

Predictive Maintenance (PdM)

Using real-time sensor data, AI-driven analytics, and integrated fleet insights to reduce downtime, increase safety, and optimize aircraft maintenance.

Problem Statement

Airlines around the world face growing challenges in managing fleet maintenance. Inconsistent data recording, fragmented systems, and lack of digitalization hinder efficiency. Amach aims to collect and connect comprehensive data sets across fleet operations — including wear and tear, interventions, and their outcomes — to identify performance gaps and drive predictive insights that reduce risk and cost.

Key Issues:

Problem

Solution

Increased Downtime



Unplanned equipment failures lead to flight cancellations and operational disruptions.



PdM enables early detection of issues, reducing unexpected downtime through real-time alerts.

Higher Maintenance Costs



Emergency repairs and reactive maintenance increase expenditure.



Predictive insights allow timely, planned interventions, lowering repair and replacement costs.

Reduced Equipment Lifespan



Frequent breakdowns and poor maintenance shorten aircraft component life.



PdM ensures timely servicing, improving long-term equipment reliability.

Safety Risks



Inadequate maintenance poses safety risks and may breach IATA's Aircraft Maintenance Optimization Guidelines.



PdM aligns with best-practice guidelines to ensure regulatory compliance and safer operations.

Difficulty in Planning



Lack of predictive insight hinders resource and maintenance planning.



PdM supports data-driven decisions, improving planning, scheduling, and resource allocation.

AI-Driven Predictive Maintenance

Amach's PdM solution combines AI, IoT sensors, and analytics to digitize and optimize fleet maintenance, shifting from reactive to predictive strategies.



Process Improvement:

Identify critical components (e.g. engines, avionics), automate data collection, and integrate logs, flight data, and sensor inputs to unify the maintenance workflow.



AI & Advanced Analytics:

Train ML models to detect wear patterns, predict failures, and simulate intervention scenarios to optimize maintenance timing and extend component lifespan.



Scheduling & Optimization:

Automate workflows, forecast parts demand, align maintenance schedules with planned downtime, and improve data quality for long-term insights.



Key Benefits



Enhanced Operational Efficiency

Optimizes fuel consumption and reduces ground time.



Prolonged Equipment Lifespan

Timely interventions extend the life of critical components.



Minimised Downtime

Reduces surprise failures, ensuring reliable scheduling.



Cost Reduction

Lowers repair and emergency maintenance costs.



Improved Safety & Compliance

Supports adherence to IATA guidelines and reduces accident risk.

Conclusion

Predictive Maintenance is a game-changer for the aviation industry. By collecting and analyzing aircraft health data, Amach helps airlines move from reactive to proactive maintenance strategies. This results in reduced downtime, extended component life, improved safety, and lower costs. Amach's holistic solution integrates process improvement, AI, and scheduling optimization – making predictive maintenance scalable and sustainable. Continuous learning and refinement ensure lasting impact, helping airlines stay competitive while meeting the highest operational standards.

Ready To Learn More?

Amach has successfully delivered Aviation Integration for global airline clients. Let us help you modernize operations while minimizing risk. Contact us today to discuss your integration strategy.

Contact Us

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