																										
Forges de Bologne México	·	·	·	·		·				·								·		·	·	·				
Safran Engineering Services Mexico					·	·																				
Servicios y Operaciones Integrales, S.A. de C.V.																										
SGI de México, S.A. de C.V.																										
Sippican de México, S. de R.L. de C.V.																										
Metal Finishing Co.																		·	·	·	·	·				
The Nordam Group						·														·	·					
Tighitco Latinoamérica, S.A. de C.V.											·	·	·	·	·	·	·	·	·							
Zodiac Aerosafety Systems / Air Cruisers (Grupo American Industries, S.A. de C.V.)						·																				
Zodiac Elastomer of America / Amfuel (Grupo American Industries, S.A. de C.V.)																										
Zodiac Interconnect America / Icore International (Grupo American Industries, S.A. de C.V.)																										
Zodiac Lighting Solution / IDD Aerospace (Grupo American Industries, S.A. de C.V.)																										
Zodiac Seat United States / Weber Aircraft (Grupo American Industries, S.A. de C.V.)																										
Coahuila																										
Exova de México, S.A. de C.V.																										
GSC Internacional, S. de R.L. de C.V.																										
Howmet de México, S. de R.L. de C.V.																										
Parkway Productos de México, S. de R.L. de C.V.																										
Saltillo Jet Center, S. de R.L. de C.V.																										
Senior Aerospace Ketema, S.A. de C.V. (Manufacturas Zapalinamé, S.A. de C.V.)																										
Unison Industries, S.A. de C.V.												·									·	·	·			
Mexico City																										
Aerovías de México, S.A. de C.V.									MRO			·									·	·	·			MRO
Mexicana MRO Services																										
Eurocopter de México, S.A. de C.V.																										
Gima Aerospace, S. de R.L. de C.V.																										
Safran de México																										
Senermex, Ingeniería y Sistemas, S.A. de C.V.																										R+D
Servicio Técnico Aéreo de México, S.A.																										
Tata Technologies de México, S.A. de C.V.																										
Durango																										
Draka Durango, S. de R.L. de C.V.																										
Estado de México																										
Ingenieros en Aeronáutica y Arquitectos Interioristas de Aeronaves, S.A. de C.V.																										
Aerovics, S.A. de C.V.																										
Centro de Servicio Avemex, S.A. de C.V.						·																				
Dupart México, S.A. de C.V.																										
Henkel Capital, S.A. de C.V.																										

COMPANY	Transformation Processes: Castings (Fundiciones): Investment	Die	Sand	Joint Processes: Soldering & Welding	Adhesives	Others (Otros)	Materials: Raw Materials: Stainless Steel	Steel	300M or Equivalent	Material Range: Aluminum	Titanium	Delran	Composites
Chihuahua													
Forges de Bologne México							·			·	·		
Safran Engineering Services Mexico													
Servicios y Operaciones Integrales, S.A. de C.V.													
SGI de México, S.A. de C.V.													
Sippican de México, S. de R.L. de C.V.													
Metal Finishing Co.													
The Nordam Group										·	·		·
Tighitco Latinoamérica, S.A. de C.V.													
Zodiac Aerosafety Systems / Air Cruisers (Grupo American Industries, S.A. de C.V.)										·			
Zodiac Elastomer of America / Amfuel (Grupo American Industries, S.A. de C.V.)													
Zodiac Interconnect America / Icore International (Grupo American Industries, S.A. de C.V.)													
Zodiac Lighting Solution / IDD Aerospace (Grupo American Industries, S.A. de C.V.)													
Zodiac Seat United States / Weber Aircraft (Grupo American Industries, S.A. de C.V.)													
Coahuila													
Exova de México, S.A. de C.V.													
GSC Internacional, S. de R.L. de C.V.													
Howmet de México, S. de R.L. de C.V.													
Parkway Productos de México, S. de R.L. de C.V.													
Saltillo Jet Center, S. de R.L. de C.V.													
Senior Aerospace Ketema, S.A. de C.V. (Manufacturas Zapalinamé, S.A. de C.V.)													
Unison Industries, S.A. de C.V.				·	·		·	·		·	·		·
Mexico City													
Aerovías de México, S.A. de C.V.				·	·		·	·		·	·		·
Mexicana MRO Services													
Eurocopter de México, S.A. de C.V.													
Gima Aerospace, S. de R.L. de C.V.													
Safran de México													
Senermex, Ingeniería y Sistemas, S.A. de C.V.													
Servicio Técnico Aéreo de México, S.A.													
Tata Technologies de México, S.A. de C.V.													
Durango													
Draka Durango, S. de R.L. de C.V.						·			·				
Estado de México													
Ingenieros en Aeronáutica y Arquitectos Interioristas de Aeronaves, S.A. de C.V.													
Aerovics, S.A. de C.V.													
Centro de Servicio Avemex, S.A. de C.V.													
Dupart México, S.A. de C.V.													
Henkel Capital, S.A. de C.V.													

COMPANY	Services: Maintenance, Repair & Overhaul (MRO)	Raw Material Suppliers	Testing & Certification Services	Ground Support & Air Field Equipment	Consultancy, Finance & Logistics	HR Manpower	Stock Solutions	Flight Training	Research, Design & Development (RDD)	Training Skills, Universities, Colleges & Institutes	Certifications: AS9100	AS9100B	AS9199	NADCAP	ISO 9000:2000	ISO 9001:2000	ISO 9001:2008	TS 16949:2002	FAA	DGAC	ITAR	MIL
Chihuahua																						
Forges de Bologne México												·		·						·		
Safran Engineering Services Mexico			·	·					·	·	·								·	·	·	
Servicios y Operaciones Integrales, S.A. de C.V.											·									·		
SGI de México, S.A. de C.V.																						
Sippican de México, S. de R.L. de C.V.																						
Metal Finishing Co.														·								
The Nordam Group											·			7						·		
Tighitco Latinoamérica, S.A. de C.V.												·			·					·		
Zodiac Aerosafety Systems / Air Cruisers (Grupo American Industries, S.A. de C.V.)												·								·		
Zodiac Elastomer of America / Amfuel (Grupo American Industries, S.A. de C.V.)																				·		
Zodiac Interconnect America / Icore International (Grupo American Industries, S.A. de C.V.)																				·		
Zodiac Lighting Solution / IDD Aerospace (Grupo American Industries, S.A. de C.V.)																				·		
Zodiac Seat United States / Weber Aircraft (Grupo American Industries, S.A. de C.V.)																				·		
Coahuila																						
Exova de México, S.A. de C.V.																						
GSC Internacional, S. de R.L. de C.V.																						
Howmet de México, S. de R.L. de C.V.																						
Parkway Productos de México, S. de R.L. de C.V.					·																	
Saltillo Jet Center, S. de R.L. de C.V.	·																					
Senior Aerospace Ketema, S.A. de C.V. (Manufacturas Zapalinamé, S.A. de C.V.)																						
Unison Industries, S.A. de C.V.										·									·	·		
Mexico City																						
Aerovías de México, S.A. de C.V.	·									·									·	·		
Mexicana MRO Services	·																					
Eurocopter de México, S.A. de C.V.	·																					
Gima Aerospace, S. de R.L. de C.V.																						
Safran de México																						
Senermex, Ingeniería y Sistemas, S.A. de C.V.			·		·				·	·						·						
Servicio Técnico Aéreo de México, S.A.	·																					
Tata Technologies de México, S.A. de C.V.					·	·			·	·												
Durango																						
Draka Durango, S. de R.L. de C.V.											·											
Estado de México																						
Ingenieros en Aeronáutica y Arquitectos Interioristas de Aeronaves, S.A. de C.V.	·	·																				
Aerovics, S.A. de C.V.	·															·						
Centro de Servicio Avemex, S.A. de C.V.	·	·			·	·			·										·	·		
Dupart México, S.A. de C.V.																						
Henkel Capital, S.A. de C.V.																						

7.- NDT

- • Capabilities & Certifications
- **C** Coatings
- **CHP** Chemical Processing
- **D** Design
- **E&D** Engineering & Design
- **HT** Heat Treatment
- **R+D** Research & Development
- **M** Manufacture
- **MRO** Maintenance, Repair & Overhaul
- **MT** Material Testing
- **NDT** Non-destructive Testing
- **NM&SE** Non-conventional Machining and Surface Enhancement
- **W** Welding

COMPANY	Aeroengines: Propelers / Rotors / Power Plant[1] (Parts & Components)	Fuselage: Nacelles / Pylons / Stabilizers	Aircraft Construction Assembly	Avionics<2	Landing Gear	Wings	Computer System Software / Information Systems	Electrical Power / Airborne Auxiliary Power	Electrical Cable Accessories / Harnesses	Aircraft Interior Equipment Furnishing	Autoflight Systems & Equipment	Communication Systems & Equipment	Control Systems & Equipment / Flight Controls	Fuel & Fuel Systems	Hydraulic Systems & Hydraulic Power	Indicating / Recording Systems	Safety & Survival Equipment	Air Conditioning	Fire, Ice & Rain Protection	Lights	Oxygen	Pneumatic	Vacuum	Water / Waste / Water Ballast	Windows	Central Maintenance System	Inert Gas System	Cargo & Accesory Systems	Fasteners	Space Systems & Equipment	Armament & Related Equipment: Missile Related Products	Technical Textiles	Others
Estado de México																																	
Hitchiner Manufacturing Company de México, S. de R.L. de C.V.																																	
Procesos Control Numérico Computarizado, S.A. de C.V.																																	
Raytheon Aircraft Services México, S. de R.L. de C.V.	MRO+D	MRO		MRO	MRO+D	MRO	•	•	•			MRO																					
Representaciones, Asesoría, Mantenimiento y Servicios Anexos, S.A. de C.V. (RAMSA)																																	
Indumet	M	M	M		M	M								M															M				
Tecniflex Ansorge de México y Compañía, S. en C.S. de C.V.																																	
Guanajuato																																	
Bodycote Thermal Processing México, LTD.																																	
Rototek, S. de R.L.																																	
Servicios Integrales Aeronáuticos, S.A. de C.V.	MRO									M/R+D																							
Hidalgo																																	
Aplicaciones Extraordinarias	MRO																																M
Jalisco																																	
Aeroriel, S.A. de C.V.			M																														M
Avntk, S.C.				M				M		M			M																				
Benchmark Electronics de México, S. de R.L. de C.V.				M																													
Flextronics Manufacturing México, S.A. de C.V.				M																													
Hydra Technologies de México, S.A. de C.V.	M		M	M								M																					M
Jabil Circuit de México, S. de R.L. de C.V.				M																													
Sanmina-SCI Systems de México, S.A. de C.V.																																	
Vertical Force México																																	
Zoltek de México, S.A. de C.V.																																	
Nuevo León																																	
Aeronaves Dinámicas del Norte, S.A. de C.V.																																	
Aeroservicios Técnicos Regiomontanos, S.A. de C.V.	MRO									MRO																							
Aeroservicios Especializados, S.A. de C.V. (ASESA)																																	
Alcro de México, S.A. de C.V.																																	
Aztek Technologies		M																															
Desarrollo Tecnológico de Máquinas, S.A. de C.V.																																	
EG Product Engineering Solutions, S.A. de C.V.																																	
Estampados Monterrey, S.A. de C.V.																																	
Exova de México, S.A. de C.V.																																	
EZI Metales, S.A. de C.V.		M		M																									M				
Doncasters de México, S.A. de C.V.	M				M																												
Frisa Forjados, S.A. de C.V.	M																																
Hawker Beechcraft Services de México	MRO	MRO	MRO	MRO	MRO	MRO	MRO			MRO	MRO	MRO	MRO					MRO								MRO						MRO	
Herramientas y Maquinaria de Monterrey, S.A. de C.V. (HEMAQ)	R+D	R+D																															
Hamilton Sundstrand - United Technologies Corporation								M																									

COMPANY	Machinery Manufacture - CNC & Precision Engineering / Rough / Turning	Machinery Manufacture - CNC & Precision Engineering / Rough / Milling	Machinery Manufacture - CNC & Precision Engineering / Finish / Turning	Machinery Manufacture - CNC & Precision Engineering / Finish / Honing	Computer Systems Software / MBD / CATIA V5	Computer Systems Software / MBD / CAD / CAM / CAE	Forging & Aerostructure Fabrication Forming / Forging	Labor Work / Deburring	Labor Work / Shot Peen	Labor Work / Grit Blasting (Surface Prep)	Treatment Processes / Heat Treat / Quench & Temper	Treatment Processes / Heat Treat / Stress Relieving	Treatment Processes / Heat Treat / Solution + Age	Treatment Processes / Surface Treatments / Chrome Plate	Treatment Processes / Surface Treatments / HVOF Spray	Treatment Processes / Surface Treatments / Cad Plating	Treatment Processes / Surface Treatments / MCAC	Treatment Processes / Surface Treatments / Sulfuric Anodise	Treatment Processes / Surface Treatments / Chromic Anodise	Treatment Processes / Surface Treatments / Prime & Paint
Estado de México																				
Hitchiner Manufacturing Company de México, S. de R.L. de C.V.																				
Procesos Control Numérico Computarizado, S.A. de C.V.																				
Raytheon Aircraft Services México, S. de R.L. de C.V.																				
Representaciones, Asesoría, Mantenimiento y Servicios Anexos, S.A. de C.V. (RAMSA)																				
Indumet	•	•	•	•	•	•	•	•						•				•	•	
Tecniflex Ansorge de México y Compañía, S. en C.S. de C.V.																				
Guanajuato																				
Bodycote Thermal Processing México, LTD.																				
Rototek, S. de R.L.																				
Servicios Integrales Aeronáuticos, S.A. de C.V.																				
Hidalgo																				
Aplicaciones Extraordinarias																				
Jalisco																				
Aeroriel, S.A. de C.V.																				
Avntk, S.C.																				
Benchmark Electronics de México, S. de R.L. de C.V.																				
Flextronics Manufacturing México, S.A. de C.V.																				
Hydra Technologies de México, S.A. de C.V.																				
Jabil Circuit de México, S. de R.L. de C.V.																				
Sanmina-SCI Systems de México, S.A. de C.V.																				
Vertical Force México																				
Zoltek de México, S.A. de C.V.																				
Nuevo León																				
Aeronaves Dinámicas del Norte, S.A. de C.V.																				
Aeroservicios Técnicos Regiomontanos, S.A. de C.V.																				
Aeroservicios Especializados, S.A. de C.V. (ASESA)																				
Alcro de México, S.A. de C.V.																				
Aztek Technologies	•	•	•	•		•		•												
Desarrollo Tecnológico de Máquinas, S.A. de C.V.	•	•				•														
EG Product Engineering Solutions, S.A. de C.V.						•														
Estampados Monterrey, S.A. de C.V.						•														
Exova de México, S.A. de C.V.											•	•	•							
EZI Metales, S.A. de C.V.																				•
Doncasters de México, S.A. de C.V.																				
Frisa Forjados, S.A. de C.V.	•		•		•	•	•	•		•	•	•	•							
Hawker Beechcraft Services de México																				
Herramientas y Maquinaria de Monterrey, S.A. de C.V. (HEMAQ)	•	•	•			•														
Hamilton Sundstrand - United Technologies Corporation																				

COMPANY	Testing & Certification / NDT / MPI	Testing & Certification / NDT / LPI	Testing & Certification / MCL / Acid Etch	Testing & Certification / MCL / Chemical	Testing & Certification / MCL / Mechanical	Tooling	Transformation Processes / Castings (Fundiciones) / Investment	Transformation Processes / Castings (Fundiciones) / Die	Transformation Processes / Castings (Fundiciones) / Sand	Transformation Processes / Joint Processes / Soldering & Welding	Transformation Processes / Joint Processes / Adhesives	Transformation Processes / Others (Otros)	Materials / Raw Materials / Material Range / Stainless Steel	Materials / Raw Materials / Material Range / Steel	Materials / Raw Materials / Material Range / 300M or Equivalent	Materials / Raw Materials / Material Range / Aluminum	Materials / Raw Materials / Material Range / Titanium	Materials / Raw Materials / Material Range / Delran	Materials / Raw Materials / Material Range / Composites
Estado de México																			
Hitchiner Manufacturing Company de México, S. de R.L. de C.V.																			
Procesos Control Numérico Computarizado, S.A. de C.V.																			
Raytheon Aircraft Services México, S. de R.L. de C.V.																			
Representaciones, Asesoría, Mantenimiento y Servicios Anexos, S.A. de C.V. (RAMSA)																			
Indumet	•	•		•	•	M				•			•	•		•	•		
Tecniflex Ansorge de México y Compañía, S. en C.S. de C.V.																			
Guanajuato																			
Bodycote Thermal Processing México, LTD.																			
Rototek, S. de R.L.																			
Servicios Integrales Aeronáuticos, S.A. de C.V.																			
Hidalgo																			
Aplicaciones Extraordinarias																			
Jalisco																			
Aeroriel, S.A. de C.V.																			
Avntk, S.C.																			
Benchmark Electronics de México, S. de R.L. de C.V.																			
Flextronics Manufacturing México, S.A. de C.V.																			
Hydra Technologies de México, S.A. de C.V.																			
Jabil Circuit de México, S. de R.L. de C.V.																			
Sanmina-SCI Systems de México, S.A. de C.V.																			
Vertical Force México																			
Zoltek de México, S.A. de C.V.																			
Nuevo León																			
Aeronaves Dinámicas del Norte, S.A. de C.V.																			
Aeroservicios Técnicos Regiomontanos, S.A. de C.V.																			
Aeroservicios Especializados, S.A. de C.V. (ASESA)																			
Alcro de México, S.A. de C.V.																			
Aztek Technologies													•			•			
Desarrollo Tecnológico de Máquinas, S.A. de C.V.						•													
EG Product Engineering Solutions, S.A. de C.V.													•	•		•			
Estampados Monterrey, S.A. de C.V.												•	•	•		•			
Exova de México, S.A. de C.V.		•	•	•	•														
EZI Metales, S.A. de C.V.																			
Doncasters de México, S.A. de C.V.																			
Frisa Forjados, S.A. de C.V.	•	•	•		•								•	•	•	•	•		
Hawker Beechcraft Services de México																			
Herramientas y Maquinaria de Monterrey, S.A. de C.V. (HEMAQ)																			
Hamilton Sundstrand - United Technologies Corporation																			

COMPANY	Services / Maintenance, Repair & Overhaul (MRO)	Services / Raw Material Suppliers	Services / Testing & Certification Services	Services / Ground Support & Air Field Equipment	Services / Consultancy, Finance & Logistics	Services / HR Manpower	Services / Stock Solutions	Services / Flight Training	Services / Research, Design & Development (RDD)	Services / Training Skills, Universities, Colleges & Institutes	Certifications / AS9100	Certifications / AS9100B	Certifications / AS9199	Certifications / NADCAP	Certifications / ISO 9000:2000	Certifications / ISO 9001:2000	Certifications / ISO 9001:2008	Certifications / TS 16949:2002	Certifications / FAA	Certifications / DGAC	Certifications / ITAR	Certifications / MIL
Estado de México																						
Hitchiner Manufacturing Company de México, S. de R.L. de C.V.																						
Procesos Control Numérico Computarizado, S.A. de C.V.																						
Raytheon Aircraft Services México, S. de R.L. de C.V.	•																					
Representaciones, Asesoría, Mantenimiento y Servicios Anexos, S.A. de C.V. (RAMSA)	•	•		•																		
Indumet		•					•				•						•					
Tecniflex Ansorge de México y Compañía, S. en C.S. de C.V.																						
Guanajuato																						
Bodycote Thermal Processing México, LTD.																						
Rototek, S. de R.L.	•																			•		
Servicios Integrales Aeronáuticos, S.A. de C.V.									•							•						
Hidalgo																						
Aplicaciones Extraordinarias																						
Jalisco																						
Aeroriel, S.A. de C.V.																						
Avntk, S.C.			MRO																			
Benchmark Electronics de México, S. de R.L. de C.V.											•					•		•				
Flextronics Manufacturing México, S.A. de C.V.											•											
Hydra Technologies de México, S.A. de C.V.									MRO							•						
Jabil Circuit de México, S. de R.L. de C.V.											•					•		•				
Sanmina-SCI Systems de México, S.A. de C.V.																						
Vertical Force México																						
Zoltek de México, S.A. de C.V.																						
Nuevo León																						
Aeronaves Dinámicas del Norte, S.A. de C.V.	•				•															•		
Aeroservicios Técnicos Regiomontanos, S.A. de C.V.	•				•																	
Aeroservicios Especializados, S.A. de C.V. (ASESA)	•				•																	
Alcro de México, S.A. de C.V.																						
Aztek Technologies																•						
Desarrollo Tecnológico de Máquinas, S.A. de C.V.			•		•				•	•												
EG Product Engineering Solutions, S.A. de C.V.																	•					
Estampados Monterrey, S.A. de C.V.		•																				
Exova de México, S.A. de C.V.			•											2								
EZI Metales, S.A. de C.V.											•			•			•					
Doncasters de México, S.A. de C.V.																						
Frisa Forjados, S.A. de C.V.											•	•		8		•						
Hawker Beechcraft Services de México		•				•	•														•	
Herramientas y Maquinaria de Monterrey, S.A. de C.V. (HEMAQ)					•	•			•	•	•			•			•					
Hamilton Sundstrand - United Technologies Corporation						•																

2.- NDT / MT / HT / CHP
8.- HT

- · Capabilities & Certifications
- **C** Coatings
- **CHP** Chemical Processing
- **D** Design
- **E&D** Engineering & Design
- **HT** Heat Treatment
- **R+D** Research & Development
- **M** Manufacture
- **MRO** Maintenance, Repair & Overhaul
- **MT** Material Testing
- **NDT** Non-destructive Testing
- **NM&SE** Non-conventional Machining and Surface Enhancement
- **W** Welding

COMPANY	Aeroengines: Propelers / Rotors / Power Plant[1] (Parts & Components)	Fuselage: Nacelles / Pylons / Stabilizers	Aircraft Construction Assembly	Avionics<2	Landing Gear	Wings	Computer System Software / Information Systems	Electrical Power / Airborne Auxiliary Power	Electrical Cable Accessories / Harnesses	Aircraft Interior Equipment Furnishing	Autoflight Systems & Equipment	Communication Systems & Equipment	Control Systems & Equipment / Flight Controls	Fuel & Fuel Systems	Hydraulic Systems & Hydraulic Power	Indicating / Recording Systems	Safety & Survival Equipment
Nuevo León																	
Jaiter, S.A. de C.V.	M																
Maquinados Programados																	
MD Helicopters (Monterrey Aerospace México, S. de R.L. de C.V.)		M															
Metalinspect Laboratorios																	
Metrolab, S.A. de C.V.																	
Mexcoaero	M																
Monterrey Jet Center, S.A. de C.V.	MRO			MRO						MRO							
Procesos Térmicos y Especiales de México, S. de R.L. de C.V.		M															
Schoeller Bleckmann de México, S.A. de C.V.																	
Tecnología, Procesos y Maquinados, S.A. de C.V.			M														
Transpaís Aéreo, S.A. de C.V. TPA	MRO	MRO		MRO													
Wyman Gordon Monterrey, S. de R.L. de C.V.																	
Conductores Monterrey, S.A. de C.V.								M	M								
Puebla																	
AritexCading México, S.A. de C.V.		M/R+D			M	M											
Avipro Fabricantes, S.A. de C.V.		M	M														
Querétaro																	
A.E. Petsche Co. (Grupo American Industries, S.A. de C.V.)								M	M								
Aernnova Aerospace México, S.A. de C.V. (Aernnova Aerospace / Aernnova México)		M	M			M											
Aernnova Componentes México, S.A. de C.V.		M	M														
Axon Interconex, S.A. de C.V.								M/R+D	M								
Bombardier Aerospace México, S.A. de C.V.	M	M		M				M	M			M					
Brovedani Reme México																	
Crio, S.A. de C.V.																	
Dishon Limited																	
Elimco Prettl Aerospace, S.A. de C.V.								M	M/R+D								
Ellison Surface Technologies																	
Especialistas en Turbo Partes División Aeronáutica, S.A. de C.V.					M												
Especialistas en Turbo Partes, S.A. de C.V. (División Aeronáutica)					M												
Eurocopter de México Planta Querétaro, S.A. de C.V.																	
Centro de Ingeniería Avanzada en Turbomáquinas, S. de R.L. de C.V. (GE-IQ)	M																
PCC Aerostructures México, S.A. de C.V.		M															
Hyrsa American Steel Crowners																	
Industria de Tuberías Aeronáuticas, S.A. de C.V.	MRO			MRO	M												
ITP Ingeniería y Fabricación, S.A. de C.V.	M																
Kuo Aerospace, S.A. de C.V.					M												
Mecanizados de Alta Calidad, S.A. de C.V.																	
Meggitt Aircraft Braking Systems Querétaro, S. de R.L. de C.V.									M								

COMPANY	Air Conditioning	Fire, Ice & Rain Protection	Lights	Oxygen	Pneumatic	Vacuum	Water / Waste / Water Ballast	Windows	Central Maintenance System	Inert Gas System	Cargo & Accesory Systems	Fasteners	Space Systems & Equipment	Armament & Related Equipment: Missile Related Products	Technical Textiles	Others
Nuevo León																
Jaiter, S.A. de C.V.																
Maquinados Programados																
MD Helicopters (Monterrey Aerospace México, S. de R.L. de C.V.)																·
Metalinspect Laboratorios																
Metrolab, S.A. de C.V.																
Mexcoaero																
Monterrey Jet Center, S.A. de C.V.												M				·
Procesos Térmicos y Especiales de México, S. de R.L. de C.V.																
Schoeller Bleckmann de México, S.A. de C.V.																
Tecnología, Procesos y Maquinados, S.A. de C.V.																
Transpaís Aéreo, S.A. de C.V. TPA																
Wyman Gordon Monterrey, S. de R.L. de C.V.																
Conductores Monterrey, S.A. de C.V.																
Puebla																
AritexCading México, S.A. de C.V.								M								
Avipro Fabricantes, S.A. de C.V.																
Querétaro																
A.E. Petsche Co. (Grupo American Industries, S.A. de C.V.)																
Aernnova Aerospace México, S.A. de C.V. (Aernnova Aerospace / Aernnova México)																
Aernnova Componentes México, S.A. de C.V.																
Axon Interconex, S.A. de C.V.																
Bombardier Aerospace México, S.A. de C.V.																
Brovedani Reme México																
Crio, S.A. de C.V.																
Dishon Limited																
Elimco Prettl Aerospace, S.A. de C.V.																
Ellison Surface Technologies																
Especialistas en Turbo Partes División Aeronáutica, S.A. de C.V.																
Especialistas en Turbo Partes, S.A. de C.V. (División Aeronáutica)																
Eurocopter de México Planta Querétaro, S.A. de C.V.																M
Centro de Ingeniería Avanzada en Turbomáquinas, S. de R.L. de C.V. (GE-IQ)																
PCC Aerostructures México, S.A. de C.V.																M
Hyrsa American Steel Crowners																
Industria de Tuberías Aeronáuticas, S.A. de C.V.																
ITP Ingeniería y Fabricación, S.A. de C.V.																
Kuo Aerospace, S.A. de C.V.																
Mecanizados de Alta Calidad, S.A. de C.V.																
Meggitt Aircraft Braking Systems Querétaro, S. de R.L. de C.V.																M

COMPANY	Machinery Manufacture - CNC & Precision Engineering: Rough – Turning	Machinery Manufacture - CNC & Precision Engineering: Rough – Milling	Machinery Manufacture - CNC & Precision Engineering: Finish – Turning	Machinery Manufacture - CNC & Precision Engineering: Finish – Honing	Computer Systems Software: MBD – CATIA V5	Computer Systems Software: MBD – CAD / CAM / CAE	Forging & Aerostructure Fabrication Forming – Forging	Labor Work – Deburring	Labor Work – Shot Peen	Labor Work – Grit Blasting (Surface Prep)
Nuevo León										
Jaiter, S.A. de C.V.	·	·	·	·						
Maquinados Programados										
MD Helicopters (Monterrey Aerospace México, S. de R.L. de C.V.)										
Metalinspect Laboratorios										
Metrolab, S.A. de C.V.										
Mexcoaero	·	·	·							
Monterrey Jet Center, S.A. de C.V.										
Procesos Térmicos y Especiales de México, S. de R.L. de C.V.	·	·	·		·	·		·		
Schoeller Bleckmann de México, S.A. de C.V.	·		·	·	·	·		·		
Tecnología, Procesos y Maquinados, S.A. de C.V.	·	·	·		·	·				
Transpaís Aéreo, S.A. de C.V. TPA										
Wyman Gordon Monterrey, S. de R.L. de C.V.										
Conductores Monterrey, S.A. de C.V.										
Puebla										
AritexCading México, S.A. de C.V.							·			
Avipro Fabricantes, S.A. de C.V.										
Querétaro										
A.E. Petsche Co. (Grupo American Industries, S.A. de C.V.)										
Aernnova Aerospace México, S.A. de C.V. (Aernnova Aerospace / Aernnova México)		·			·				·	
Aernnova Componentes México, S.A. de C.V.										
Axon Interconex, S.A. de C.V.										
Bombardier Aerospace México, S.A. de C.V.										
Brovedani Reme México	·	·	·	·	·	·				
Crio, S.A. de C.V.										
Dishon Limited										
Elimco Prettl Aerospace, S.A. de C.V.										
Ellison Surface Technologies										
Especialistas en Turbo Partes División Aeronáutica, S.A. de C.V.	·	·		·	·	·		·		
Especialistas en Turbo Partes, S.A. de C.V. (División Aeronáutica)										
Eurocopter de México Planta Querétaro, S.A. de C.V.					·	·			·	
Centro de Ingeniería Avanzada en Turbomáquinas, S. de R.L. de C.V. (GE-IQ)										
PCC Aerostructures México, S.A. de C.V.		·								
Hyrsa American Steel Crowners	·	·	·	·						
Industria de Tuberías Aeronáuticas, S.A. de C.V.										
ITP Ingeniería y Fabricación, S.A. de C.V.	·	·	·	·	·	·				
Kuo Aerospace, S.A. de C.V.	·	·	·	·	·	·				
Mecanizados de Alta Calidad, S.A. de C.V.										
Meggitt Aircraft Braking Systems Querétaro, S. de R.L. de C.V.	·	·	·							

COMPANY	Treatment Processes: Heat Treat – Quench & Temper	Heat Treat – Stress Relieving	Heat Treat – Solution + Age	Surface Treatments – Chrome Plate	Surface Treatments – HVOF Spray	Surface Treatments – Cad Plating	Surface Treatments – MCAC	Surface Treatments – Sulfuric Anodise	Surface Treatments – Chromic Anodise	Surface Treatments – Prime & Paint	Testing & Certification: NDT – MPI	NDT – LPI	NDT – Acid Etch	MCL – Chemical	MCL – Mechanical	Tooling
Nuevo León																
Jaiter, S.A. de C.V.																
Maquinados Programados																
MD Helicopters (Monterrey Aerospace México, S. de R.L. de C.V.)																
Metalinspect Laboratorios													·	·	·	
Metrolab, S.A. de C.V.																
Mexcoaero																
Monterrey Jet Center, S.A. de C.V.										MRO	MRO					
Procesos Térmicos y Especiales de México, S. de R.L. de C.V.	·	·	·		·			·		·	·	·	·			
Schoeller Bleckmann de México, S.A. de C.V.																
Tecnología, Procesos y Maquinados, S.A. de C.V.																
Transpaís Aéreo, S.A. de C.V. TPA																
Wyman Gordon Monterrey, S. de R.L. de C.V.																
Conductores Monterrey, S.A. de C.V.																
Puebla																
AritexCading México, S.A. de C.V.				·					·	·						M/R+D
Avipro Fabricantes, S.A. de C.V.																
Querétaro																
A.E. Petsche Co. (Grupo American Industries, S.A. de C.V.)																
Aernnova Aerospace México, S.A. de C.V. (Aernnova Aerospace / Aernnova México)	·	·	·					·	·			·				
Aernnova Componentes México, S.A. de C.V.																
Axon Interconex, S.A. de C.V.																
Bombardier Aerospace México, S.A. de C.V.																
Brovedani Reme México																
Crio, S.A. de C.V.	·	·														
Dishon Limited																
Elimco Prettl Aerospace, S.A. de C.V.																
Ellison Surface Technologies																
Especialistas en Turbo Partes División Aeronáutica, S.A. de C.V.																
Especialistas en Turbo Partes, S.A. de C.V. (División Aeronáutica)																
Eurocopter de México Planta Querétaro, S.A. de C.V.								·	·	·	·	·				
Centro de Ingeniería Avanzada en Turbomáquinas, S. de R.L. de C.V. (GE-IQ)																
PCC Aerostructures México, S.A. de C.V.																
Hyrsa American Steel Crowners				·	·	·										
Industria de Tuberías Aeronáuticas, S.A. de C.V.																
ITP Ingeniería y Fabricación, S.A. de C.V.								·	·	·	·	·	·	·	·	
Kuo Aerospace, S.A. de C.V.																
Mecanizados de Alta Calidad, S.A. de C.V.																
Meggitt Aircraft Braking Systems Querétaro, S. de R.L. de C.V.																

COMPANY	Transformation Processes: Castings (Fundiciones) – Investment	Castings – Die	Castings – Sand	Joint Processes – Soldering & Welding	Joint Processes – Adhesives	Others (Otros)	Materials: Raw Materials / Material Range – Stainless Steel	Steel	300M or Equivalent	Aluminum	Titanium	Delran	Composites
Nuevo León													
Jaiter, S.A. de C.V.							·	·		·	·		
Maquinados Programados													
MD Helicopters (Monterrey Aerospace México, S. de R.L. de C.V.)													·
Metalinspect Laboratorios													
Metrolab, S.A. de C.V.													
Mexcoaero							·			·			
Monterrey Jet Center, S.A. de C.V.													
Procesos Térmicos y Especiales de México, S. de R.L. de C.V.							·			·	·		
Schoeller Bleckmann de México, S.A. de C.V.							·	·				·	
Tecnología, Procesos y Maquinados, S.A. de C.V.				·			·			·	·		
Transpaís Aéreo, S.A. de C.V. TPA													
Wyman Gordon Monterrey, S. de R.L. de C.V.													
Conductores Monterrey, S.A. de C.V.													
Puebla													
AritexCading México, S.A. de C.V.				·			·	·		·			
Avipro Fabricantes, S.A. de C.V.													
Querétaro													
A.E. Petsche Co. (Grupo American Industries, S.A. de C.V.)													
Aernnova Aerospace México, S.A. de C.V. (Aernnova Aerospace / Aernnova México)										·	·		·
Aernnova Componentes México, S.A. de C.V.													
Axon Interconex, S.A. de C.V.				·									
Bombardier Aerospace México, S.A. de C.V.													·
Brovedani Reme México													
Crio, S.A. de C.V.													
Dishon Limited													
Elimco Prettl Aerospace, S.A. de C.V.													
Ellison Surface Technologies													
Especialistas en Turbo Partes División Aeronáutica, S.A. de C.V.							·			·	·		
Especialistas en Turbo Partes, S.A. de C.V. (División Aeronáutica)													
Eurocopter de México Planta Querétaro, S.A. de C.V.							·			·	·		
Centro de Ingeniería Avanzada en Turbomáquinas, S. de R.L. de C.V. (GE-IQ)													
PCC Aerostructures México, S.A. de C.V.													
Hyrsa American Steel Crowners							·	·	·	·	·		
Industria de Tuberías Aeronáuticas, S.A. de C.V.													
ITP Ingeniería y Fabricación, S.A. de C.V.													
Kuo Aerospace, S.A. de C.V.								·		·	·		
Mecanizados de Alta Calidad, S.A. de C.V.													
Meggitt Aircraft Braking Systems Querétaro, S. de R.L. de C.V.													

COMPANY	Services: Maintenance, Repair & Overhaul (MRO)	Raw Material Suppliers	Testing & Certification Services	Ground Support & Air Field Equipment	Consultancy, Finance & Logistics	HR Manpower	Stock Solutions	Flight Training	Research, Design & Development (RDD)	Training Skills, Universities, Colleges & Institutes
Nuevo León										
Jaiter, S.A. de C.V.										
Maquinados Programados										
MD Helicopters (Monterrey Aerospace México, S. de R.L. de C.V.)	·				·					
Metalinspect Laboratorios			·							
Metrolab, S.A. de C.V.										
Mexcoaero										
Monterrey Jet Center, S.A. de C.V.	·		·						·	
Procesos Térmicos y Especiales de México, S. de R.L. de C.V.										
Schoeller Bleckmann de México, S.A. de C.V.										
Tecnología, Procesos y Maquinados, S.A. de C.V.										
Transpaís Aéreo, S.A. de C.V. TPA										
Wyman Gordon Monterrey, S. de R.L. de C.V.										
Conductores Monterrey, S.A. de C.V.										
Puebla										
AritexCading México, S.A. de C.V.										
Avipro Fabricantes, S.A. de C.V.		M			M		M			
Querétaro										
A.E. Petsche Co. (Grupo American Industries, S.A. de C.V.)										
Aernnova Aerospace México, S.A. de C.V. (Aernnova Aerospace / Aernnova México)										
Aernnova Componentes México, S.A. de C.V.										
Axon Interconex, S.A. de C.V.										M
Bombardier Aerospace México, S.A. de C.V.										
Brovedani Reme México										
Crio, S.A. de C.V.										
Dishon Limited										
Elimco Prettl Aerospace, S.A. de C.V.										
Ellison Surface Technologies										
Especialistas en Turbo Partes División Aeronáutica, S.A. de C.V.										
Especialistas en Turbo Partes, S.A. de C.V. (División Aeronáutica)										
Eurocopter de México Planta Querétaro, S.A. de C.V.										
Centro de Ingeniería Avanzada en Turbomáquinas, S. de R.L. de C.V. (GE-IQ)						·			·	·
PCC Aerostructures México, S.A. de C.V.										
Hyrsa American Steel Crowners									·	
Industria de Tuberías Aeronáuticas, S.A. de C.V.										
ITP Ingeniería y Fabricación, S.A. de C.V.										
Kuo Aerospace, S.A. de C.V.										
Mecanizados de Alta Calidad, S.A. de C.V.										
Meggitt Aircraft Braking Systems Querétaro, S. de R.L. de C.V.										

COMPANY	Certifications: AS9'00	AS9'00B	AS9'99	NADCAP	ISO 9000:2000	ISO 900':2000	ISO 900':2008	TS '6949:2002	FAA	DGAC	ITAR	MIL
Nuevo León												
Jaiter, S.A. de C.V.	·						·					
Maquinados Programados												
MD Helicopters (Monterrey Aerospace México, S. de R.L. de C.V.)	·			·								
Metalinspect Laboratorios				·								
Metrolab, S.A. de C.V.												
Mexcoaero								·				
Monterrey Jet Center, S.A. de C.V.												
Procesos Térmicos y Especiales de México, S. de R.L. de C.V.	·			9								·
Schoeller Bleckmann de México, S.A. de C.V.		·										
Tecnología, Procesos y Maquinados, S.A. de C.V.	·						·					
Transpaís Aéreo, S.A. de C.V. TPA												
Wyman Gordon Monterrey, S. de R.L. de C.V.												
Conductores Monterrey, S.A. de C.V.	·						·					
Puebla												
AritexCading México, S.A. de C.V.									·			
Avipro Fabricantes, S.A. de C.V.												
Querétaro												
A.E. Petsche Co. (Grupo American Industries, S.A. de C.V.)	·						·					
Aernnova Aerospace México, S.A. de C.V. (Aernnova Aerospace / Aernnova México)				5			·			·		
Aernnova Componentes México, S.A. de C.V.												
Axon Interconex, S.A. de C.V.							·					
Bombardier Aerospace México, S.A. de C.V.							·					
Brovedani Reme México							·	·				
Crio, S.A. de C.V.							·					
Dishon Limited												
Elimco Prettl Aerospace, S.A. de C.V.		·					·					
Ellison Surface Technologies												
Especialistas en Turbo Partes División Aeronáutica, S.A. de C.V.		·					·					
Especialistas en Turbo Partes, S.A. de C.V. (División Aeronáutica)												
Eurocopter de México Planta Querétaro, S.A. de C.V.				10			·	·				
Centro de Ingeniería Avanzada en Turbomáquinas, S. de R.L. de C.V. (GE-IQ)												
PCC Aerostructures México, S.A. de C.V.							·					
Hyrsa American Steel Crowners												
Industria de Tuberías Aeronáuticas, S.A. de C.V.												
ITP Ingeniería y Fabricación, S.A. de C.V.					·				·			
Kuo Aerospace, S.A. de C.V.					·							
Mecanizados de Alta Calidad, S.A. de C.V.												
Meggitt Aircraft Braking Systems Querétaro, S. de R.L. de C.V.							·					

5.- NDT / HT / CHP, **9.-** HT / CHP
10.- NDT / CHP

- **•** Capabilities & Certifications
- **C** Coatings
- **CHP** Chemical Processing
- **D** Design
- **E&D** Engineering & Design
- **HT** Heat Treatment
- **R+D** Research & Development
- **M** Manufacture
- **MRO** Maintenance, Repair & Overhaul
- **MT** Material Testing
- **NDT** Non-destructive Testing
- **NM&SE** Non-conventional Machining and Surface Enhancement
- **W** Welding

COMPANY	Aeroengines: Propelers / Rotors / Power Plant[1] (Parts & Components)	Fuselage: Nacelles / Pylons / Stabilizers	Aircraft Construction Assembly	Avionics<2	Landing Gear	Wings	Computer System Software / Information Systems	Electrical Power / Airborne Auxiliary Power	Electrical Cable Accessories / Harnesses	Aircraft Interior Equipment Furnishing	Autoflight Systems & Equipment	Communication Systems & Equipment	Control Systems & Equipment / Flight Controls	Fuel & Fuel Systems	Hydraulic Systems & Hydraulic Power	Indicating / Recording Systems	Safety & Survival Equipment	Air Conditioning	Fire, Ice & Rain Protection	Lights	Oxygen	Pneumatic	Vacuum	Water / Waste / Water Ballast	Windows	Central Maintenance System	Inert Gas System	Cargo & Accesory Systems	Fasteners	Space Systems & Equipment	Armament & Related Equipment: Missile Related Products	Technical Textiles	Others
Querétaro																																	
Messier Bugatti-Dowty México, S.A. de C.V.		M			M																												
Messier Services Americas, S.A. de C.V.	M				MRO										MRO																		
Navair de México, S. de R.L. de C.V.								M/R+D	M/R+D																								
Outsourcing Engineering Services, S.A. de C.V.																																	
Qet Tech Aerospace, S.A. de C.V.																																	
Snecma America Engine Services, S.A. de C.V. (Grupo Safran)	M/MRO																																
Snecma México, S.A. de C.V. (Grupo Safran)	M																																
Southwest United Galnik, S.A. de C.V.																																	
Tecnum Service, S.A. de C.V.					M																												
Thyssenkrupp Aerospace México																																	M
Turborreactores, S.A. de C.V.	M/MRO/R+D			R+D	M				R+D					R+D	M/R+D																		
Curtiss Wright Controls Flight Systems México													M																				
González Aerospace																																	
San Luis Potosí																																	
Aearo Technologies de México, S.A. de C.V.		M																															•
Comercializadora del Centro Bonanza, S.A. de C.V.																																	
GKN Aerospace San Luis Potosí, S. de R.L. de C.V.																																	
Hitchiner Manufacturing Company de México, S. de R.L. de C.V.	M																																
Tighitco Latinoamérica, S.A. de C.V.	M	M								M				M			M												M			M	•
Sonora																																	
Acra Aerospace	M																																
Aerocast International																																	
PRV Aerospace de México																																	
American Precision Assemblers	M								M																								
Amphenol Optimize México, S.A. de C.V.								M	M																						M		
Arrow Electronics								M	M																								
BAE Systems Products Group		M							M	M																			M				
Benchmark Electronics Precision Technologies	M							M	M																								
Be Aerospace						M				M																							
Belden de Sonora, S.A. de C.V.			M					M	M																								
Bodycote																																	
Bosch - División de Sistemas de Seguridad												M																					
CRM Advanced Manufacturing	M								M																								
Curtiss-Wright Controls de México, S.A. de C.V.								M																							M		
Daher Aerospace, S.A. de C.V.		M				M/E&D				M																							
Ducommun AeroStructures México	M	M/E&D	M/E&D			M/E&D		M/E&D		M/E&D																					M/E&D		
Ellison Surface Technologies																																	
ESCO - Turbines Technology México	M							M																									

COMPANY	Machinery Manufacture - CNC & Precision Engineering: Rough: Turning	Rough: Milling	Machinery Manufacture - CNC & Precision Engineering: Finish: Turning	Finish: Honing	Computer Systems Software: MBD: CATIA V5	MBD: CAD / CAM / CAE	Forging & Aerostructure Fabrication Forming: Forging	Labor Work: Deburring	Labor Work: Shot Peen	Labor Work: Grit Blasting (Surface Prep)	Treatment Processes: Heat Treat: Quench & Temper	Heat Treat: Stress Relieving	Heat Treat: Solution + Age	Surface Treatments: Chrome Plate	Surface Treatments: HVOF Spray	Surface Treatments: Cad Plating	Surface Treatments: MCAC	Surface Treatments: Sulfuric Anodise	Surface Treatments: Chromic Anodise	Surface Treatments: Prime & Paint	Testing & Certification: NDT: MPI	NDT: LPI	NDT: Acid Etch	MCL: Chemical	MCL: Mechanical	Tooling	Transformation Processes: Castings (Fundiciones): Investment	Castings: Die	Castings: Sand	Joint Processes: Soldering & Welding	Joint Processes: Adhesives	Others (Otros)
Querétaro																																
Messier Bugatti-Dowty México, S.A. de C.V.																																
Messier Services Americas, S.A. de C.V.	•	•	•		•	•			•	•	•								•	•												
Navair de México, S. de R.L. de C.V.																																
Outsourcing Engineering Services, S.A. de C.V.																																
Qet Tech Aerospace, S.A. de C.V.																																
Snecma America Engine Services, S.A. de C.V. (Grupo Safran)																																
Snecma México, S.A. de C.V. (Grupo Safran)																							•									
Southwest United Galnik, S.A. de C.V.									•					•		•	•	•	•	•		•		•								
Tecnum Service, S.A. de C.V.																																
Thyssenkrupp Aerospace México		•				•																										
Turborreactores, S.A. de C.V.	•	•	•	•	•	•	•	•													•	•	•			M/R+D						
Curtiss Wright Controls Flight Systems México	•	•	•	•	•	•																										
González Aerospace																										M						
San Luis Potosí																																
Aearo Technologies de México, S.A. de C.V.																																•
Comercializadora del Centro Bonanza, S.A. de C.V.																																
GKN Aerospace San Luis Potosí, S. de R.L. de C.V.																																
Hitchiner Manufacturing Company de México, S. de R.L. de C.V.																																
Tighitco Latinoamérica, S.A. de C.V.					•	•	•	•			•		•						•	•		•									•	
Sonora																																
Acra Aerospace																																
Aerocast International																																
PRV Aerospace de México																																
American Precision Assemblers																																
Amphenol Optimize México, S.A. de C.V.																																
Arrow Electronics																																
BAE Systems Products Group																																
Benchmark Electronics Precision Technologies																					•											
Be Aerospace																																
Belden de Sonora, S.A. de C.V.																																
Bodycote																																•
Bosch - División de Sistemas de Seguridad																																
CRM Advanced Manufacturing																																
Curtiss-Wright Controls de México, S.A. de C.V.																																
Daher Aerospace, S.A. de C.V.																																•
Ducommun AeroStructures México																																
Ellison Surface Technologies																																
ESCO - Turbines Technology México																																

COMPANY	Materials: Raw Materials: Material Range: Stainless Steel	Steel	300M or Equivalent	Aluminum	Titanium	Delran	Composites	Services: Maintenance, Repair & Overhaul (MRO)	Raw Material Suppliers	Testing & Certification Services	Ground Support & Air Field Equipment	Consultancy, Finance & Logistics	HR Manpower	Stock Solutions	Flight Training	Research, Design & Development (RDD)	Training Skills, Universities, Colleges & Institutes	Certifications: AS9100	AS9100B	AS9199	NADCAP	ISO 9000:2000	ISO 9001:2000	ISO 9001:2008	TS 16949:2002	FAA	DGAC	ITAR	MIL
Querétaro																													
Messier Bugatti-Dowty México, S.A. de C.V.																								•					
Messier Services Americas, S.A. de C.V.								•																		•	•		
Navair de México, S. de R.L. de C.V.																								•					
Outsourcing Engineering Services, S.A. de C.V.																													
Qet Tech Aerospace, S.A. de C.V.																													
Snecma America Engine Services, S.A. de C.V. (Grupo Safran)								•																		•	•		
Snecma México, S.A. de C.V. (Grupo Safran)																								•					
Southwest United Galnik, S.A. de C.V.				•	•																5								
Tecnum Service, S.A. de C.V.																								•					
Thyssenkrupp Aerospace México	•	•		•	•	•												•						•					
Turborreactores, S.A. de C.V.	•	•	•	•	•	•	•	•											•								•		
Curtiss Wright Controls Flight Systems México		•		•																				•					
González Aerospace																								•					
San Luis Potosí																													
Aearo Technologies de México, S.A. de C.V.							•																•						
Comercializadora del Centro Bonanza, S.A. de C.V.																													
GKN Aerospace San Luis Potosí, S. de R.L. de C.V.																		•					•						
Hitchiner Manufacturing Company de México, S. de R.L. de C.V.									M																				
Tighitco Latinoamérica, S.A. de C.V.				•			•												•		5		•				•		
Sonora																													
Acra Aerospace																			•					•					
Aerocast International																													
PRV Aerospace de México																					•								
American Precision Assemblers																	•					•							
Amphenol Optimize México, S.A. de C.V.																	•					•			•				
Arrow Electronics																	•					•	•						
BAE Systems Products Group																•	•				•								
Benchmark Electronics Precision Technologies																			•			•	•	•					
Be Aerospace																	•												
Belden de Sonora, S.A. de C.V.																					•		•						
Bodycote																													
Bosch - División de Sistemas de Seguridad																													
CRM Advanced Manufacturing																													
Curtiss-Wright Controls de México, S.A. de C.V.																	•				•		•						
Daher Aerospace, S.A. de C.V.												•					•		•		•		•			•			
Ducommun AeroStructures México																	•		•		1		•	•					
Ellison Surface Technologies																	•				•		•						
ESCO - Turbines Technology México																	•		•		•	•	•						

1.- NDT / HT / CHP / W
5.- NDT / HT / CHP

- • Capabilities & Certifications
- **C** Coatings
- **CHP** Chemical Processing
- **D** Design
- **E&D** Engineering & Design
- **HT** Heat Treatment
- **R+D** Research & Development
- **M** Manufacture
- **MRO** Maintenance, Repair & Overhaul
- **MT** Material Testing
- **NDT** Non-destructive Testing
- **NM&SE** Non-conventional Machining and Surface Enhancement
- **W** Welding

COMPANY	Aeroengines: Propelers / Rotors / Power Plant[1] (Parts & Components)	Fuselage: Nacelles / Pylons / Stabilizers	Aircraft Construction Assembly	Avionics[2]	Landing Gear	Wings	Computer System Software / Information Systems	Electrical Power / Airborne Auxiliary Power	Electrical Cable Accessories / Harnesses	Aircraft Interior Equipment Furnishing	Autoflight Systems & Equipment	Communication Systems & Equipment	Control Systems & Equipment / Flight Controls	Fuel & Fuel Systems	Hydraulic Systems & Hydraulic Power	Indicating / Recording Systems	Safety & Survival Equipment	Air Conditioning	Fire, Ice & Rain Protection	Lights	Oxygen	Pneumatic	Vacuum	Water / Waste / Water Ballast	Windows	Central Maintenance System	Inert Gas System	Cargo & Accessory Systems	Fasteners	Space Systems & Equipment	Armament & Related Equipment: Missile Related Products	Technical Textiles	Others
Sonora																																	
Federal Electronics																																	
G.S. Precision, Inc.	M																																
Goodrich Engine Components, Blades & Vanes	M/E&D	M/E&D							M/E&D	M/E&D																					M		
Griffith Enterprises, Inc.								M	M/E&D				M/E&D																				
Horst Engineering de México	M									M							M												M				
Integrated Magnetics de México	M							M																					M				
Incertec								M	M																								
ITT Cannon de México, S.A. de C.V.			M					M				M	M																				
JJ Churchill Ltd. Precision Engineering	M																																
Latecoere		M							M																								
BF&S - Manufacturas y Ensambles Fernández y Asociados (Planta Agua Prieta)									M																								
BF&S - Manufacturas y Ensambles Fernández y Asociados (Planta Cumpas)									M																								
National Manufacturing México																																	
North American InterConnect								M																									
Paradigm Precision	M/MRO/E&D				M																												
Parker Hannifin Aerospace									M					M	M														M				
Pencom CSS de México, S. de R.L. de C.V.			M																														
Pinnacle Aerospace	E&D																																
Precision Products de México									M																								
Quantum Metal																																	
Radiall (Sonora S. Plan, S.A. de C.V.)	M/MRO/E&D		M					M	M																								
Sargent Aerospace México			M/MRO/E&D												M/MRO/E&D																		
Semco Instruments, Inc.		M	M					M	M																								
Thermax Wire Corp.									M																								
Trac Tools de México	M																																
TE Connectivity (antes Tyco Electronics)								M	M																								
Vermillion de México		M							M																								
Williams International	M/E&D	M/E&D																															
Winchester Electronics (Sonitronies, S.A. de C.V.)																																	
Windtech, Inc.																																	
Tamaulipas																																	
Ametek Lamb Motores de México, S.A. de C.V.	M							M	M																								
Chromalloy Dallas - Mexico, S.A. de C.V.	M							M																									
Cinch Connectors de México, S.A. de C.V.								M	M																								
Corning Cable Systems, S.A. de C.V.									M																								
Eaton Controls, S. de R.L. de C.V.								M																									
G. Shank, Inc.																																	M
Kearfott Precisiones Generales de México, S.A. de C.V.								M	M				M																		M		

COMPANY	Machinery Manufacture - CNC & Precision Engineering, Rough: Turning	Rough: Milling	Machinery Manufacture - CNC & Precision Engineering, Finish: Turning	Finish: Honing	Computer Systems Software, MBD: CATIA V5	MBD: CAD / CAM / CAE	Forging & Aerostructure Fabrication Forming: Forging	Labor Work: Deburring	Shot Peen	Grit Blasting (Surface Prep)	Treatment Processes, Heat Treat: Quench & Temper	Heat Treat: Stress Relieving	Heat Treat: Solution + Age	Surface Treatments: Chrome Plate	HVOF Spray	Cad Plating	MCAC	Sulfuric Anodise	Chromic Anodise	Prime & Paint	Testing & Certification, NDT: MPI	NDT: LPI	NDT: Acid Etch	MCL: Chemical	MCL: Mechanical	Tooling	Transformation Processes, Castings (Fundiciones): Investment	Castings: Die	Castings: Sand	Joint Processes: Soldering & Welding	Joint Processes: Adhesives	Joint Processes: Others (Otros)	Materials, Raw Materials: Stainless Steel	Steel	300M or Equivalent	Material Range: Aluminum	Titanium	Delran	Composites
Sonora																																							
Federal Electronics																																							
G.S. Precision, Inc.																																							
Goodrich Engine Components, Blades & Vanes																																							
Griffith Enterprises, Inc.																																							
Horst Engineering de México																																							
Integrated Magnetics de México																																							
Incertec																																							
ITT Cannon de México, S.A. de C.V.																																							
JJ Churchill Ltd. Precision Engineering																																							
Latecoere																																							
BF&S - Manufacturas y Ensambles Fernández y Asociados (Planta Agua Prieta)																																							
BF&S - Manufacturas y Ensambles Fernández y Asociados (Planta Cumpas)																																							
National Manufacturing México																																							
North American InterConnect																																							
Paradigm Precision																				•																			
Parker Hannifin Aerospace				•																																			
Pencom CSS de México, S. de R.L. de C.V.																																							
Pinnacle Aerospace																																							
Precision Products de México																																							
Quantum Metal																																							
Radiall (Sonora S. Plan, S.A. de C.V.)	•	•	•	•								•	•								•	•																	
Sargent Aerospace México																																							
Semco Instruments, Inc.																																							
Thermax Wire Corp.																																							
Trac Tools de México																																							
TE Connectivity (antes Tyco Electronics)																																							
Vermillion de México																																							
Williams International																																							
Winchester Electronics (Sonitronies, S.A. de C.V.)																																							
Windtech, Inc.																																							
Tamaulipas																																							
Ametek Lamb Motores de México, S.A. de C.V.																																							
Chromalloy Dallas - Mexico, S.A. de C.V.																																							
Cinch Connectors de México, S.A. de C.V.																																							
Corning Cable Systems, S.A. de C.V.					•	•																																	
Eaton Controls, S. de R.L. de C.V.					•	•																																	
G. Shank, Inc.																																							
Kearfott Precisiones Generales de México, S.A. de C.V.																																							

COMPANY	Services: Maintenance, Repair & Overhaul (MRO)	Raw Material Suppliers	Testing & Certification Services	Ground Support & Air Field Equipment	Consultancy, Finance & Logistics	HR Manpower	Stock Solutions	Flight Training	Research, Design & Development (RDD)	Training Skills, Universities, Colleges & Institutes	Certifications: AS9'00	AS9'00B	AS9'99	NADCAP	ISO 9000:2000	ISO 900°:2000	ISO 900°:2008	TS °6949:2002	FAA	DGAC	ITAR	MIL
Sonora																						
Federal Electronics																						
G.S. Precision, Inc.										•		•		3		•						
Goodrich Engine Components, Blades & Vanes										•				•		•			•			•
Griffith Enterprises, Inc.				M/E&D						•		•		•		•			•			•
Horst Engineering de México										•		•					•					
Integrated Magnetics de México												•					•					
Incertec														10		•					•	
ITT Cannon de México, S.A. de C.V.						•				•				4	•		•	•				
JJ Churchill Ltd. Precision Engineering																						
Latecoere																						
BF&S - Manufacturas y Ensambles Fernández y Asociados (Planta Agua Prieta)										•												
BF&S - Manufacturas y Ensambles Fernández y Asociados (Planta Cumpas)																						
National Manufacturing México																						
North American InterConnect																						
Paradigm Precision																						
Parker Hannifin Aerospace									•					7		•						
Pencom CSS de México, S. de R.L. de C.V.														•		•						
Pinnacle Aerospace										•												
Precision Products de México									•	•												
Quantum Metal																						
Radiall (Sonora S. Plan, S.A. de C.V.)		M							•	•		•		3		•						
Sargent Aerospace México																•						
Semco Instruments, Inc.																						
Thermax Wire Corp.																						
Trac Tools de México																						
TE Connectivity (antes Tyco Electronics)																						
Vermillion de México																						
Williams International																						
Winchester Electronics (Sonitronies, S.A. de C.V.)																						
Windtech, Inc.																						
Tamaulipas																						
Ametek Lamb Motores de México, S.A. de C.V.	•										•				•			•				
Chromalloy Dallas - Mexico, S.A. de C.V.	•																		•			
Cinch Connectors de México, S.A. de C.V.																						
Corning Cable Systems, S.A. de C.V.											•			6								
Eaton Controls, S. de R.L. de C.V.											•			6								
G. Shank, Inc.																						
Kearfott Precisiones Generales de México, S.A. de C.V.											•					•						

3.- NDT /HT / CHP / NM&SE, **4.-** C / W / NM&SE, **7.-** NDT
6.- NDT / HT / C / W, **10.-** NDT / CHP

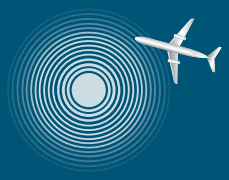
- **·** Capabilities & Certifications
- **C** Coatings
- **CHP** Chemical Processing
- **D** Design
- **E&D** Engineering & Design
- **HT** Heat Treatment
- **R+D** Research & Development
- **M** Manufacture
- **MRO** Maintenance, Repair & Overhaul
- **MT** Material Testing
- **NDT** Non-destructive Testing
- **NM&SE** Non-conventional Machining and Surface Enhancement
- **W** Welding

COMPANY	Aeroengines: Propelers / Rotors / Power Plant[1] (Parts & Components)	Fuselage: Nacelles / Pylons / Stabilizers	Aircraft Construction Assembly	Avionics<2	Landing Gear	Wings	Computer System Software / Information Systems	Electrical Power / Airborne Auxiliary Power	Electrical Cable Accessories / Harnesses	Aircraft Interior Equipment Furnishing	Autoflight Systems & Equipment	Communication Systems & Equipment	Control Systems & Equipment / Flight Controls	Fuel & Fuel Systems	Hydraulic Systems & Hydraulic Power	Indicating / Recording Systems	Safety & Survival Equipment	Air Conditioning	Fire, Ice & Rain Protection	Lights	Oxygen	Pneumatic	Vacuum	Water / Waste / Water Ballast	Windows	Central Maintenance System	Inert Gas System	Cargo & Accesory Systems	Fasteners	Space Systems & Equipment	Armament & Related Equipment: Missile Related Products	Technical Textiles	Others
Tamaulipas																																	
North Hills Signal Processing Corp.																																	
Promotora Merhen, S.A. de C.V.																																	
RBC de México, S. de R.L. de C.V.																																	
Servicios Industriales Nova Link, S.A. de C.V.	M								M																								
Yucatán																																	
Frecuencia '22·, S.A. de C.V.																																	M
PCC Airfoils, S.A. de C.V.	M																																
Seal & Metal Products of Latin America, S.A. de C.V.						M										M									M								
Zacatecas																																	
Triumph Group México, S. de R.L. de C.V.						M												M															M

COMPANY	Turning (Rough – Machinery Manufacture - CNC & Precision Engineering)	Milling (Rough – Machinery Manufacture - CNC & Precision Engineering)	Turning (Finish – Machinery Manufacture - CNC & Precision Engineering)	Honing (Finish – Machinery Manufacture - CNC & Precision Engineering)	CATIA V5 (MBD – Computer Systems Software)	CAD / CAM / CAE (MBD – Computer Systems Software)	Forging (Forging & Aerostructure Fabrication Forming)	Deburring (Labor Work)	Shot Peen (Labor Work)	Grit Blasting (Surface Prep) (Labor Work)	Quench & Temper (Heat Treat – Treatment Processes)	Stress Relieving (Heat Treat – Treatment Processes)	Solution + Age (Heat Treat – Treatment Processes)	Chrome Plate (Surface Treatments – Treatment Processes)	HVOF Spray (Surface Treatments – Treatment Processes)	Cad Plating (Surface Treatments – Treatment Processes)	MCAC (Surface Treatments – Treatment Processes)	Sulfuric Anodise (Surface Treatments – Treatment Processes)	Chromic Anodise (Surface Treatments – Treatment Processes)	Prime & Paint (Surface Treatments – Treatment Processes)	MPI (NDT – Testing & Certification)	LPI (NDT – Testing & Certification)	Acid Etch (NDT – Testing & Certification)	Chemical (MCL – Testing & Certification)	Mechanical (MCL – Testing & Certification)	Tooling	Investment (Castings (Fundiciones) – Transformation Processes)	Die (Castings (Fundiciones) – Transformation Processes)	Sand (Castings (Fundiciones) – Transformation Processes)	Soldering & Welding (Joint Processes – Transformation Processes)	Adhesives (Joint Processes – Transformation Processes)	Others (Otros) (Transformation Processes)
Tamaulipas																																
North Hills Signal Processing Corp.																																
Promotora Merhen, S.A. de C.V.																																
RBC de México, S. de R.L. de C.V.																																
Servicios Industriales Nova Link, S.A. de C.V.																																
Yucatán																																
Frecuencia '22·, S.A. de C.V.																																
PCC Airfoils, S.A. de C.V.																																
Seal & Metal Products of Latin America, S.A. de C.V.	·				·	·		·																								
Zacatecas																																
Triumph Group México, S. de R.L. de C.V.						M																										

COMPANY	Stainless Steel (Materials – Raw Materials – Material Range)	Steel (Materials)	300M or Equivalent (Materials)	Aluminum (Materials)	Titanium (Materials)	Delran (Materials)	Composites (Materials)	Maintenance, Repair & Overhaul (MRO) (Services)	Raw Material Suppliers (Services)	Testing & Certification Services (Services)	Ground Support & Air Field Equipment (Services)	Consultancy, Finance & Logistics (Services)	HR Manpower (Services)	Stock Solutions (Services)	Flight Training (Services)	Research, Design & Development (RDD) (Services)	Training Skills, Universities, Colleges & Institutes (Services)	AS9'00 (Certifications)	AS9'00B (Certifications)	AS9'99 (Certifications)	NADCAP (Certifications)	ISO 9000:2000 (Certifications)	ISO 900':2000 (Certifications)	ISO 900':2008 (Certifications)	TS '6949:2002 (Certifications)	FAA (Certifications)	DGAC (Certifications)	ITAR (Certifications)	MIL (Certifications)
Tamaulipas																													
North Hills Signal Processing Corp.							·																						
Promotora Merhen, S.A. de C.V.																													
RBC de México, S. de R.L. de C.V.																													
Servicios Industriales Nova Link, S.A. de C.V.																													
Yucatán																													
Frecuencia '22·, S.A. de C.V.																		·			·		·						
PCC Airfoils, S.A. de C.V.																					5		·						
Seal & Metal Products of Latin America, S.A. de C.V.													·			·	·		·				·						
Zacatecas																													
Triumph Group México, S. de R.L. de C.V.	·	·	·	·	·	·	·		·								·		·								·		

5.- NDT / HT / CHP



FLIGHT PLAN

MEXICO'S AEROSPACE INDUSTRY ROAD MAP 2013

RECYCLING RECYCLABLE

SE
MINISTRY OF ECONOMY

ESTADOS UNIDOS MEXICANOS

PRO MÉXICO
Trade and Investment