

December 2023

100 KNOTS

India's Aviation Ecosystem

November Fleet Report

Crisis Management

Evacuation Flights

MRO

AIESL's Role in the Future
growth of MRO Industry in
India

Helicopter Operations

Unleashing India's Helicopter
Potential

Vineet Sood

CEO, Alliance Air
Growth & Changes



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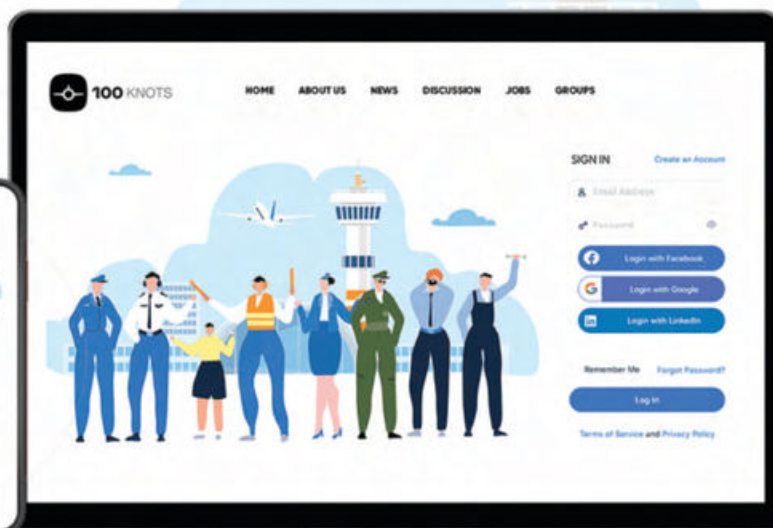
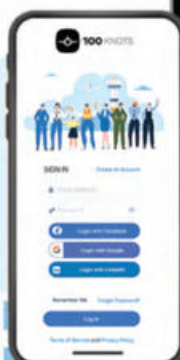
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EDITOR'S LETTER



Radhika Bansal
Assistant Editor

Dear Colleagues,

Welcome to the December 2023 issue of the 100 Knots Magazine.

Regional airlines play a pivotal role in the intricate tapestry of modern air travel, connecting smaller cities and towns to major hubs with seamless efficiency. These carriers serve as lifelines for communities that might otherwise be isolated, fostering economic development, tourism, and cultural exchange. While major airlines dominate the international stage, regional airlines serve as the unsung heroes, linking passengers to destinations that may not have the infrastructure to support large-scale air traffic. Their importance lies not only in bridging geographical gaps but also in catalyzing local economies by facilitating business connections and opening doors to opportunities.

In this edition, we are privileged to have Mr. Vineet Sood, CEO, Alliance Air who sheds light on how Alliance Air is a keen participant of the Government of India's flagship scheme UDAN or Regional Connectivity Scheme (RCS). He discusses pricing policy, value addition, competition and most importantly customer acquisition and retention strategy.

As always, Contributions, comments, and feedback is always welcome. All papers are received with a high degree of enthusiasm and will find a home in future issues.

Our sincere thanks to all the contributors for their support and interest.

We hope to hear from you soon!

Happy Reading!

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November Fleet Report

Scheduled Operations

Deliveries



VT-RTQ

01-Nov

Airbus A320 NEO

Air India



TC-MKF

01-Nov

Boeing B737-8 MAX

SpiceJet



ES-SAG

01-Nov

Airbus A320-200

IndiGo



ES-SAD

03-Nov

Airbus A320-200

IndiGo



YL-LDU

05-Nov

Airbus A320-200

IndiGo



YL-LDN

08-Nov

Airbus A320-200

IndiGo



VT-RTO

09-Nov

Airbus A320 NEO

Air India



TC-COH

09-Nov

Boeing B737-800

SpiceJet








ES-SAY

13-Nov

Airbus A320-200

IndiGo

		ES-SAZ	14-Nov	Airbus A320-200	IndiGo
		YL-LDT	16-Nov	Airbus A320-200	IndiGo
		VT-RTP	16-Nov	Airbus A320 NEO	Air India
		ES-SAF	19-Nov	Airbus A320-200	IndiGo
		VT-IQK	21-Nov	Airbus A320 NEO	IndiGo
		VT-RTT	28-Nov	Airbus A320 NEO	Air India
		VT-IQJ	28-Nov	Airbus A320 NEO	IndiGo
		VT-TSH	29-Nov	Boeing B787-900	Vistara

AIR INDIA



A319-100	A320-200	A320 NEO	A321-200	A321 NEO	B777-200	B777-300ER	B787-800	Total
18	9	33	13	4	8	15	27	127

AIR INDIA express



B737-800	A320-200	A320 NEO	B737 MAX 8	Total
26	23	6	3	58



vistara



A320 NEO	A321 NEO	B787-900	Total
48	10	6	64

IndiGo



A321 NEO	A321 P2F	A320 200	A320 NEO	ATR 72	B777-300ER	Total
94	3	30	180	42	2	351

SpiceJet



A340-300	B737-700	B737-800	B737-900ER	B737 MAX 8	DHC-8	Total
1	8	18	3	13	23	66

Akasa Air



B737 MAX 8	Total
20	20



A320-200	A320 NEO	Total
5	49	54



ATR 42	ATR 72	Total
2	18	20



ERJ 145	ERJ 175	Total
5	3	8

BLUE DART



B737-800	B757-200	Total
2	6	8



ATR 72	DHC-6	Total
2	1	3

(Data as of 31-Nov-2023)

Alliance Air

Growth Changes in Indian Market Challenges & RCS-UDAN Scheme

Vineet Sood
CEO
Alliance Air



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Introduction about Indian Aviation

The civil aviation industry in India has emerged as one of the fastest growing industries in the country during the last three years and can be broadly classified into scheduled air transport service which includes domestic and international airlines, non-scheduled air transport service which consists of charter operators and air taxi operators, air cargo service.

India is the third-largest civil aviation market in the world, in terms of number of operational airports and flights. In terms of number of passengers, India is expected to beat USA, China, UK and others by 2024 and gain the top position due to high demand for air travel with the help of the vision of our hon'ble Prime minister of India Shri. Narendra Modi.

The rising working class and increasing disposable incomes are expected to raise the domestic demand for travel and tourism. There is also a healthy competition between low-cost carriers building up at leading airports. Airlines like Indigo, Spicejet, Air Asia, Go-First, Alliance Air have contributed there services through low cost because of which many people have now started opting for flight services.

Alliance Air

Alliance Air is a keen participant of the Government of India's flagship scheme UDAN or Regional Connectivity Scheme (RCS). The Hon'ble Prime Minister of India flagged off the first UDAN flight on the Shimla- Delhi sector on 27th April 2017 and Alliance Air had the privilege of being the launch carrier. With the RCS initiative extremely successful, Alliance Air is constantly expanding network and connecting uncharted dots on the aviation ambit. Currently Alliance Air has been awarded by 137 RCS routes out of which 111 have already been operated by Alliance Air.

We have a fleet of 18 ATR72-600 aircraft and the Made in India Dornier Do-228 which was inducted in our fleet on 12th April 2022. The 2nd Dornier aircraft will also be inducted in our fleet shortly. Alliance Air has also inducted 2 latest technology ATR42-600 aircrafts which are able to operate on short runways such as those of Shimla, Kullu, & other airports located at high altitudes.



Pricing Strategy, Challenges & RCS-UDAN Scheme

Pricing of any airline is dynamic in nature and transforms based on various factors such as demand, Seasonality, etc. Price has an important part to play the role in any sector. But also more than the price the accessibility and the time of travel is way more important. For eg; if a business man has to travel in any of these routes and he also wants to travel back on time so that his business does not hamper that's where everyone can provide the passengers the suitability of traveling and then he ready to pay any amount. Every airline nowadays keeps prices at sync with each other. Introduction of timely sale benefits also help passengers where they can take benefits from those sales, especially who book early.

Fortunately, most challenges post Covid are now becoming an opportunity and are being showcased with the Indian aviation Industry operating at pre-Covid levels. However, high fuel cost contributes to a major portion of the operating cost of any airline. Many state govts. have gone ahead and adjusted VAT on fuel prices and this has boosted the aviation sector in India.

The financial impact can be especially acute for airlines when it relates to sizeable changes in the value of the US dollar. This is because a large proportion of airline costs (including fuel) are denominated in US dollars, and many carriers need to convert domestic currency into dollars each year to meet their obligations. A more stable pricing will allow us to fly better. However, the lives of the middle class are being transformed and their aspirations are increasing.

Apart from the above, at present industry is facing huge challenges with the Supply Chain issues. Timely availability of required spares & engines are the challenges which further delays the maintenance activities.



The lives of the middle class are now transforming and their aspirations are increasing. Given an occasion to travel by air keeping in mind the price, the timing & the convenience, they will grab the opportunity. Under the leadership of Hon'ble Prime minister Shri. Narendra Modi, RCS-UDAN Scheme was launched in 2017 to cater any individual from Tier 2 and Tier 3 cities. Aviation was once considered the domain of a select few, but after introduction of RCS-Udan scheme it has changed now. The new civil aviation policy marks an opportunity to cater to the aspirations of the people of India. UDAN scheme has helped the small traders who use to travel from trains are now trading at a higher pace by travelling through Air. From Hawaii Chappal to Hawaii Jahaz everyone is able to travel under RCS scheme. Major portion of RCS-Flights are being operated by Alliance Air which mainly operates on Tier-2 and Tier-3 cities with small aircrafts.

The scheme has two components. The first component is to develop new airports and enhance the existing regional airports to increase the number of operational airports for scheduled civilian flights. The second component is to add several hundred financially viable, capped-airfare, new regional flight routes to connect more than 100 underserved and unserved airports in smaller towns with each other as well as with well-served airports in bigger cities by using "Viability Gap Funding" (VGF) where needed.

New Players in the Market

With new players in Aviation sector, trade and tourism will grow faster in India. More the market grow, more Mature will be our economy. More players in aviation will also help many sections of the economic world to move away from isolation and will also create a Ripple effect.

The civil aviation industry in India has emerged as one of the fastest growing industries in the country during the last three years. India has become the third largest domestic aviation market in the world and is expected to overtake UK to become the third largest air passenger market by 2024. With the help of Ministry of civil aviation and Under the Leadership of our Hon'ble Prime Minister, India is growing higher in the aviation market.

All airlines have kept price bar almost equivalent to boost our economic sector but what will be most important in near future is how each of us attract the passengers. Like providing them offers after certain period of time so that the passengers get motivated to travel with you again. Majorly passengers look for comfort and affordability, so what I feel these will be the important factors to sustain in the aviation sector in near future.



About the Author

Vineet Sood is a visionary, thought leader and a C-Suite professional with extensive experience of successful entrepreneurship in aviation sector. He has more than 23 years of rich experience in driving strategic initiatives and propelling business profitability as well as growth. He is an expert on leading change management in a global capacity to facilitate business turnaround and acceleration. He is a proven ability in improving operations, enhancing business growth & maximizing profits through the achievements in finance management, internal controls & productivity improvements. He is an effective communicator with excellent relationship building & interpersonal skills with strong analytical, problem solving & organizational abilities. Currently he is serving as CEO in Alliance Air (A wholly owned subsidiary of AIAHL). Earlier he was serving Biman Bangladesh as a CFO.





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Evacuation Flights

An Effort to Make Every Indian Life Count



Gp. Capt. Surya Prakash (Retd.)
Senior Captain
IndiGo

'If you are an Indian stuck amid a war, be it bio-war or full-fledged military war- be assured India is coming for you to bring you back to safety!!'

Have you heard of Mission Ganga (2022), Devishakti (2021), Vande Bharat (2020), Ajay (2023), and Kaveri (2023)?? These are no ordinary names, these are the names of the evacuation and humanitarian missions that India has successfully carried out in just a span of 3 years, bringing back thousands of Indians and a few others stuck in war-torn areas to the safety of their land- their home INDIA. These missions are mostly undertaken by the military and on occasions civil aviation lends a hand for support.

In just less than a year alone due to the Russia-Ukraine war, the Sudan conflict and the recent attack on Israel, the Indian Government along with the support of Indian Armed Forces successfully launched 3 operations respectively to bring back thousands of its nationals to the safety of their homeland. History too stands witness to India's efforts to make every life count especially that of Indians; be it the airlift of Indians from Kuwait during the Gulf War or the humanitarian aid during the earthquakes in Nepal.

Similarly in recent times Operation Vande Bharat, one of the biggest operations where the Government of India repatriated thousands of Indian nationals and facilitated travel of passengers within and outside India. As of 31 Oct 2021, a total of 2,17,000 flights were operated to facilitate 1.83 Crore passengers' movement.



History of Evacuation Operations

The conduct of evacuation flights is not new. These flights are undertaken whenever the government feels that there is a need to recover our citizens back to safety due to changing geo-political situations or any calamity. Sending evacuation flights dates back to 1940 when the Allied Forces undertook to recover its troops from the French coast when attacked by Nazis. Back then most of the evacuations were undertaken by ships.

The history of evacuation missions in India dates back to the aftermath of World War II when India undertook the task of repatriating thousands of prisoners of war and stranded nationals from different parts of the world. This early experience laid the foundation for a robust framework for evacuation operations.

One of the most remarkable evacuation missions in India's history was the massive operation during the Gulf War in 1990-91. India successfully evacuated over 170,000 of its citizens from Kuwait and Iraq, a Herculean effort that showcased the nation's commitment to safeguarding its people. This operation was celebrated as a symbol of national pride and unity, and even commercial aircraft were requisitioned for the task.

India has continued to build on this legacy by conducting evacuation operations in subsequent crises, such as the Yemen conflict in 2015 and the COVID-19 pandemic in 2020, repatriating thousands of its citizens from different corners of the globe. These missions reflect India's proactive approach to ensuring the safety and well-being of its citizens abroad and its evolving capabilities in executing such complex operations. Evacuation flights remain an essential tool in India's diplomatic arsenal, ensuring that its citizens can return home safely during times of turmoil and adversity.



Why are Recovery Flights or Evacuations Operations Undertaken?

These flights are conducted in case of natural calamity, medical emergency, loss of safety of its people and war-like situations. In addition to this, we also conduct evacuation flights for diplomatic reasons i.e., in case of breakdown of diplomatic ties with other nations.

While we continue to use several aircraft today, in earlier times the evacuations were undertaken by ships. The Navy of specific countries played a big role in evacuation. Since the aircraft have faster and longer reach, it becomes easier to use the aircraft for recovery of nationals.

Remember the evacuation undertaken in Ukraine. In a short period as the war was getting intense and the Indian diaspora was getting threatened, the Indian government used various resources, pooled in from military and private carriers to make Operation Ganga a success. Air Asia, Air India Express, Air India, Spice Jet and Indigo participated as private operators and C-17 Globemaster from the Indian Air Force were the load carriers.

Types of Evacuations

Complete evacuation can be easily divided into five categories. Each one will require a different set of procedures to handle the evacuation. In India, they are looked after by National Disaster Management and the Ministry of External Affairs (MEA) in close coordination with the Embassy at the location. Evacuations can be easily classified into-

1. Medical Evacuation- Indian national requiring immediate medical recovery. These can be undertaken by private aircraft, Air Ambulance, or private operators.
2. Diplomatic Evacuation- These evacuations involve people from diplomatic missions.
3. War zone Evacuation- This type of evacuation involves evacuating people from a war zone or war-like situation as is the case in Israel and Ukraine.
4. Natural Calamity Evacuation- This involves evacuating people from regions affected by natural calamity. As was the case in Nepal, where people were evacuated after the earthquake or from Uttaranchal after the flood.
5. Criminal Evacuation- These evacuations are mainly carried out to recover high-end criminals from a country.



Who facilitates the evacuation operation?

The flights are undertaken mainly by the Indian Air Force along with required commandos in case the safety of the aircraft and people are likely to be compromised. However, civil aircraft also participate in case there is no danger to the aircraft and its crew.

Critical areas to be considered for planning such flights

- Number of persons that need evacuation- this is largely to decide the type of aircraft and also the total number of aircraft required for the mission.
- Location of people for recovery- People need to be relocated to a place away from the affected zone, from where recovery can be initiated. As was the case in Ukraine, wherein students were asked to move to a certain location for safe recovery.
- Internal movement of people is conducted by the Embassy through local help.
- The type of aircraft chosen for recovery will depend on the threat level on the ground and in the air.

If you recall evacuation from Africa and Afghanistan, were operations completely headed by the Indian Air Force alone. However, commercial flights participate in evacuation missions from nearby friendly countries where Indians had moved for safety and recovery purposes. Private operators operate the flights after an adequate assessment of safety has been carried out. In case of any possibility of threat to the aircraft and the crew, military aircraft are used after in-depth planning.

- In case of a possibility of a threat to the aircraft, only military aircraft is used with all precautions.
- To ensure the safety of the aircraft, if operating in an affected zone, Commandoes onboard are part of the recovery mission. This is largely decided during the initial planning and will change the type of aircraft being used for the mission.
- The experience level of the crew is of vital importance. These missions are time-critical and proper coordination among the crew and the ground staff is extremely necessary. The personnel to be evacuated must be ready and have gone through the security checks before the aircraft lands. This will ensure that the time spent on the ground is to the minimum.
- Safety of the aircraft on the ground is ensured by the local government and by onboard commandoes, as per the location.



Sequence of Events

- The criticality of the area needs to be identified.
- Close liaison with the embassy and people on the ground is to be established.
- An operational control centre is established both in India and also at the embassy of the affected country.
- The total number of personnel to be evacuated is to be identified.
- The type of aircraft to be used for the mission is identified.
- The requirement of commandoes is identified.
- The route to be followed by the aircraft and, approximate time on the ground needs to be assessed.
- The evacuation timeline with activities is prepared and shared with concerned people.
- Contingencies are worked out.
- Nearby friendly countries are kept on standby for the mission in case of any emergency.

Significance of These Missions

- It builds confidence among citizens that the nation stands with them and will recover them in case of any eventualities.
- Show of strength to the world
- The reach of its military might.
- A diplomatic win for the government.
- Commitment to the safety and security of its citizens.
- Availability of safety structure in the country.



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Conclusion

Recovery of citizens from areas of calamity or war-like situations is the duty of the government of the day. Though these missions are important, however, its correct timing and planning are equally important. A wrong step, for the right cause, could be catastrophic, if not planned correctly. The Indian government has been proactive in its diplomatic missions and in ensuring that its citizens are recovered from the affected areas and brought back home safely. It's also important for the citizens in the affected zone to be calm and keep the embassy informed of their whereabouts. They should follow the instructions of the embassy released from time to time to ensure the complete success of the mission. A successful evacuation mission is as much a relief for the citizens as a matter of pride for the government of the day.

About the Author

Gp Capt Surya Prakash is a Retd Air Force Officer. A fighter pilot, who is a graduate of the National Defence Academy (NDA), Defence Services Staff College (DSSC) and Indian Institute of Public Administration (IIPA). He was the instructor at Weapon School and flew MiG21, MiG27, M-2000, and Su-30. He took pre-mature retirement in 2016 and joined Indigo as a Commercial Pilot. An avid Golfer, Marathon runner, Cyclist, Photographer and Adventure sports enthusiast, he continues to fly with Indigo as a Senior Captain.



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Revolutionizing India's Aviation Landscape

AIESL's Role in the Future growth of MRO Industry
in India



Pankaj Kumar Karn
Additional Chief Engineer
AI Engineering Service Limited



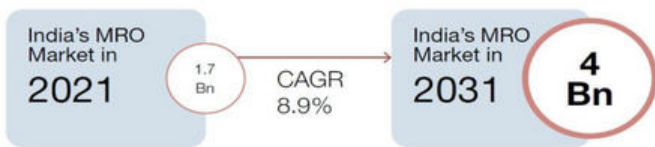
The Dynamics of Maintenance, Repair, and Overhaul in India

The aviation industry in India is experiencing a paradigm shift, marked by substantial growth in the number of aircraft and an increasingly competitive market. As India positions itself to become the third-largest buyer of commercial planes globally, the Maintenance, Repair, and Overhaul (MRO) sector play a pivotal role in ensuring the airworthiness and availability of the expanding fleet. This article explores the current state of the MRO industry in India, its growth potential, and the transformative capabilities of AI Engineering Services Limited (AIESL).

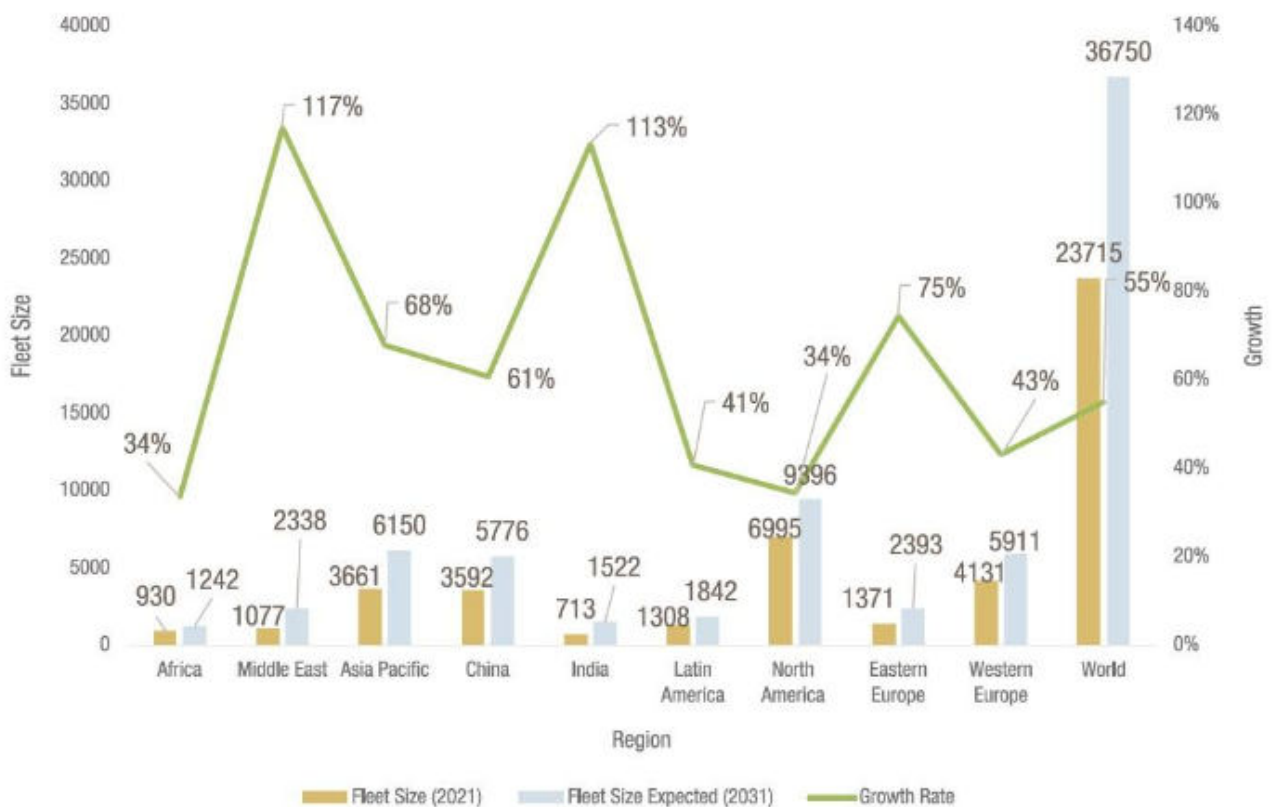
Setting the Stage: The Growth Trajectory of Indian Aviation

With an existing fleet of around 700 aircraft and plans to add over 1000 more, India is poised to become a major player in the global aviation market. The civil aviation sector is witnessing remarkable growth, making India the third-largest air passenger market. This surge in demand underscores the critical need for the development of the MRO sector in the country. Despite being in its early stages, the industry is projected to reach USD 4.0 billion by 2031, exhibiting a Compound Annual Growth Rate (CAGR) of 8.9%, outpacing the global average.

The MRO industry in India is propelled by several key factors, including rising consumer demand, an expanding fleet, supportive government policies, and labour arbitrage. Redelivery maintenance contracts for leased aircraft are anticipated to be a crucial driver for capacity expansion. Approximately 10 to 15% of total revenues in the Indian aviation industry are allocated to Aircraft Maintenance, emphasizing its significance as the second most substantial expense after fuel.



Fleet Size Distribution By Region



MRO Landscape: Overview, Segmentation and Cost Structures

Aircraft maintenance is a meticulously regulated domain that demands a rigorous routine of both scheduled and unscheduled tasks. These encompass a range of activities, including inspection, servicing, testing, repair, and overhaul or modification, all of which are carried out by certified engineers on each operational aircraft.

MRO services are delineated into four principal segments, each serving a distinct function within the aviation maintenance spectrum:

1. Line Maintenance:

Conducted during flight turnarounds, this category primarily involves routine, in-service inspections, servicing, and the identification and rectification of any operational issues, if any. Notably, these maintenance tasks are executed without the need for a hangar or additional infrastructure.

2. Base/Major Maintenance:

Undertaken within a hangar using specialized tools, this category involves the removal of an aircraft from service for intensive tasks such as 'C' and 'D' checks. These comprehensive checks encompass structural work, corrosion prevention measures, interior refurbishment, and the replacement of major components.

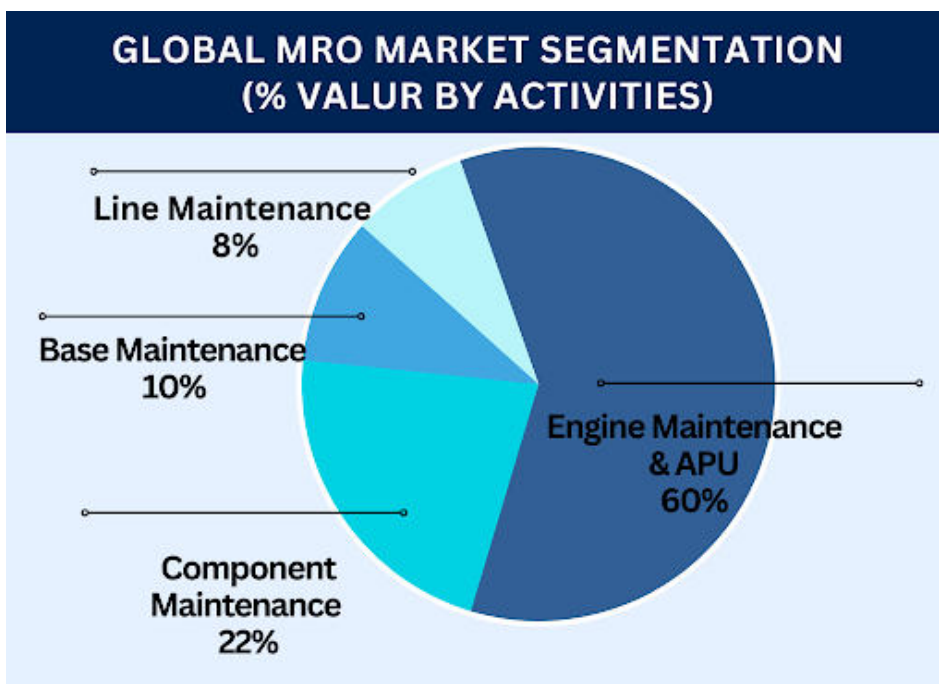
3. Engine & APU Maintenance:

Focused on engine and Auxiliary Power Unit (APU), this segment involves major repair, modification, and overhaul activities. The process requires the utilization of an approved overhaul shop and a team of experienced engineering personnel.

4. Component Maintenance:

Covering all components apart from the engine and APU, this segment directs components to various approved maintenance shops for repair and overhaul. Like engine and APU maintenance, this category necessitates the expertise of specialized and experienced engineering personnel.

Understanding the distribution of expenditure across these MRO segments offers valuable insights. Notably, engine and APU maintenance collectively account for nearly 60% of the total MRO expenditure. In contrast, component maintenance, line maintenance, and base maintenance constitute approximately 22%, 8%, and 10%, respectively, of the overall maintenance outlay. This breakdown provides a comprehensive perspective on the allocation of resources within the MRO landscape.



Now, delving into the labour and spare cost components of these segments becomes particularly intriguing.

The accompanying figure elucidates the cost structure across different segments, highlighting a significant factor contributing to the elevated spare costs in engine and component maintenance—mainly because of, various intellectual property patents and the dominant supply chain control exercised by Original Equipment Manufacturers (OEMs).

In the context of the Indian MRO industry, major players primarily focus on airframe maintenance, with minimal involvement in engine and component maintenance. This trend is attributed to the absence of independent inventory availability for MRO facilities and the imposition of high taxes on MRO services in India. Consequently, a staggering 90% of MRO work in India is outsourced to countries such as Singapore, Malaysia, UAE, Sri Lanka, and others.

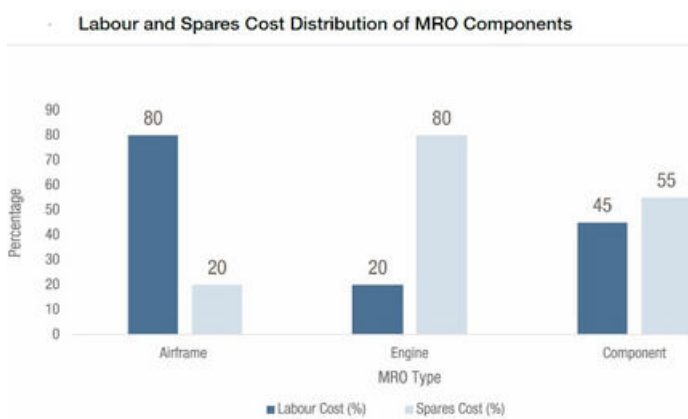
India's advantage lies in the accessibility of low-cost MRO manpower, setting it apart from other MRO hubs globally, including the USA, Europe, and Singapore. Despite this advantage, the substantial impediment to market growth remains the imposition of high taxes and customs duties on the MRO sector, rendering services comparatively more expensive in India than abroad. This taxation scenario has prompted both domestic and international airlines to prefer obtaining MRO services from destinations outside India, leading to missed opportunities, reduced employment opportunities, and a hampered growth trajectory for the Indian economy.

Challenges and Opportunities: A Balancing Act for MRO Growth

Despite policy initiatives such as the MRO Policy 2021 and the National Civil Aviation Policy 2016, the MRO sector faces challenges in breaking into existing value chains and addressing barriers related to offset clauses, credit accessibility, infrastructure, licensing, certification, and taxes. Regulatory frameworks, especially in alignment with FAA/EASA standards, present hurdles for MRO players looking to attract business from international airlines.

A significant impediment to the growth of the Maintenance, Repair, and Overhaul (MRO) industry pertains to the regulatory framework. To mitigate costs during aircraft leasing, airline operators frequently engage with Federal Aviation Administration (FAA) or European Union Aviation Safety Agency (EASA) approved MRO centres. Furthermore, MRO operators are mandated to obtain accreditation from FAA/EASA to extend services to foreign airlines. This practice diverts a considerable portion of MRO business away from India.

Despite the Directorate General of Civil Aviation (DGCA) guidelines being aligned with EASA regulations and guidelines under the EU-India Aviation Agreement, European authorities or countries adhering to EASA often do not accord recognition to DGCA certifications and approvals on par with those issued by EASA member states. EASA certification empowers Indian MROs to conduct maintenance and release aircraft registered in the European Union, including the installation of components. The absence of EASA approval hinders Indian MROs from providing services to aircraft registered in the European Union, even if they possess DGCA and FAA approvals. Consequently, MROs must secure EASA clearance for European Union-registered aircraft, irrespective of their DGCA and FAA endorsements.



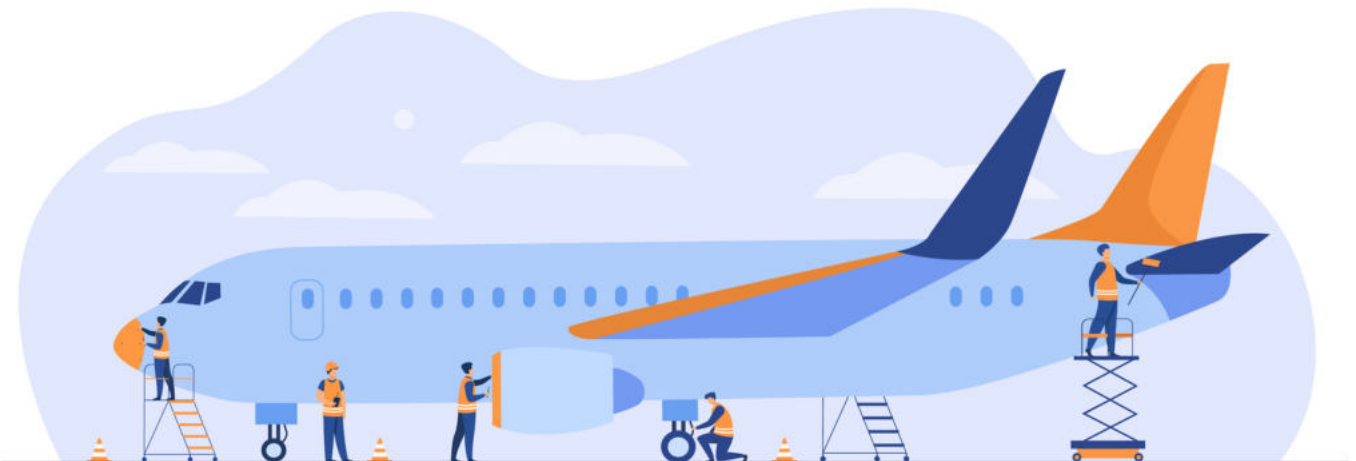
AIESL Unveiled: Charting the Course for MRO Transformation

AI Engineering Services Limited (AIESL), formerly known as Air India Engineering Services LTD, served as the maintenance subsidiary of Air India Limited. Established in 2013, the formation of AIESL resulted from Air India Limited's strategic decision to bifurcate its engineering and ground handling services, creating two wholly-owned subsidiaries as part of its comprehensive turnaround plan—AIESL and Air India Transport Services Limited (AITSL). Positioned as a distinct profit centre, AIESL specialized in providing Maintenance, Repair, and Overhaul (MRO) services not only to Air India but also to other carriers.

However, with the disinvestment of Air India and the directives of the Air India Specific Alternative Mechanism (AISAM), a pivotal shift occurred in AIESL's ownership structure. On the 12th of January 2022, the complete shareholding of AIESL was transferred from Air India to AI Assets Holding Limited (AIAHL). Consequently, as of the same date, AIESL transitioned into a wholly-owned subsidiary of AIAHL, marking a significant milestone in its corporate structure.

Strengths of AIESL

1. **Expertise and Experience:** AIESL brings a wealth of experience from its history in the aviation industry, coupled with insider knowledge as a former airline subsidiary.
2. **Skilled Workforce:** With a team of skilled engineers, technicians, and support staff, AIESL is well-equipped to provide high-quality maintenance and engineering services.
3. **Infrastructure and Facilities:** AIESL boasts advanced facilities for aircraft maintenance and repair, including engine overhaul shops and various component repair centres across multiple locations.
4. **Regulatory Approvals:** Holding DGCA, FAA certifications, and working towards EASA certification, AIESL ensures compliance with global aviation safety and quality standards.
5. **Strategic Location:** With MRO centres strategically located near major aviation hubs, like, Mumbai, Delhi, Hyderabad, Kolkata, Nagpur & Trivandrum AIESL can efficiently serve a diverse clientele.
6. **One stop solution:** Due to the availability of DGCA/FAA approved airframe maintenance centres, DGCA/FAA/EASA approved engine overhaul shops, various specialized components shop, AIESL can be designated as a favourable one stop solution provider.
7. **Defence MRO Business:** AIESL is having various agreements with DRDO for the maintenance of its A319 & A320 aircraft and with Boeing defence to carry out maintenance on Navy P8 aircraft and VVIP b777 aircraft.



AIESL's MRO Capabilities: Transforming the Landscape

The consensus among stakeholders is clear: the upward trajectory of the Indian MRO industry hinges on its ability to elevate its capabilities to encompass engine and component maintenance. AIESL's capabilities in engine and component maintenance, along with its robust infrastructure, position it as a key player in the MRO industry. AIESL operates engine overhaul facilities in Mumbai, Delhi, and Nagpur, effectively covering maintenance for a wide range of existing engine types. Additionally, the company is in the process of enhancing its capabilities by obtaining approvals for CFM LEAP engines, which powers Boeing 737 MAX and Airbus A320 NEO family aircraft. The AIESL signed Engine Maintenance Service Agreement with Willis Lease Finance Corporation, one of the major global engine lessors, for CFM 56 engine servicing and repair showcase its commitment to staying at the forefront in global business agreements.

AIESL's prowess extends to Auxiliary Power Unit

(APU) maintenance, with dedicated overhaul shops proficient in various APU maintenance activities. Beyond engines, the company exhibits a robust presence in component maintenance, boasting multiple overhaul shops across its MRO locations. These encompass structure repair facilities, advanced composite repair units, accessory overhaul shops, electrical overhaul facilities, wheel and brake overhaul shops, landing gear overhaul units, cabin refurbishment workshops, as well as facilities for heat treatment, welding, and standard testing. Additionally, AIESL conducts various Non-Destructive Testing (NDT) procedures such as MPI/FPI, eddy current testing, and ultrasound testing. AIESL's commitment to excellence is exemplified by its continuous efforts to upgrade capabilities in tandem with the induction of new aircraft types into the fleets of Indian airlines. Noteworthy achievements include the successful completion of major checks on the B737 Max and Airbus A320 family with NEO engines.

In addition to its core activities, AIESL provides critical support through Continuing Airworthiness Management Organization (CAMO) technical assistance to airlines. The company further ensures operational resilience with a robust Aircraft on Ground (AOG) recovery team comprising highly skilled engineers and technicians.

While acknowledging the significant capacity of defence MRO players such as HAL, there exists untapped potential. Recent initiatives, such as the Memorandum of Understanding between HAL and Airbus to establish a Civil MRO for A320 family aircraft at its Nasik facility, underscore the potential for growth in the civil aviation MRO sector. Recognizing the parallels in training capacities, spares, and components between civil and defence sectors, a recommendation is made for a strategic Civil-Defence MRO convergence. This convergence aims at optimizing the utilization of existing infrastructure and capacity in both sectors.



Addressing Bottlenecks: Navigating Regulatory Challenges

While AIESL stands as a stalwart in the Indian MRO landscape, the industry still grapples with regulatory challenges. The need for FAA/EASA approvals, despite alignment with DGCA guidelines, poses a hurdle for Indian MROs. The establishment of a nodal agency, akin to successful models in Singapore and Malaysia, could streamline taxation relief, supply chain management, and global collaboration, fostering a more conducive environment for MRO growth in India. Illustratively, in July 2017, the European Aviation Safety Agency (EASA) and the Civil Aviation Authority of Singapore established a collaborative agreement to mutually recognize each other's certifications. This collaboration played a pivotal role in propelling Singapore into a prominent Maintenance, Repair, and Overhaul (MRO) hub. Another significant challenge lies in securing a seamless supply chain in India facilitated by Original Equipment Manufacturers (OEMs). Singapore's strategic advantage in this aspect is evident through its numerous Joint Ventures in MROs with OEMs. Approximately 90% of the industry's value is attributed to the maintenance of parts, logistics, and the availability of a robust supply chain. Obtaining approval for the manufacturing of non-critical components is imperative for the growth of the Indian MRO sector. This not only benefits the MRO industry but also provides airlines with faster and more cost-effective access to essential inventory.

Conclusion: AIESL's Flight Path: Transformative Strategies for Future Growth

As India propels itself into a prominent position in the global aviation market, the role of MRO services becomes increasingly pivotal. AIESL, with its rich history, skilled workforce, and advanced infrastructure, stands at the forefront of this transformation. To ensure sustained growth, collaborative efforts are needed to address regulatory challenges, encourage global partnerships, and create an environment conducive to innovation.

The future of the MRO industry in India, intertwined with AIESL's journey, holds immense potential. By capitalizing on its strengths, addressing challenges head-on, and embracing transformative strategies, AIESL can not only shape its own success but also contribute significantly to the evolution of India's MRO landscape. As the skies beckon, AIESL's wings of expertise and innovation have the potential to chart a course for a thriving MRO industry in the country.



About the Author

Pankaj Kumar Karn, an accomplished professional, currently serves as an Additional Chief Engineer with a distinguished career exceeding two decades in the field of Airline Engineering/MRO. Possessing a B1 license for B737NG (including freighters), B737MAX, and A320 family aircraft, he also holds approvals for structural repair, including advanced composite repairs, on the afore mentioned aircraft types.

A graduate of both IIM Bangalore and Toulouse Business School, France, Pankaj completed his executive MBA with a specialization in Aerospace and Aviation. His academic achievements complement his extensive practical experience, enabling him to seamlessly integrate technical expertise with strategic business acumen.

With a wealth of experience in aviation, Pankaj has successfully led key departments such as MCC, Production Planning, Aircraft Reliability, and Aircraft Scheduling at Air India Express. He also served as Dy BMM at AIESL. Pankaj actively participated in various committees within Air India Express, including those focused on Lease Induction & Return, SGHA Engineering Contracts, and Aircraft Incident Investigation & Recovery.

His professional focus extends to the Middle East Asia and South Asia regions, where his in-depth knowledge and innovative insights have positioned him as an asset in the aviation industry.







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Unleashing India's

Helicopter Potential



Tanya Singh
Arrow Aircraft



India, a country known for its diverse terrain and challenging infrastructure, has seen significant growth in the helicopter industry over the past few years. Helicopters have become indispensable in various sectors, including transportation, healthcare, tourism & defense. Rotary Wings have also proven invaluable assets in times of crisis, enhancing the government's ability to respond effectively to various natural calamities, including floods & earthquakes. However, there's still ample room for India to harness the full potential of this versatile mode of transportation, drawing inspiration from the usage patterns observed in the West.

India's rotary wings industry has made impressive strides, with a growing fleet of civilian and military helicopters. The Defense industry heavily relies on helicopters for various operations, including surveillance, rescue missions, and troop transportation. For instance, during the devastating Kerala floods in 2018, helicopters were used to rescue stranded individuals, drop relief materials, and transport medical teams to remote areas. Similarly, the Indian Navy has frequently deployed helicopters for the offshore oil & gas sector, transporting personnel to and from oil rigs and platforms, ensuring efficient operations in the Arabian Sea.

On the other hand, in the civilian sector, helicopters are widely used for VIP transport, heli-tourism, heli-yatra, aerial surveys, underslung operations, and medical evacuation.

Heli-Yatra to pilgrimage sites like Vaishno Devi, Kedarnath & Amarnath Ji has become increasingly popular in the last decade due to the machines' ability to enhance accessibility, safety, and the overall experience of the pilgrimage, making it an appealing choice for the Indian pilgrims. Arrow Aircraft has been one such operator that's been operating in the Kedar Valley since the beginning of the last decade, having flown over a million yatris. Along with Kedarnath, Arrow deals with Do & Char Dham Yatras Amarnath Shuttles and has previously operated at Shri Machail Mata in Jammu. Other areas where Arrow's Helicopters have touched upon are Aerial Surveys (for PMO's flagship high-speed rail corridor or the Bullet Train) & underslung operations in the northeastern state of Arunachal Pradesh, transporting construction materials for high-extension electric towers. In both sectors, helicopters were immensely valuable due to their ability to cover larger areas quickly than the traditional modes of transportation.



Learning from the West - Europe & the US offers valuable insights into maximizing the utility of helicopters. Firstly, efficient airspace management and air traffic control (ATC) systems in these regions have enabled smoother operations. India can benefit from adopting similar technologies and improving its air traffic management. India shall emulate the heliport infrastructure in cities like London, which offers multiple heliports for more effortless connectivity.

Additionally, utilizing helicopters for urban transportation, such as heli-taxis, is a prominent trend. The US has witnessed the emergence of UAM initiatives, such as Uber Elevate or Joby Aviation, exploring the potential of eVTOL (electric Vertical Takeoff and Landing) aircraft for urban commuting. The same can be mirrored in the Indian cities to alleviate traffic congestion and provide faster, more efficient transport options. To make this a reality, the Indian Government and private sector must collaborate on creating the necessary heli infra.

For the Indian chopper industry to realize its full potential, government support is vital. Initiatives such as tax incentives for helicopter manufacturers, reduced import duties on critical components, and streamlined regulatory processes can attract investments and foster growth. Government Organizations like ISRO & DRDO can collaborate with private sector players to develop advanced heli technologies.

Moreover, consumer behavior is also evolving, and there is a growing preference for time-saving and convenient modes of transportation. Helicopters offer a unique advantage in this regard, as they can overcome the challenges of infrastructure limitations. Heli charter services, heli-tourism, and heli-commuting have witnessed increased interest. As this trend continues, the industry must focus on affordability and accessibility to cater to a broader consumer base.

By leveraging the versatility and capabilities of rotatory wings in various sectors, India can unlock economic opportunities, enhance connectivity, improve emergency response, and promote sustainable development.



Arrow Aircraft is a leading private aviation company that has significantly contributed to the business aviation sector in India. The company provides world-class solutions for aircraft sales, acquisitions, charters, and operational management programs. Apart from this, the company is also deeply invested in the pilgrimage sector and provides Heli shuttle services to Kedarnath, Amarnath & Machail Mata Yatra. The reputation of Arrow Aircraft has enabled it to partner with global aerospace companies for exclusive sales & business development activities. Our business philosophy is based on trust, integrity, and dependability and has a hands-on approach to executing projects with flawless precision. Having such diversified experiences, Arrow Aircraft is well-positioned for future growth in business aviation.

Arrow Aircraft



About the Author

Tanya is a graduate of Warwick Business School, UK. Post which, she worked for a PR firm handling various big hospitality brands, including one of the major players in Indian aviation. Growing up, she was fortunate enough to travel the world and grasp different cultures & traditions. She considers herself a history and political buff who loves all things socio-politics. Currently, Tanya works in the glamorous field of General Aviation, handling commercials & marketing along with PR at Arrow Aircraft Sales & Charters.





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