India

Opportunities for Missouri Businesses
India Market Report: Aero Industry Edition
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Global Aviation Industry - Industry Overview

- If aviation were a country, it would rank 19th in the world in terms of gross domestic product.
- The global air transport industry supports 56.6 million jobs worldwide and contributes $2.2 trillion to global GDP, equivalent to 3.5% of GDP.
- By 2026, it is forecast that aviation will contribute $1 trillion to world GDP.
- If you extend that figure to the additional industries that depend on aviation, as well as aviation-related tourism, the current global economic impact of air transport is $1.5 trillion.
- Worldwide, the amount contributed to the global economy by aviation jobs is roughly four times higher than that contributed by other jobs.

The global airline industry provides a service to virtually every country in the world, and has played an integral role in the creation of a global economy. Few other industries generate the amount and intensity of attention given to airlines, not only by those directly engaged in its operations, but also by government policy makers, the news media, as well as its billions of users.

The International Air Transport Association (IATA) reported that full year 2011 passenger demand rose 6% compared to 2010, in line with long-term growth trends. In contrast, cargo markets contracted by 0.7% for the year; but recorded positive growth in December of 0.2%. The average passenger load factor for 2011 was 78.1%, down from 78.3% in 2010, while the freight load factor was just 45.9%, down from 48.1% in 2010. International air travel rose 6.9% last year, though the majority of this growth occurred in the first half of the year. International capacity climbed 8.2%, pushing the passenger load factor down to 77.4%.

Airlines transport about 3 billion people a year. And over a third of the value of goods that are traded internationally is transported by air. Getting people and goods to their destinations more efficiently improves functionality. Infrastructure investments to enable aircraft to land and takeoff with a minimum of delay and fly the most fuel and carbon efficient trajectories will return a far greater payout to global GDP. Hope remains that 2012 will be the year when politicians put the required political capital behind important projects such as the Single European Sky and NextGen in the U.S. improving air travel.
The numbers of air travel passengers in India are expected to increase from 102.73 million in 2008 to 290.19 million by 2014, at a compound annual growth rate of 15 percent representing a huge opportunity for firms in both the aeronautical and the non-aeronautical end of activities (which represents 30% of the revenues). Until recently, the Indian aerospace industry has been dominated by government dominated owned R&D organizations and aircraft development and manufacturing units, which are primarily focused on defense needs. Yet the opportunity for India is huge - various estimates prognosticate figures of between USD 18 billion and USD 15 billion over the next 10 years.

The global aerospace market is dominated by US/EU based companies. Most of the leading companies are involved in the manufacture of aircrafts or MRO. There are several factors driving growth in manufacturing in India’s aerospace industry. These include both macro and micro factors - strong economic growth that has resulted in rapidly growing domestic aircraft demand, the liberalization of civil aviation policies, offset requirements, a strong domestic manufacturing base, cost advantages, a well-educated talent pool, the ability to leverage IT competitiveness and a liberal Special Economic Zones law that provides attractive fiscal benefits for developers and manufacturers.

On an average, the aerospace industry spends more annually on MRO than on manufacturing or development activities. As a support service to the aviation industry, this sector will also grow with the industry. Additionally, the globalization of MRO services, manpower cost competitiveness, the availability of talent, locational advantages and the presence of specialist capabilities combine to make India a potential global/regional MRO hub. India’s MRO segment is estimated to grow at 10 percent and USD 2.6 billion by 2020. While approximately 70 percent of the MRO market is based in North America and Western Europe, there is a possibility of a shift towards the emerging market economies in the Asia Pacific region. The most significant MRO growth will be witnessed in Asia. Currently Asia Pacific, China and India combined - represent 22% or USD 9.3 billion the overall market.

Selected trends emerging in Indian aerospace include:

- An increase in private owned airlines
- Increased outsourcing/manufacturing activities occurring in India
- Government’s easing of regulatory norms that would further increase the pace of activity in Indian aerospace
- An increased defense acquisition program over the next 10 years
Indian Civil Aviation - Future Challenges/Opportunities

Mentioned below are some of the critical factors that will shape the Indian aviation industry in the years ahead as well as may prove to be the niche areas if solutions can be created to address them.

1. **Sustained Profitability**

   With the next best alternative to air travel (rail), in India being such a cheap option the aviation industry surely has a tough job ahead of it trying to convince the Indian consumer to shift. Although with the rise in income levels and GDP growth more people have an increasing propensity to travel by air. The aviation market in India has always been regulated to 49% foreign ownership (Non airline). With the government now contemplating allowing foreign airlines to invest in the Indian market, conditions and practices will improve. Their time proven techniques and practices will help the local business attain and maintain better profitability.

2. **Infrastructure and Support**

   Airports are at the epicenter of the air transportation infrastructure. Yet the augmentation of airport capacity is constrained by environmental concerns, funding issues for large capital projects, and the availability of land and airspace to name but a few. Public-Private partnerships are being explored in almost every new airport that is set up in India. Private firms in the aerospace sector are working on coming up with their own solutions to help manage the congestion both on land and air. Northrop Grumman Park Air Systems is supplying Instrument Landing Systems. Honeywell is working on its own version of Air Traffic Modernization offering.

   Some of the development plans are below:

   - Modernization and upgrading of 25 airports, being looked into with private participation
   - Elevating transfer vehicles with stacker systems
   - Building of common user domestic terminals at all international airports
   - Expansion of import and export wings at international airports
   - Electronic data interchange at all airports to enable handling of international cargo

3. **Maintenance Repair and Overhaul**

   The Aviation Industry of India is all geared to explore the possibilities of boosting MRO business in India, which is currently worth USD 800 million and estimated to grow over 1.5 billion by 2020, so as to facilitate the maintenance, repairs and overhaul of the rapidly growing number of the aircrafts, both in civil and defense sectors, within India thus making it more viable and economical as compared to the outsourcing of the same to foreign countries. Industry watchers also estimate that MRO revenues, a direct function of the number of aircraft, are growing at a CAGR of 15% in India, which makes this space attractive. The MRO space is a $45 billion market globally, of which India constitutes only 1% today. Today most of the Indian MRO business goes to either Singapore or Dubai. With global giants like Airbus, Boeing, Raytheon, Lufthansa Technik to mention a few looking to set up shop in India (read Nagpur, Gujarat) the Indian MRO industry is well on the path of growth and expansion.
The defense-focused aerospace industry has been active for a long time; however it has only recently opened up to private sector participation through various government policies and initiatives and is witnessing an unprecedented growth. Hindustan Aeronautics Limited (HAL), which is fully owned by the Government of India, is the premier aerospace company in the country. HAL has played a major role in the Defense aviation of India through design, manufacture and overhaul of fighters, trainers, helicopters, transport aircraft, engines, avionics and system equipment. India has allowed up to 100% domestic private sector participation, although the foreign direct investment is still limited to 26% in the defense-related segment. The offset policy requirement of 30% is meant to encourage further development of indigenous production capabilities with international manufacturers. With several government organizations like Hindustan Aeronautics Limited (HAL), Defense Research Development Organization (DRDO), NAL, ISRO etc. research and development in industry has progressed but at a slow pace and India needs to invest in the future. The government has also invited domestic and foreign players for participation with an offer of 80% funding. It is especially looking for joint production with global players in order to transfer technology and know-how into the country. A new trend of Public-Private-Partnerships (PPP) has also emerged wherein private Indian players are collaborating with government bodies for the joint production of aircrafts. Although less has been done in the field of research on green fuels so far, government agencies like DRDO and Bharat Electronics Limited (BHEL) have started working on projects to develop Unmanned Aerial Vehicles (UAV). Therefore, future research efforts in terms of R&D investment and high-technology product developments are expected to increase. Below is a list of private sector domestic firms and their tie-ups.

<table>
<thead>
<tr>
<th>Company</th>
<th>Tie-ups with</th>
<th>Major Products &amp; Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tata (excluding TCS)</td>
<td>Sikorsky, IAI, Boeing</td>
<td>Composites, Avionics, Electrical systems, Planned aircraft &amp; subsystems assembly</td>
</tr>
<tr>
<td>L&amp;T</td>
<td>EADS, Boeing, Lockheed Martin</td>
<td>CAD, Testing</td>
</tr>
<tr>
<td>Mahindra &amp; Mahindra, Mahindra Satyam</td>
<td>NAL</td>
<td>CAD, Testing, IT &amp; PLM solutions, Planned small jet manufacture, component design &amp; manufacture</td>
</tr>
<tr>
<td>Infosys</td>
<td>Boeing, Airbus</td>
<td>CAD, Testing, IT &amp; PLM solutions, Embedded systems</td>
</tr>
<tr>
<td>TCS</td>
<td>NAL, HAL</td>
<td>CAD, Testing, IT &amp; PLM solutions</td>
</tr>
<tr>
<td>Wipro</td>
<td>Bae, Lockheed Martin</td>
<td>CAD, Testing, IT &amp; PLM solutions, Embedded systems</td>
</tr>
<tr>
<td>Taneja Aerospace</td>
<td>HAL, NAL, ISRO</td>
<td>Tier-2&amp;3 components, CAD, MRO services</td>
</tr>
<tr>
<td>Dynamic Technologies</td>
<td>HAL, DRDO, EADS</td>
<td>Tier-2&amp;3 components, CAD, Testing</td>
</tr>
<tr>
<td>QuEST Global</td>
<td></td>
<td>Tier-3 components, CAD, Testing, IT &amp; PLM solutions, Embedded systems</td>
</tr>
<tr>
<td>IICL</td>
<td>GE, Boeing</td>
<td>CAD, Testing, IT &amp; PLM solutions, Embedded systems</td>
</tr>
<tr>
<td>HAMCO</td>
<td></td>
<td>MRO</td>
</tr>
<tr>
<td>Air Works Engineering</td>
<td></td>
<td>MRO</td>
</tr>
</tbody>
</table>
Indian Defense Aviation - Future Challenges/Opportunities

DataMonitor estimates that the aerospace and defense industry in the top five emerging countries (Brazil, China, India, Mexico and South Africa) will reach a value of around $260 billion in 2014. That’s equivalent to a CAGR of approximately 15% over the 2009-2014 period. Currently the Indian Air Force (IAF) has 32 operative squadrons and will need around 50 by 2025, which makes India a vibrant space for foreign investment and partnerships especially since the Indian government has realized the value of bringing in foreign know-how. The defense purchase policy has comparatively been thrown open to private firms. With the Indian defense budget growing at a CAGR of 7.2% annually, India is planning a major modernization program valued at approximately USD 100 billion in 2011 - 2020. With the passing of time there has been a “change in mind-set” with the Indian defense organizations where the focus has moved from price to quality. The biggest driver for the Indian defense industry still remains its long history of conflict with it neighboring nations (read Pakistan, China) and the changing nature of conflicts, with battles now moving from the traditional battle field to modern tactical electronic warfare.

Although the government’s plans on paper seem adequate and inspiring, the fact remains that 70% of procurement still comes from foreign manufactures and the Indian industry is still playing catch up. The recently awarded MMRCA deal was a sign of things to come. The largest Indian defense deal, it was a show of Indian seriousness in ramping for the coming years. Every Indian defense deal comes with a 30% offset obligation. This proves to be a sweetener for the private firms supplying to India as they can offset this obligation against their local Indian setups.

Below is a view of how the Indian aerial fleet in 2025, that gives a general idea of the investment opportunity available in India.

<table>
<thead>
<tr>
<th>Platform</th>
<th>Generation</th>
<th># of Aircrafts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tejas (ADA)</td>
<td>4.5</td>
<td>147</td>
</tr>
<tr>
<td>MMRCA (Buy &amp; Make)</td>
<td>4.5</td>
<td>210</td>
</tr>
<tr>
<td>Sukhoi-30 MKI (Russia)</td>
<td>4.5</td>
<td>273</td>
</tr>
<tr>
<td>AMCA (ADA)</td>
<td>5</td>
<td>210</td>
</tr>
<tr>
<td>FGFA (HAL/Russia)</td>
<td>5</td>
<td>210</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>1050</strong></td>
</tr>
</tbody>
</table>
Trade Shows - Civil

1. **India Aviation** ([www.india-aviation.in](http://www.india-aviation.in))
   
   Organized by the Ministry of Civil Aviation, Government of India, jointly with Federation of Indian Chambers of Commerce & Industry (FICCI).

2. **MRO India 2012** ([www.mroindia.com/2012](http://www.mroindia.com/2012))

   Organized by India’s leading Aviation publications “Indian Aviation” and “The STAT Trade Times”.

Trade Shows - Defense

1. **Aero India** ([www.aeroindia.in](http://www.aeroindia.in))

   Bi-annually organized by the Defense Exhibition Organization and the Ministry of Defense in association with the Defense Research and Development Organization (DRDO), the Indian Air Force (IAF), the Department of Space and the Union Ministry for Civil Aviation.

2. **DEFEXPO INDIA** ([www.defexpoindia.in](http://www.defexpoindia.in))


Conclusion

The Indian aero industry is still in its nascent stage when we consider what the outside industry is capable of. With the opening up of the industry to private players the government is flagging off a race in every sector that is related to the aero industry. Although the industry is controlled by the larger OEM's (Original Equipment Manufacturer's) in both civil and defense sectors the adjacent markets are highly attractive and promise much returns.

India has proved its mettle in services and manufacturing in a number of sectors not only locally but globally. In this context of India’s position in the global stage, the Indian aerospace industry is clearly poised for growth. Strong local demand in aviation coupled with large defense requirements position India as one of the most significant buyers of aerospace equipment. The same is also true for all related maintenance and repair services. India also has a strong competitive advantage by way of availability of a large low cost engineering and skilled talent pool. Additionally, from the MRO perspective, India has a geographic advantage. India also has a long history in aerospace R&D, design, engineering and manufacturing through the Government owned entities like HAL, NAL, ISRO, DRDO etc. and more recently some private players.

Last but not least, it must be recognized that India’s competitive advantage lies in its excellent quality of engineering professionals, especially in design, development and testing. For long term sustainable competitive advantage, it is critical that Indian aerospace industry entrants work on a program that moves them swiftly from “manufacture to print” to “design to manufacture.” This means that while they may start with licensed production with requisite technology transfer, they will subsequently graduate to development of upgrades/variants to joint design, development and manufacture which is essentially the way to go.
Appendix

- RPK is defined as one paying passenger transported 1 kilometer (km). For example, a flight carrying 140 passengers over a distance of 1,000 km generates 140,000 RPK of airline traffic.

- Yield is calculated by dividing the total passenger revenues collected by the number of RPK carried. In the previous example, if the flight that carried 140,000 RPK generates $16,000 of total passenger revenue, its yield would be $0.114 per RPK (i.e. $16,000/140,000).

- ASK is defined as one available seat flown 1 kilometer (km). If our example flight operates over a distance of 1,000 km with 200-seat aircraft, it generates 200,000 ASK of airline output.

- Load factor is calculated as passengers carried divided by available seats.

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