



Maintenance Cost Efficiency

September 2017

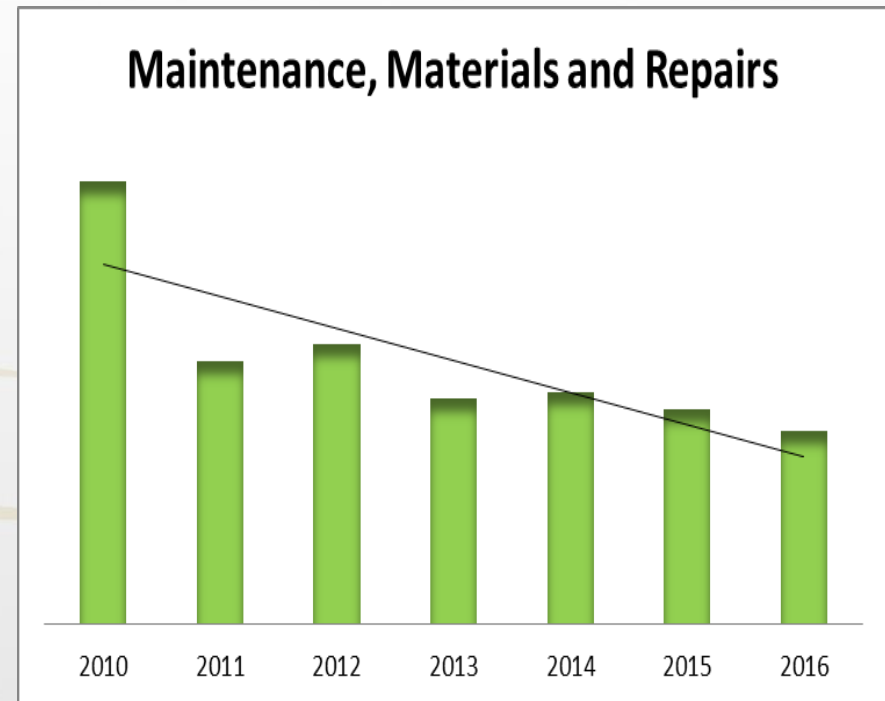
Is this coincidence or do we know our business?

■ We had received the following awards:

■ Best **On-Time Performance** in Latin America (Flight Stats) and Second On-Time Performance Worldwide (AOG) in 2016

■ **Highest Maintenance Reliability Performance** of our engines during the last 5 years according to CFM and GE in 2016

■ World's **most profitable airline**, (Airline Weekly, October 2014)



Cost per Available Seat Mile (CASM)



MAGIC PILL

■ The “**Magic Pill**” does exist in Aviation!



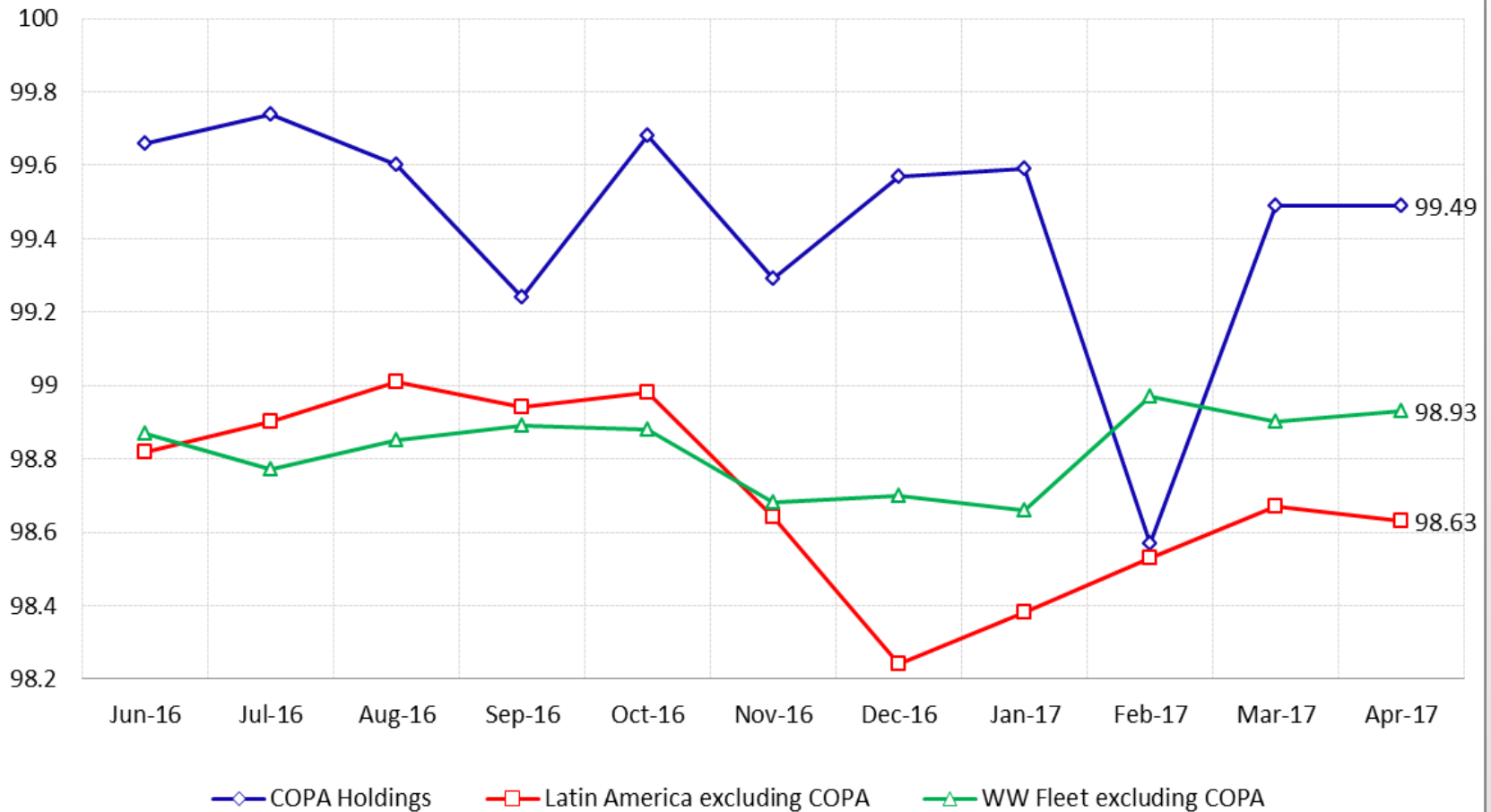
The Problem is that:

- Sometimes the “**Doctors**” are not qualified or are not real doctors
- Not all “**The Human Bodies**” are equal
- The “**Doses**” needs to be manged



EMB 190 World Wide Fleet (WWF)

EMBRAER 190 SCHEDULE RELIABILITY(%) TOTAL -MONTHLY



Source: Embraer



Synthesis

■ The Planning and scheduling of the maintenance activities when you operate in more than 74 destinations' and 31 countries is **far beyond recommendations** of the **Manufactures** and **reactive maintenance**.

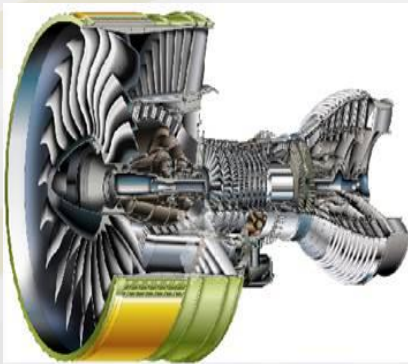
■ It is impossible to have spare parts and technicians in all our destination make it indispensable to believe in **predictive maintenance**

- Inventory Strategies
- Maintenance Best Practices
- Search for Efficiencies
- Training Strategies

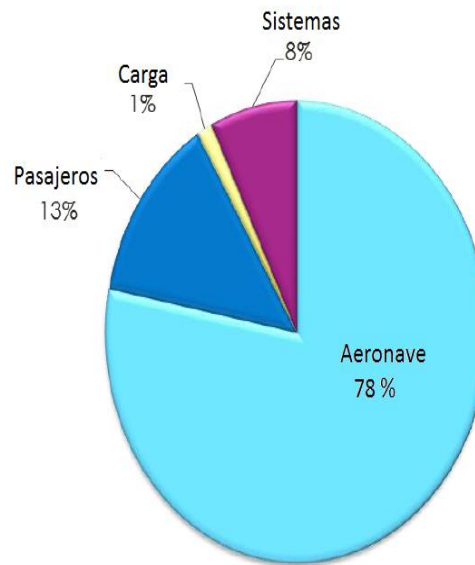


Operating Cost

Any initiative that can generate savings within **Maintenance costs**, will have a **high and positive impact** within the operation and the profitability of an airline.



Total: Costos Operacionales



Costos de Operación

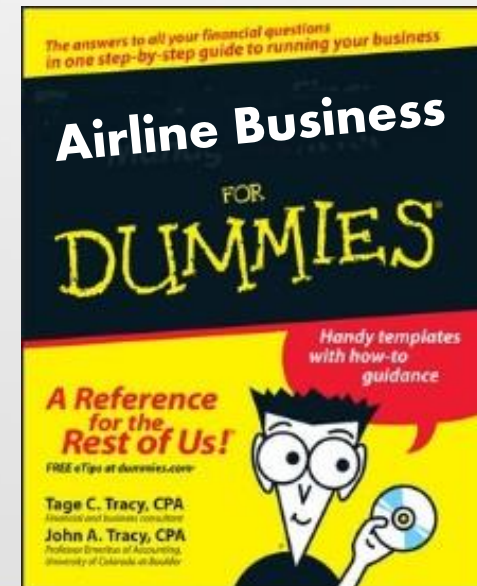


- 777-200ER
- Precio de Combustible \$3.50 / Galón
- 3,000 nm promedio de utilización



Inventory Strategies

- The importance of inventory control lies in the primary objective of every company: **TO OBTAIN PROFITS...**
- However, if the inventory function does not operate effectively, the company will not have enough material to operate efficiently, the customer will be discontented and the opportunity to have profits dissolves.
 - Material Planning
 - Inventory Administration
 - Contract Negotiation
 - Managing Turn around time



Where do we buy our spares and what type of spares?

- Copa is known for using PMA, so **YES we use PMA`s!!!**
- The others are original spare parts purchased from the manufacturer or distributors of the manufacturer
- Thanks to the first-class supply chain, we can be sure that we will have available what we need, when we need it.



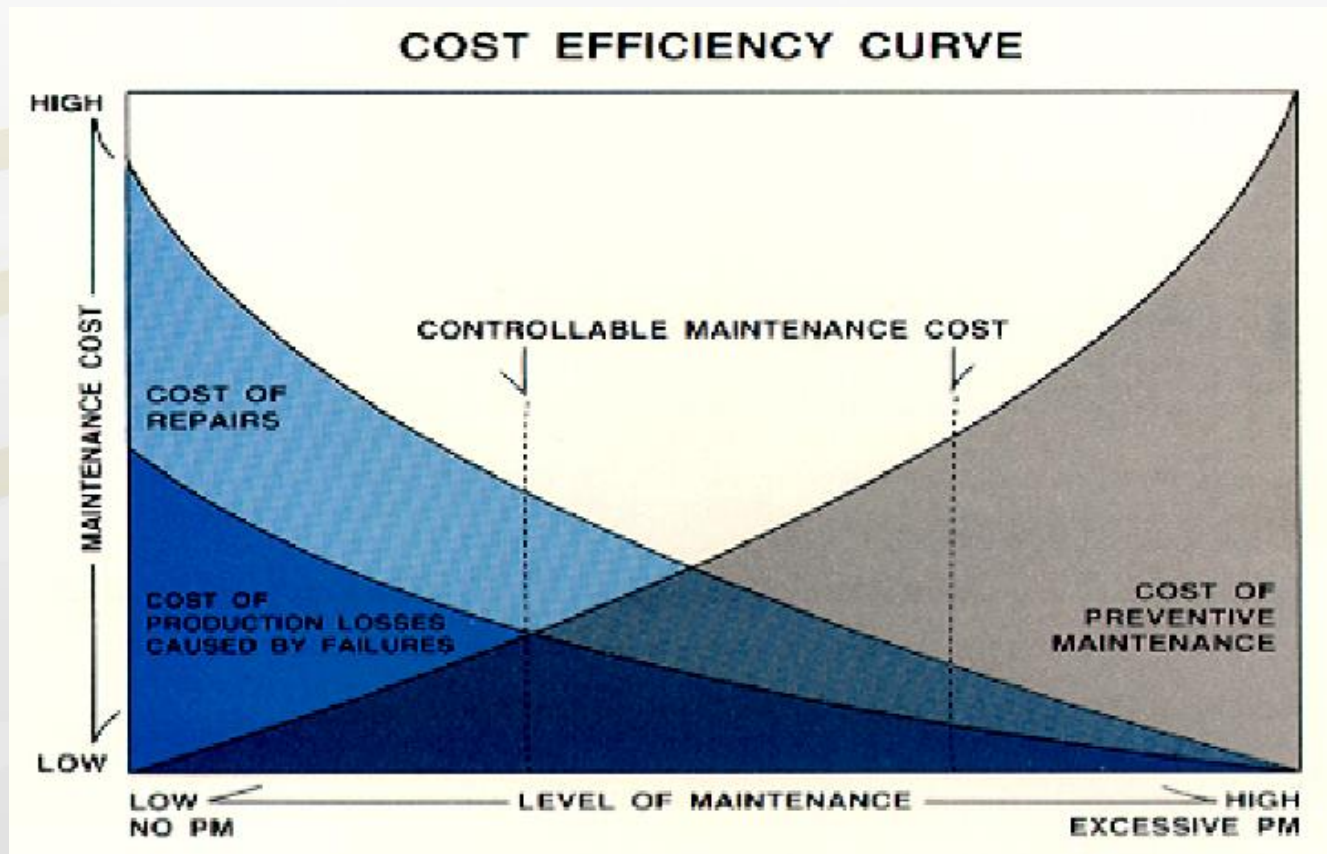
Engine Repairs

- Aircraft turbines are one of the **largest expenses** in aircraft maintenance
- We use programs called Power by the Hour (PBH) where we pay an hourly rate per flight.
- We always review the Service Bulletins and implement those who increase the **Time on Wing.**

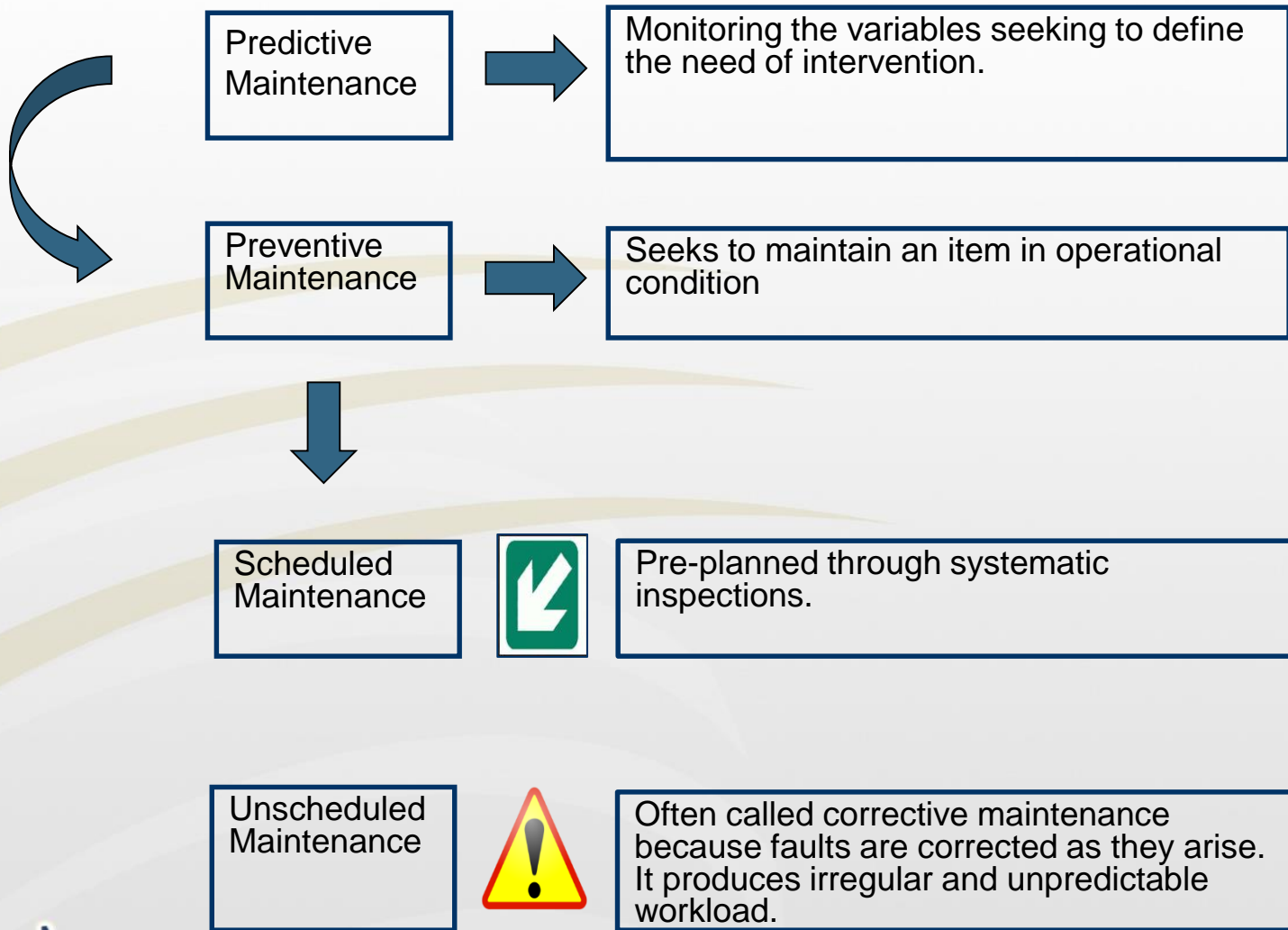


Maintenance Cost

Excessive maintenance does not improve reliability and may lead to additional faults...

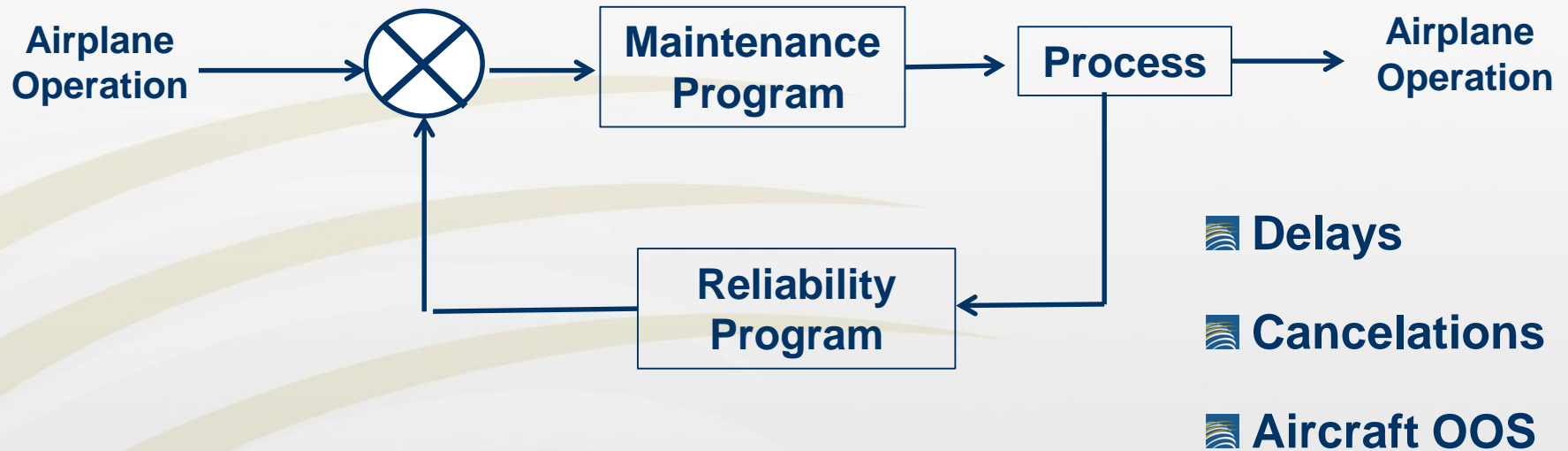


Maintenance Program



Maintenance Program

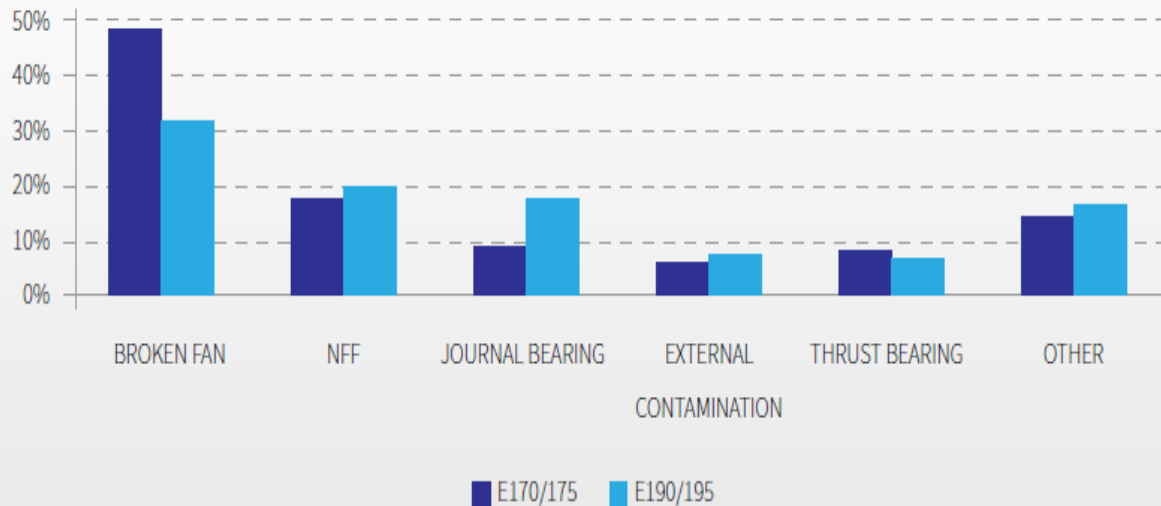
Indicators



Component Shop Finding

Shop Finding analysis

AIR CYCLE MACHINE
SHOP FINDINGS JAN/2015 - JUN/2016



Analysis of Air Cycle Machine (ACM) shop finding reports shows Fan Broken and Journal Bearing as the main drivers for ACM PN 1000700-4 and -5 removals.



(1) New
Titanium Fan



(2) New
Journal Bearing



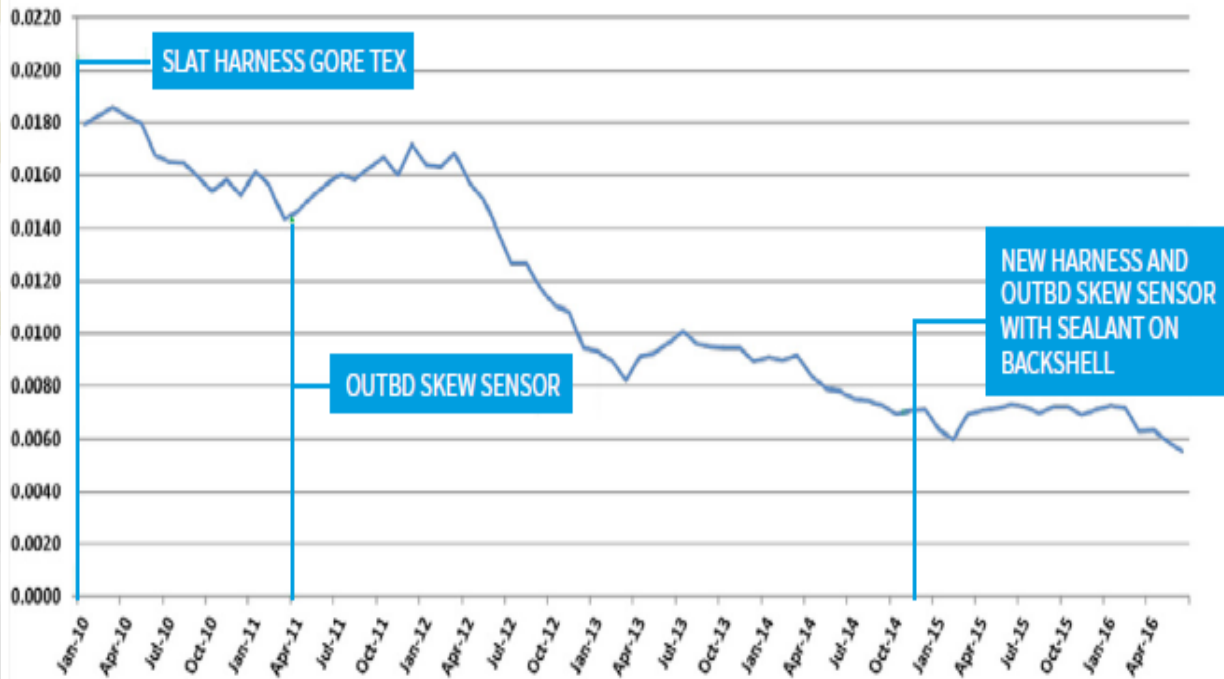
Component Service Bulletins

- Not 100% of the Service **Bulletins** behave as **advertised** by the OEM

(3) Examples of Harness and Outb Skew Sensor with sealant applied



Slat Fail - Chargeable Interruptions Outbd Skew and Harness Solutions



Systems Monitoring



Systems Monitoring



Training

- If you think Education is expensive, **try ignorance!**
- Is training and **expense** or an **investment**?
- Failure to have a trained team impacts the daily decisions and operation of the equipment, which can lead to delays in operation and / or flight cancellations.



Training

- Good training results in:
- Increased **efficiency** of the aircraft/engines
- Increased **availability of equipment**
- Reduced **inventory levels**



הודות.
Mh'gōi
arigatō
danke
nandri
takk
grazie
hvala.
gracias
dziękuję
děkuji
kiitos
Xièxiè
спасибо
ευχαριστώ
mahalo
tānan
dank u
gràcies
tack
köszönöm
благодаря
shukran
ederim
teşekkür
dhanyavād
faleminderit
xвала
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Баярлалаа
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