Operations and business models of Maintenance Repair and Overhaul (MRO) organizations are rapidly changing, driven by competitive forces and changing global dynamics.

Competition is intensifying day by day, threatening the sustainability of traditional business models. Evolving airline fleets and new entrants are disrupting the MRO business landscape and forcing players globally to come up with new business models.

On the technological front, MROs are investing in new technologies that improve their operational efficiency and service standards.

Airlines are gradually evolving from focusing on in-house fleets to customer-centric, third-party service offerings. There is also an increasing share of original equipment manufacturers (OEMs) in the aftermarket and changing fleet dynamics from full-cost carriers (FCCs) to low-cost carriers (LCCs). Now is the time for MROs to evaluate their current status and understand the implications of the industry changes to prepare for the future.

Frost & Sullivan has worked with technology vendors, airline and third-party MROs, OEMs, and aviation authorities to identify game-changing solutions, recommend business improvement and growth opportunities, and develop strategic plans.
MRO MARKET POTENTIAL

- Global MRO to grow by $28B in the next 7 years, from $82B in 2018
- Asia-Pacific will be the 2nd largest market, accounting for 21% global value
- A320 and B737 families will contribute to 40% of the total MRO output

MRO 2025

Global MRO spending to cross the $110B mark by 2025

- NA: $22.5B, CAGR 1.0%
- EUR: $28.3B, CAGR 3.1%
- CHN: $11.6B, CAGR 7.5%
- MEA: $14.1B, CAGR 6.3%
- IND: $3.1B, CAGR 13.6%
- APAC: $22.9B, CAGR 6.2%

Global MRO output is estimated to grow at a CAGR of 4.3% for the period 2018–2025

- Airframe: MRO will grow by 1.29 times, from $6.1 billion in 2018, and reach $7.95 billion by 2025
- Engine: MRO to grow by 1.38 times, from $27 billion in 2018, and reach $37.4 billion by 2025
- Component: MRO to grow by 1.34 times, from $31.7 billion in 2018, and reach $42.5 billion by 2025
- Line: MRO to grow by 1.23 times, from $12.5 billion in 2018, and reach $15.3 billion by 2025

Top 5 Aircraft Families by MRO Spending, Global Forecast, 2025

- A320
- B737
- A330
- B747
- B777
- Others
The commercial aviation MRO landscape is changing across multiple facets, and it is imperative for businesses to develop strategies to align with or counter the impact of these changes to survive in this highly competitive space.

**OEMs in the Aftermarket**
OEMs across the board are looking to increase their share of revenue from the aftermarket.

**Shift in Global Fleet Base**
Asia-Pacific is set to host the largest fleet base going forward, overtaking North America and moving far ahead of Europe.

**New-generation Fleet**
MRO needs of new-generation aircraft are different due to the usage of new-age materials.

**Low-cost Airline Growth**
LCCs are highly cost-sensitive, forcing MROs to run efficiently to come up with competitive pricing.

**Global Expansion of MROs**
Established MROs such as Lufthansa Technik, AAR, SR Technics and AFI-KLM are have setup bases in APAC to tap the market.

---

**Increasing MRO Share of OEMs**
![Increasing MRO Share of OEMs](chart1)

**APAC’s Increasing Share of Global Fleet**
![APAC’s Increasing Share of Global Fleet](chart2)

**Composites by Weight**

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Composites by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airbus A350</td>
<td>53%</td>
</tr>
<tr>
<td>Boeing 787</td>
<td>50%</td>
</tr>
<tr>
<td>Airbus A330</td>
<td>14%</td>
</tr>
<tr>
<td>Boeing 777</td>
<td>12%</td>
</tr>
</tbody>
</table>

---

**Increasing LCC Penetration**

<table>
<thead>
<tr>
<th>Year</th>
<th>LCC Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>19%</td>
</tr>
<tr>
<td>2012</td>
<td>23%</td>
</tr>
<tr>
<td>2014</td>
<td>25%</td>
</tr>
<tr>
<td>2016</td>
<td>28%</td>
</tr>
<tr>
<td>2018</td>
<td>29%</td>
</tr>
</tbody>
</table>
Heavy Maintenance

Inspections Take Up Majority of Downtime
Due to the sheer size and complexities of an aircraft, a lot of time and money is spent only on assessment

Inability to Forecast Maintenance
Growing fleets are leading to increasing unplanned jobs, disrupting routine maintenance

Cost Competitiveness
The rapid growth of LCCs has increased the demand for cost-efficient maintenance

Line Maintenance

Expansion and Addition of Terminals
Expanding airports require services to support larger areas while maintaining efficiency

Inefficiencies in Resource Allocation
Dynamic changes in flight schedules require quick deployment of manpower and equipment

Increasing Need for Shorter Turnaround Time (TAT)
More than ever, need to reduce lead time for resource deployment

Workshop

Unavailability of Real-time Monitoring
No visibility into incoming jobs from heavy maintenance, cabin services, or line maintenance

Difficulties in Parts Handling and Storage
Very strenuous and time-consuming to manually move heavy parts in and out of the shop floor

Increasing Aircraft Complexities
New-generation aircrafts are leading to longer downtimes due to increased difficulties faced by technicians

Fleet Management

Unstructured Repair Management
Lack of a centralized repository to perform smart sourcing for repairs

Lack of Unified Solution
Use of multiple separate programs in parallel by various departments, causing confusion and resulting in delays and losses

Delays and Losses in Delivery of Spares
Lack of visibility into the delivery status and location of spares and components
WHY FROST & SULLIVAN?

For over 50 years, Frost & Sullivan has pioneered growth and guided organizations by providing a 360-degree view of industry intelligence, as well as interaction with the world’s best and brightest analysts, economists, and futurists helping organizations make crucial decisions.

If you face challenges predicting the future of the industry and understanding how changes could impact your organization, positively or negatively, we can help provide the answers you seek.

RESEARCH PROGRAM COMPONENTS

- **Business Strategy**
  - MRO JV Strategy
  - MRO Business Strategy
  - MRO Investment Strategy
  - Airline MRO Strategy
  - Airport MRO Strategy

- **Roadmaps and Policies**
  - Technology Roadmap
  - MRO Industry Roadmap
  - Aerospace Cluster Roadmap
  - Aerospace MRO Policy Framework
  - National MRO Development Roadmap

- **Feasibility and Master Plan Study**
  - Master Planning
  - Aerospace/MRO Park
  - MRO Cluster Benchmarking
  - Best Practices for Cluster Development
  - Aerospace MRO Industry Promotion

---

**STRATEGIC INSIGHT**
Analysis of key topics driving market development

**MARKET SIZING**
Market assessment and forecast

**MRO BENCHMARKING**
Insights into new developments of the major hub technologies
HOW FROST & SULLIVAN CAN SUPPORT YOUR STRATEGIC PLANNING PROCESS:

- Develop Market Entry & Local Partnership Strategy
- Support Drafting of Policies, Regulations, and Incentives
- Develop Master Plans for MRO and Aviation Clusters
- Support Strategy Execution
- Perform Global Best Practices and Benchmarking Study
- Perform Market and Competitor Analysis to Assess Size of Opportunities
- Develop and Implement Technology Roadmap for MROs
- Develop Master Plans for MRO and Aviation Clusters
- Support Strategy Execution
Frost & Sullivan, the Growth Partnership Company, works in collaboration with clients to leverage visionary innovation that addresses the global challenges and related growth opportunities that will make or break today’s market participants. For more than 50 years, we have been developing growth strategies for the global 1000, emerging businesses, the public sector and the investment community. Is your organization prepared for the next profound wave of industry convergence, disruptive technologies, increasing competitive intensity, Mega Trends, breakthrough best practices, changing customer dynamics and emerging economies? Contact Us.

www.frost.com