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### **Regulatory changes for MRO part 145 shops in India**

The year 2023 marked a pivotal moment in the evolution of India's aviation industry. Two Indian airlines placed record-breaking aircraft orders, signaling unprecedented growth in air travel demand. That same year, India signed a working agreement with the European Union to clarify regulations surrounding aircraft component maintenance. Together, these developments underscore a rising need for robust maintenance capabilities and the regulatory alignment needed for the creation of local maintenance facilities. This article will recommend US based aerospace companies expand their operations in India by obtaining component repair certification. This paper will explore the historical landscape of component repair and relevant regulatory frameworks, and present a strategic case for pursuing these certifications, highlighting their

potential to support India's aviation growth while advancing the industry objectives of cost efficiency and global expansion.

### **Historical understanding of components and history**

Aircraft components, known as line-replaceable units (LRUs), are designed for quick removal and replacement by airline mechanics when a fault occurs, allowing for efficient maintenance and minimal aircraft downtime. Depending on the complexity of the component, the airline will either repair the component themselves or send it to an external component repair facility for repair and recertification. These components vary from simple brake temperature sensors to complex hydraulic actuators that move the control surfaces. Historically these components have been repaired outside of India, primarily in the United States or Europe.

Many of the LRU used in commercial aircraft are made by companies other than the aircraft manufacturer. In an effort to control the development costs of complex aircraft, manufacturers began entering into risk sharing agreements with suppliers who would design and test and build LRU for the aircraft project. The first example of this risk sharing partnership was the Airbus A300 which was manufactured by a European consortium in the 1970's. Since this time, the risk sharing trend has continued. The latest widebody aircraft on the market the Airbus A350 has 75% of the aircraft components produced by suppliers (Mocenco, 2021).

As a reward for participating in the risk sharing partnership with the aircraft makers, the LRU suppliers are granted access to the aftermarket for repair and support of the LRU components. It is not uncommon for suppliers to agree to a Product support agreement with the aircraft maker which obligates the supplier to provide support services such as repair or replacement units. It is the supplier's discretion as to where this activity will take place,

provided they meet the obligations of the support agreement (International Air Transport Association, 2024). Most US aerospace and defense companies have historically repaired components in US and EU based facilities but this is not a requirement.

### **Part 145**

Aircraft component repair facilities are subject to specific federal regulations. Title 14, Subchapter H, Part 145 of the code of federal regulations outlines the requirements for certification and operation of a repair facility (U.S. GPO, 2024) It applies to organizations that perform maintenance, preventive maintenance, inspection, and alteration of aircraft and aeronautical products. The code of federal regulations name has stuck- in industry parlance a component repair facility is sometimes called a “145 shop”.

A Part 145 component repair facility specializes in the inspection, repair, and overhaul of individual aircraft components, such as avionics, hydraulics, or other LRU. The regulatory framework governing component repair facilities ensures that repaired or overhauled components meet the same safety and performance standards as new ones. Facilities must operate under an approved maintenance organization (AMO) certificate, which outlines the scope of work they are authorized to perform. Regular audits and surveillance activities are conducted by the certifying authorities to verify continued compliance. In addition, any deviation from approved procedures, use of unapproved parts, or failure to maintain traceability can result in enforcement actions, including fines, certificate suspension, or revocation.

Employees working in part 145 component repair facilities must be trained and qualified to perform repair work. They are usually individually licensed or are performing work under the direct supervision of a certificated repairman. All employees must adhere to a strict drug free

lifestyle and are regularly subjected to random drug tests. All repair facilities must have management procedures in place to ensure their tooling is correct and in calibration, their documentation is correct and their records are retained as described by law. Each repair station must also strictly define each employee's function and quality plans in a repair station quality control manual. All quality manuals and certifications are available to the public for review if requested. Component repair facilities depend on their airworthiness authorities for guidance on how to organize and document their work. The airworthiness authorities in India now have more robust guidance which will help aid in the development of Indian repair facilities.

In an approved component repair facility, components arriving for repair typically follow a standard flow. The parts arrive and are inducted into some form of ERP system. The customer purchase order is reviewed for contractual and technical compliance (can the shop perform the work requested, etc.). The part is then sent for evaluation by a certificated technician who determines what is wrong and what must be done to repair. The customer is quoted based on the evaluation and then if approved the unit is repaired and recertified for use. As part of the recertification process the part receives an airworthiness certificate also known as an 8130 tag and certificate of conformance. These documents certify the part is airworthy and ready for installation on an aircraft. Without these certifications the part cannot be installed on an aircraft.

### **Bilateral Agreements**

Most countries have their own local aviation authorities. For components manufactured or repaired in the U.S. to be used on an aircraft registered in another country, that country must have an agreement in place with the FAA. These bilateral agreements form a formal arrangement between two countries that establishes mutual recognition of aviation-related certifications, standards, and oversight systems. (FAA, 2024) These agreements aim to streamline regulatory

processes, reduce duplication of oversight, and facilitate international aviation operations such as aircraft certification, maintenance, and repair.

A key example of such an agreement is the Bilateral agreement between the Federal Aviation Administration (FAA) of the United States and the Directorate General of Civil Aviation (DGCA) of India. This agreement allows for the mutual acceptance of certain aviation certifications in areas such as airworthiness, and maintenance approvals (FAA, 2011). This agreement allows for Indian airlines to use components made or repaired in the United States on their aircraft. These agreements also allow for each country to accept the respective airworthiness agency's part 145 approval of a local component repair facility for example: the DCGA accepts the credentials of a us based component repair facility provided it is licensed by the FAA. It is also possible as part of the bilateral agreement for a repair facility based in India to obtain an FAA repair station certificate.

### **Safety management system**

In 2018 the European Union passed Regulation (EU) 2018/1139. This regulation created the requirement for all EU approved part 145 repair facilities to develop a Safety Management System (SMS) (EASA, 2018). All existing component repair facilities have quality systems in place by law. SMS regulations are different, in that they focus on risk assessment and safety data monitoring. The intent of SMS is to use data to find and remedy issues that may impact aviation safety and places a greater emphasis on developing a positive safety culture, where all employees feel responsible for safe outcomes. As most US based repair shops also have EASA certification it is common to issue a joint FAA/EASA airworthiness certificate. In order to do US based part 145 component repair facilities have also adopted a safety management system. This has also

become an industry standard with most airlines requiring their partner 145 shops to maintain a safety management system.

### **Indian Aviation Business Case**

In an effort to grow the local aviation industry the government of India has developed a program to greatly increase the number of regional airports in the country. There are currently 100 airports under development in India (Ministry of Civil Aviation, 2016). The airline industry has responded to the governments investment by placing massive orders for aircraft. In 2023 Air India placed an order for 470 aircraft. This was the record at the time, but it only stood for a short time. A few months later Indigo an Indian low-cost carrier placed an order for 500 aircraft (Bailey, A., 2023) These orders along with those from other Indian airlines make India the second largest customer for commercial aircraft after the United States. According to the government of India only 2% of Indians have ever flown (Economist, 2023). The aviation program seeks to subsidize fuel and airport costs such the max fare for any in country route is 3,500 rupees or around \$40USD.

Most aircraft allow for some deferred maintenance which allows for dispatch with some components inoperative. The deferred maintenance timeline depends on the specific component but 10 days is quite common. This means that an airline can continue to fly an aircraft for up to 10 days (with restrictions) before they are required to replace the defective component. With such a large volume of aircraft coming online in India it is unfeasible to have repairs performed many time zones away. Airlines would need to stock massive amounts of spares to cover the transit time of their repairs which is quite cost prohibitive. US based airlines enjoy much leaner inventory levels allowing for greater profitability due to their proximity to their repair base. Indian airlines are interested in the same relationship and would welcome the creation of more

local component repair facilities. There are also significant labor cost considerations in India. A certificated Repairman in India makes about 1/3 of a similar worker in the US (Glassdoor, 2025). An Indian component repair facility should achieve significant labor cost savings when compared with a similar facility in the US or Europe while also saving on shipping costs as labor makes up 50% or more of the cost to perform a repair.

### **EASA/DGCA**

As noted previously, the Indian DGCA has a bilateral agreement with the FAA which was signed in 2011. India however does not have a bilateral agreement with EASA. Rather, in 2023 they signed a working arrangement between the DCGA and EASA. There are several important elements of this working arrangement.

The working arrangement between the two agencies significantly enhances regulatory cooperation and streamlines the path for Indian aviation organizations—particularly EASA Part 145 maintenance organizations—to obtain certification. Under this arrangement, DGCA collaborates directly with EASA in the oversight process, reducing the need for duplicate audits and inspections. This coordination alleviates regulatory burdens, accelerates approval timelines, and allows Indian repair stations to more effectively support EU-registered aircraft and European operators.

Importantly, the agreement also enables Indian Part 145 repair facilities to develop and implement Safety Management Systems (SMS) that are fully compliant with EU Regulation (EU) 2018/1139. This marks a critical advancement, as compliance with EASA's SMS standards is a prerequisite for issuing EASA airworthiness release certificates. In essence, the working

arrangement provides a regulatory bridge—connecting India's growing maintenance capabilities with Europe's stringent safety standards and market demands (EASA, 2021)

Before this agreement, Indian repair stations could technically obtain an EASA Part 145 certificate, but they lacked a clear regulatory pathway to certify their SMS. This situation rendered their certificates functionally ineffective—akin to owning a driver's license but not having access to a road. Without an EASA-compliant SMS, these organizations were unable to issue airworthiness certificates, meaning repaired components could not legally be installed on commercial aircraft. The working arrangement now corrects that disconnect, paving the way for the establishment of truly international component repair facilities in India that meet global standards both in quality and safety.

### **Conclusion and Recommendation**

Given the convergence of regulatory progress, market growth, and cost efficiencies, many US based aerospace companies with a footprint in India are positioned to benefit from establishing a component repair facility in country. The recent regulatory enhancements—specifically the bilateral agreement with the FAA and the working arrangement between the DGCA and EASA—now offer a clear, streamlined path for Indian-based facilities to achieve dual FAA and EASA certification, including approval of Safety Management Systems compliant with global standards. These changes remove long-standing barriers and open the door to operating a fully functional, internationally recognized Part 145 repair station within India.

The rapid expansion of India's aviation sector, driven by unprecedented aircraft orders and aggressive airport development, is creating substantial local demand for timely, cost-effective maintenance services. Without local repair capabilities, airlines will face high logistics

costs due to the regular shipments to and from the US and Europe, and be forced to maintain larger spare inventories due to the transit times, which undermines profitability. Establishing a repair facility in India would reduce lead times, improve support for Indian operators using Collins Aerospace components, and enhance customer satisfaction. Additionally, the substantial labor cost advantage in India offers a long-term opportunity for operational savings while maintaining the highest quality and safety standards.

In light of these factors, aerospace companies should seize this moment to invest in a strategically located component repair facility in India. Doing so will strengthen their companies global MRO network, ensure responsive support to one of the fastest-growing aviation markets in the world, and reinforce its position as a leader in both innovation and customer service in the aerospace sector.

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