Increasing MRO and Aftermarket Efficiency with Predictive Maintenance Technology

Martyn Haines, Technical Director, AJW Group IATA 5th Paperless Aircraft Operations and RFID Conference, Nov 2018

About Us



AJW Group is a world-leading independent specialist in the supply, exchange, repair and lease of modern commercial airframe and engine spare parts.

Through innovative and tailored services, the company delivers highly effective supply chain, asset management and channel partner solutions to transform aviation efficiency.

- Supporting more than 1,000 airlines in 117 countries
- Renowned for our 24/7/365 AOG logistics and customer service
- Incorporating one of the world's leading MRO facilities
 AJW Technique
- 6 x winner of the MRO Global 'Parts Supplier of the Year Award' including 2018
- Consistent 20% growth in group revenue over 10 years
- Over 750 staff globally

1932

An aviation story since 1932
2018 Major OEM repair contract won with Bombardier
2015 Industry leading total support, supply chain contract with easyJet
Founding of AJW Technique (Component MRO)
Focus on Boeing and Airbus Engines and C&E support
Company founded

Component MRO



AJW Technique is our industry leading MRO facility. Located in Montreal, the purpose built 160,000 sq.ft. facility strives to incorporate cost and reliability innovations to all aspects of the MRO Cycle.



Key Differentiators

- Comprehensive licencing agreements from all major OEMs ensuring access to latest technical publications
- Repairs backed up by exchange ready inventory
- Total cost/DMC approach to increasing unit life on-wing
- Flexible commercial terms delivering repair programmes tailored to flight profiles

Certifications

FAA/TCCA, EASA, CAAC, DGCA, HKCAD, ANAC, CAAS

Capabilities

- Avionics
- Hydraulics
- Pneumatics
- Fuel
- Power generation
- Safety slides
- IDG
- Galley
- Electromechanical & Lighting
- 80% of ATA chapters covered

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What is Predictive Maintenance ?

Through detection of a developing system or component failure, corrective action is taken before causing an operational disruption



What are the primary benefits?



Through detection of a developing system or component failure, the benefits listed can be achieved by taking corrective action before causing an operational disruption





Further benefits



discomfort Avoid incorrect component removals

> Delay reduction

Avoid risk of customer

Reduced maintenance costs (parts & labour)

Reduced fuel costs

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Avoid High NFF & early removals



Reduced MEL limitations

Other benefits being enjoyed by Operators through Predictive Maintenance

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Value chain





Areas not being leveraged





- Standards, ownership, integration and sharing of data
- Competing technology between suppliers
- Optimisation of inventory levels

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• Smart workscoping for Predictive Maintenance component removals



Optimisation of workscopes for NFF



• Predictive Maintenance component removals translated into soft lifing concepts

8

Alignment of AOMs & OEMs in sharing Predictive Maintenance data





Competing technology between suppliers

Standards, ownership, integration and sharing of data



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Optimised inventory levels



Predictive Maintenance can cause the effects of too much or too little inventory





Component workscoping

AJW



Are component workscopes for Predictive Maintenance removals being optimised through smart workscoping ?

Engine Start Valve - Spring tension deterioration through detection of valve opening time. Is it appropriate to perform standard CMM repair / overhaul specification ?



ACM or Avionics Cooling Fan - Bearing Health Monitoring allows early vibration detection which avoids potential smoke in cabin / diversion events. Also avoids high cost repair of other failed 'piece parts'. OEMs recommend overhaul, but is full O/H actually required ?

11

Smart Workscoping

- Transferring Predictive Maintenance into soft life offerings
- Quick and efficient solutions from internal research
- MRO influence often forces OEM to align





Components in scope

Oil / Fuel Filter Clogging



New Technology aircraft (787, A350, A320 NEO, 737 MAX) have taken the number of PM capable components to a new level.

A320 example :

57 Component / system combinations

ATA 21 - Skin Air Inlet/Outlet Valve, Temp Sensor, Bypass Valve, Pack Performance Monitoring, Flow Control Valve, Cabin Leak, Ram Air Flap Actuator, Avionic Cooling Fan

ATA24 - IDG Oil / Temp / Failure Prediction



ATA 29 - Hydraulic Reservoir Level Monitoring / Temp, Hyd Pump, Hyd Press Switch / Transducer, Accumulator Servicing

ATA 34 – Rad Alt, AoA Sensor, Pitot Probe, IRS Drift

> ATA 49 – APU Oil Cooler, Air Intake Flap Actuator, Starter Motor, APU Gen

ATA 32 – Brake Temp, L/G Extension / Retraction / Prox Sensor / Shock Absorber, Brake Servo / Selector Valve, NWS Drift / Vibration, Direct Drive Valve, Brake Press Transducer, Tachometer, Park Brake Control Valve

Industry issues to be addressed



Various actions will support full Predictive Maintenance benefits being leveraged



Finding the sweet spot







Thank you

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