Engine Condition Monitoring at SR Technics Switzerland

R. Arntz / 31.3.06
SR Technics Overview

- 1997 created as separate company in SAir Group
- Since Dec 2002 owned by finance investors 3i plc, Star Capital and others
- Largest independent MRO provider
SR Technics Overview

Services:

● Aircraft Services (Airbus / Boeing)
  ● Line/Base/Heavy Maintenance
  ● Total Care Fleet Management

● Engine Services
  ● Repair and Overhaul
  ● Total Fleet Management

● Component Services
  ● Repair and Overhaul
  ● Integrated Component Management

● Enhanced Services
  ● Engineering, Logistics, AOG desk, Training
Engine Condition Monitoring / ECM

Introduction:

● Airlines require maximum engine on-wing life at minimum costs

● Legal requirements from Authorities for certain aircrafts to monitor engine condition (ETOPS)

● SRT supports these requirements by monitoring engines through their operational life

● ECM as a product enhances reliable operation by collecting, analysing and displaying engine specific data and recommending / performing maintenance actions
Engine Condition Monitoring / ECM

ECM Interfaces

- Pilot Complaints
- Engineering Experience
- Test Cell Trends
- Watch List Trend Report
- On Wing Trending ECM
- Engine Fleet Management
- ECM Tools
- ACARS
- FALCON
- Optical Disk Data
- EMS Database
- Troubleshooting
- On Wing Maintenance Actions
Engine Condition Monitoring / ECM

FALCON Data Flow and Processing / Simplified Overview
Engine Condition Monitoring / ECM

SRT requirements

Short Term Monitoring to cover trouble & repair activities on wing

- Fast track graphical analysis
- Easy handling, highly automatic & standardized system
- On-line data availability & 24h access
- Troubleshooting possibilities (access to relevant data)

Long Term Monitoring to cover engine removal planning

- Coverage of whole engine life
- Standardized graphical analysis
- Fleet and Engine comparison & ranking
Engine Condition Monitoring / ECM

Services:

- 24 / 7 automatic trend data processing, conversion and correction
- Data visualisation in GUI “FALCON” via Internet
- 24 / 7 access for customers
- Automatic e-mail alerting
- Engineering support by SRT
  - recommendation of corrective actions
  - ECM reporting
Engine Condition Monitoring / ECM

WHY a GUI?
- Single Systems with specific infrastructures and outputs
- High amount of ECM manpower required
- Get rid of “paper trash”

“History View”
Engine Condition Monitoring / ECM

Graphical User Interface

Benefits

● Unified output reduced training / workload up to 90%
● Automated data processing reduced manpower to minimum
● KISS philosophy for User
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FALCON Selection Interface => Meta Data Driven!

With the Meta Data driven concept we are able to adjust the interface easily and fast! This gives us the required flexibility!
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Go from “one engine view” trend to FALCON fleet survey to compare engine status within your fleet.

Advantage:
Immediate fleet overview instead of single engine view.
Engine Condition Monitoring / ECM

Advantage:
Reduce human factor errors

Let the system automatically monitor your fleet and tell you exceedances only thus concentrate on problems

Oil Pressure drop automatically alerted / solved with Oil Pump change
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Display all installed engines per Aircraft instead of single engine view

Advantage:
Find out “real” trend changes

Data fluctuation and “real” shift
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This chart is mainly used to perform a fleet ranking. This is useful in the short term to find out engines with on wing performance problems but also for the long term to plan the shop visit staggering.
Cruise dEGT and dFF values are used to give an initial performance overview of every engine in your fleet as EGT and Fuel Flow react towards the same direction in case of engine problems and during on wing life.
Cruise N1 vibrations from two different vibration pick ups are used to better monitor vibration behavior.
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Takeoff EGT Margin trend showing all engines per Aircraft allowing immediate comparison with each other.
Engine Condition Monitoring / ECM

A340-313 HB-JMI / EGT MARGIN vs FLIGHT DATE

Takeoff EGT Margin long term trend showing history data per Aircraft.
Engine Condition Monitoring / ECM

CF56-5C 741523 / EGT MARGIN vs FLIGHT DATE

Single engine short and long term trend shows current engine performance but also complete engine life and history.
3D views showing two different parameters versus time as for instance N1 vibration carpet.
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● SR Technics’ Advantages Using SAS Software in FALCON / The “User’s View”:
  ● KISS philosophy / user friendly interface
  ● No User training required
  ● Quick & professional support in background
  ● Software changes faster than from OEM’s
  ● User requests are understood and fulfilled
  ● Software helps and is no obstacle
  ● Software can be maintained in house
Engine Condition Monitoring / ECM

- 60 FALCON User
- access via SRT Intranet or Internet
- 10'000 Plots per Month in average
- appr. 500 MB Data in total
- Application maintained & developed by SRT