Impresa MRO

WHITE PAPER

THE FUTURE OF MRO WORKFORCE MANAGEMENT:

ORCHESTRATING PEOPLE, TOOLS, PARTS, FILES, AND DATA FOR A SUSTAINABLE FUTURE

September 2025

Transforming the MRO Workforce with Digital Tools and Intelligent Automation

The aviation Maintenance, Repair, and Overhaul (MRO) industry is standing at a critical crossroads. An aging workforce, persistent shortages of skilled technicians, and the increasing complexity of modern aircraft are creating mounting operational pressures. According to the Aviation Technician Education Council (ATEC), nearly 38% of certificated technicians are aged 60 or older, and retirement rates are projected to outpace the influx of new talent for years to come. At the same time, global fleets are expanding, Oliver Wyman forecasts a 32% increase in aircraft between 2025 and 2035, pushing maintenance demand to new highs.

Faced with these challenges, MRO software platforms must go beyond traditional workforce strategies. Digital tools, integrated data platforms, and intelligent automation are emerging as powerful equalizers that enable organizations to optimize workflows, enhance compliance, and make the technician experience more efficient and engaging. This paper examines the state of the MRO workforce, the transformative role of technology, and how solutions like Impresa™ MRO are helping to solve these challenges.

Rising Industry Costs & Challenges

13% INCREASE IN LABOR COSTS

12K-15K TECHNICIAN SHORTAGE

32% INCREASE IN FLEET GROWTH

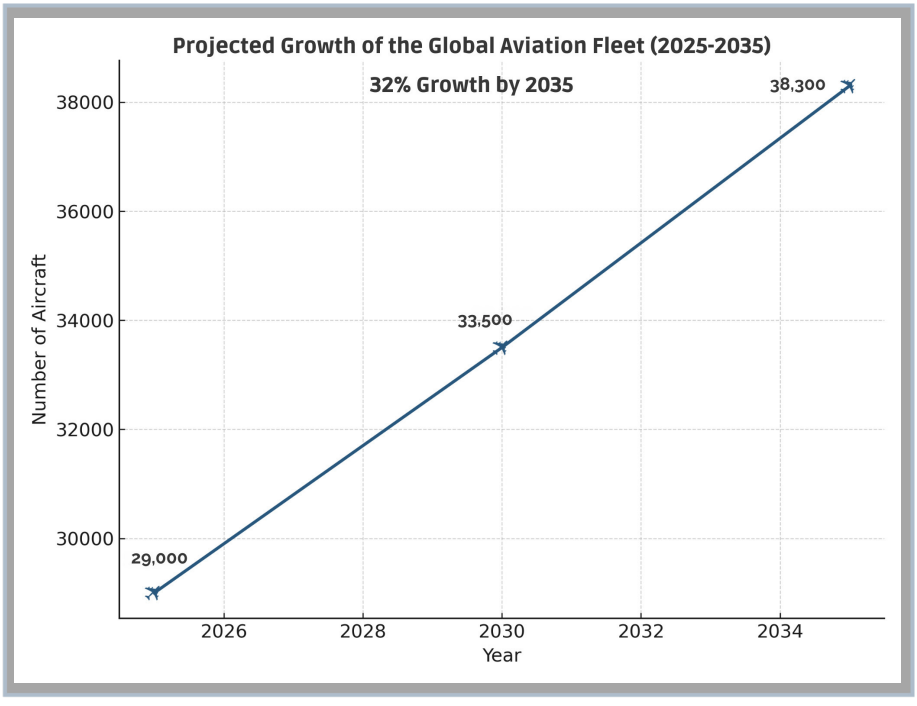
The Workforce Challenges Facing Aviation MRO

The labor shortage in aviation maintenance is more than a headline, it is a persistent, measurable trend. ATEC's 2024 Pipeline Report shows that the number of new FAA-certified A&P technicians graduating each year falls significantly short of industry needs. The gap is widening, and by 2028, the shortage is projected to reach nearly 20% of total demand, or roughly 25,000 technicians. In North America alone, Oliver Wyman estimates a deficit of 16,200 technical personnel, including 10,800 certificated technicians, putting additional strain on MRO software systems designed to optimize workforce planning.

The problem is compounded by demographics. The average age of a U.S. aircraft technician hovers in the mid-50s, meaning a large portion of the workforce is nearing retirement. Replacing these experienced professionals will be difficult, as the pipeline of new entrants is neither large enough nor trained fast enough to keep pace, making the adoption of modern MRO management solutions essential to accelerate onboarding and knowledge transfer.

Digital transformation in aviation MRO is not just about digitizing records, it represents a systemic overhaul of how planning, scheduling, execution, and compliance is managed. Instead of juggling disconnected tools, providers need a unified system that synchronizes the five critical assets of aviation maintenance: people, parts, tools, files, and data.

Adding to the challenge is the rapid expansion of the global fleet. Oliver Wyman projects an increase from 29,000 aircraft in 2025 to over 38,300 by 2035. With every additional aircraft comes a proportional rise in scheduled and unscheduled maintenance needs, parts demand, and compliance obligations. This growth underscores the need for scalable aircraft MRO software platforms that can manage rising workloads and MRO inventory demands effectively.



Operationally, MRO providers are already feeling the strain. Labor costs grew 7.3% in 2023 and are forecast to rise another 5.8% in 2024, well above pre-pandemic norms. Attrition rates, while starting

to stabilize, still average over 10% in North America, leaving many providers struggling to maintain adequate staffing. Here, the best MRO software can provide relief by automating manual processes and improving resource utilization across global networks.

These converging factors mean that unless MRO organizations adopt integrated MRO ERP solutions to amplify technician productivity and engagement, they risk longer turnaround times (TAT), higher costs, and reduced capacity to serve customers.

Technology as a Workforce Multiplier

While the workforce shortage is severe, technology is proving to be a vital counterbalance. Digital transformation in aviation MRO software solutions isn't just about automation, it's about enabling technicians to do their jobs better, faster, and with greater precision.

Modern cloud-based MRO platforms are redefining the way maintenance is planned and executed. Rather than juggling siloed MRO systems for scheduling, MRO inventory management, compliance, and task management, modern platforms unify these workflows into a single, integrated MRO ERP platforms unify workflows in a single environment. With real-time visibility into parts, labor, and documentation, technicians spend less time chasing down information and more time on actual maintenance.

Mobile and connected tools have further transformed the hangar floor. Technicians can now access work instructions, digital task cards, parts availability, and compliance data from tablets or mobile devices, right at the point of maintenance. This shift reduces non-productive time spent walking to terminals or hunting for parts or paper documentation, ultimately boosting efficiency across every aspect of MRO management.

Augmented and virtual reality (AR/VR) solutions are accelerating both onboarding and task execution. Programs like Boeing's VR training modules and Microsoft HoloLens guided maintenance applications help technicians visualize complex assemblies, reducing the likelihood of errors and shortening training timelines.

AI-driven predictive maintenance is also gaining traction. By analyzing sensor data and operational history, predictive systems can forecast component failures before they occur, allowing maintenance to be scheduled during planned downtime rather than in response to unplanned events. This not only improves aircraft availability but also optimizes the use of skilled labor.

When all these tools are integrated through a digital thread, connecting OEM manuals, PLM, ERP, MES, and aircraft MRO software systems, the result is a seamless flow of accurate, up-to-date information. The best MRO software platforms put the right data at technicians' fingertips, reducing rework, ensuring compliance, and supporting faster turnaround times (TAT).

The Human Impact of Digital MRO

The benefits of adopting modern MRO software solutions extend beyond efficiency metrics, they directly influence the technician experience. By automating the repetitive administrative tasks, integrated MRO management platforms liberates technicians to focus on skilled labor. Instant access to the right information reduces frustration and supports higher job satisfaction.

Safety and compliance also improve. Automated digital recordkeeping ensures audit readiness, while built-in compliance checks within aircraft MRO software reduce costly errors and rework. Training becomes more engaging and adaptable, particularly for younger technicians who expect digital tools in the workplace.

For MRO providers, these improvements are more than operational wins, they are recruitment and retention advantages. In an industry competing for a limited pool of skilled labor, offering a modern, tech-forward work environment can be the deciding factor for new hires.

Impresa MRO: The Conductor of Maintenance Operations

In many MRO operations, people, parts, tools, files, and metadata all move independently, resulting in inefficiencies and delays. Impresa™ MRO acts as the conductor that brings harmony to this orchestra. Unlike fragmented MRO systems or generic ERPs, Impresa unifies planning, scheduling, work orders, MRO inventory control, compliance tracking, and analytics into one integrate MRO platform. This includes creating visibility into technician schedules and certifications, ensuring that the right personnel are matched to the right tasks. By aligning technician qualifications with planned work, Impresa maximizes productive time on task while maintaining compliance.

Designed by aerospace professionals, for aerospace professionals, Impresa MRO is a cloud-native, self-hosted SaaS application that delivers:

- **Faster Turnaround Times** through automated scheduling and AI-driven task prioritization.
- **Lower Total Cost of Ownership (TCO)** with modern cloud architecture, free from the lock-in legacy MRO ERP systems.
- **Real-Time Visibility** into operations, allowing parts, people, and planes, tracking resource anytime, anywhere.
- **Integrated Planning of Assets, People, Parts, Tools, Files, and Data** so that workforce availability, certifications, and material readiness are all factored into scheduling decisions, driving true end-to-end efficiency.
- **Regulatory Readiness** with automated recordkeeping and audit trails to meet FAA, EASA, and other global standards.
- **Scalability** to grow with the needs of small and mid-sized MROs, without adding IT complexity.

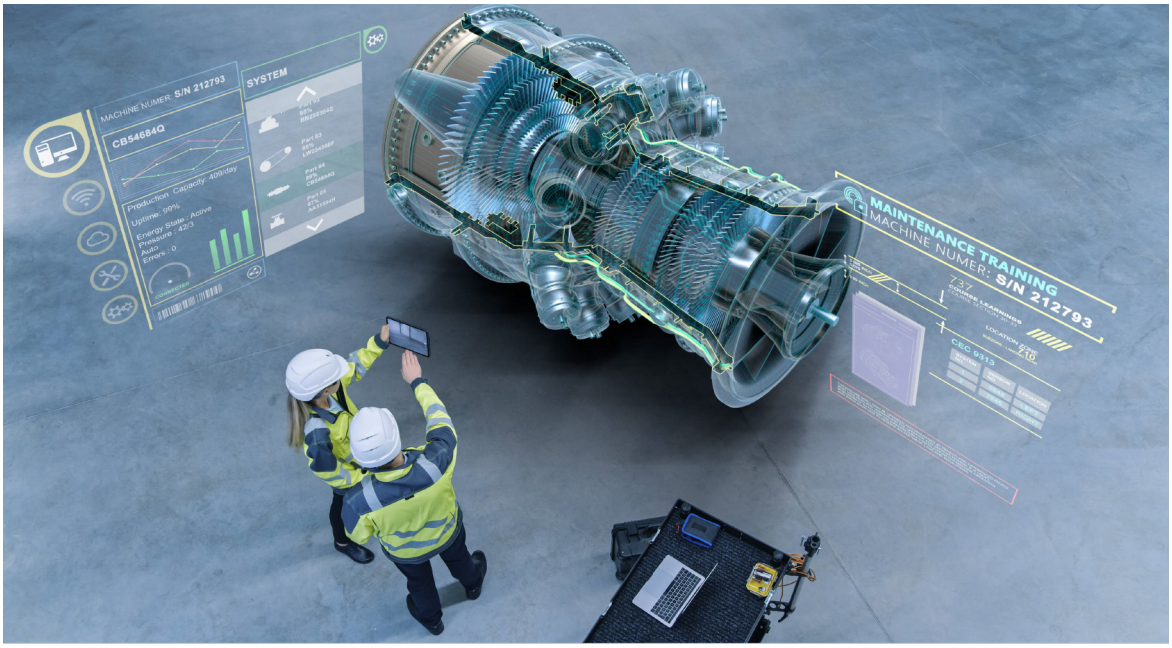
Customers consistently report cutting days or even weeks from heavy maintenance schedules, boosting aircraft availability, profitability, and competitive advantage.

Preparing for the Future Workforce

The challenges facing the MRO workforce, shortages, rising costs, and compliance pressures, are not temporary. They will define the next decade of aviation MRO software adoption. The providers that succeed will be those that adopt tools and strategies to make their technicians more capable, more efficient, and more engaged.

Platforms like Impresa MRO are more than operational systems, they are workforce enablers. Efficiency comes not just from automation but from the orchestration of people, tools, parts, and data into synchronized workflows. By bringing these elements together within a single planning and scheduling framework, Impresa empowers organizations to cut downtime, accelerate turnaround, and support sustainable growth.

As AI, automation, and immersive training technologies advance, their impact on workforce productivity, safety, and job satisfaction will only deepen, making modern MRO software solutions the foundation of future-ready operations.



Conclusion: Orchestrating Workforce Technology

The future of MRO workforce management will be defined by the industry's ability to transform challenge into an opportunity. By investing in digital-first MRO solutions that empowers technicians, providers can bridge the skills gap, improve compliance, and keep fleets mission-ready.

In an aviation market defined by speed, precision, and safety, Impresa MRO is not just another MRO platform, it is the conductor of aviation maintenance, orchestrating assets into a coordinated, high-performing operation.

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