AERO ENGINE SUPPLIER QUALITY GROUP (AESQ) OVERVIEW

BARBARA NEGROE
EXECUTIVE SOURCING QUALITY LEADER
GE AVIATION
Aero Engine Industry Burning Platform

Aero Engine Manufacturers created a Collaboration working group to address burning platform in 2013 with key Global Suppliers

*Used the Automotive example of QS-9000 with Ford, GM and Chrysler as the model*

- Airline passengers set to double in size over the next 20 years
- Customers expect Zero Defects
- Increasing level of supplier made engine content
- Global Supplier Footprint
- Large number of common suppliers between engine manufacturers
- Wide range of Aerospace engine supplier businesses, from <$1M to >$2B
- Improving Quality, Cost and Delivery remains a key challenge
Defect Prevention Tools Must Work as a System
Aero Engine Supplier Quality Group Principles

- Aero Engine Manufacturers created a Collaboration working group to address burning platform in 2013 with key Global Suppliers
- Used the Automotive example of QS-9000 with Ford, GM and Chrysler as the model
- Purpose is to:
  - Simplify and Standardize Aero Engine supplier requirements through the removal of duplication and waste
  - Create a common language for Quality
  - Build on existing industry standards, where they exist
  - Create Requirements that are simple, prescriptive, and auditable
  - Promote the use of standardized 3rd party training
  - Deliver results with pace
  - Focus on effective deployment and improving the capability of the shared supply chains
AESQ Strategy Group Members

AESQ Members
Cincinnati Thermal Spray
Consolidated Precision Products
Meggitt PLC
Solar Atmospheres
AESQ Vision

To establish and maintain a common set of Quality Requirements that enable the Global Aero Engine Supply Chain to be truly competitive through lean, capable processes and a culture of Continuous Improvement.
Aero Industry Requirements Flowdown 2012

Regulator Requirements
Customer Requirements
Industry Requirements
NADCAP
IAQG (AS9100, AS9145, AS9102, etc.)
ISO (ISO9001, ISO19011, etc.)

AEROS4 Engine Manufacturers

Rolls-Royce
SABRe

GE
S-1000

P&W
ASQR-01

Safran
SAFe

Aero Engine Supply Chain
Product Life Cycle & Current AESQ Document Interaction


AS9145 APQP Phases

AS9145 Key PPAP Events

AS9145 PPAP Element Timing

AESQ 2nd Level Documents

AESQ Systems Documents

AS13000 – Problem Solving Requirements for Suppliers - 8D
AS13001 – Delegated Product Release Verification Training Requirements
AS13002 – Inspection Frequency Plans
AS13003 – Measurement Systems Analysis
AS13004 – PFMEA & Control Plans
AS13006 – Process Control Methods
Example Best Practice Stories

Sam Suzhou make Engine Mounts
16 Part Specific FMEAs using AS13004 created in 3 months
PFMEA led to the Introduction of error proofing and prevention controls
Defect Free since September 2017

Fan Case Delivered Defect Free at PPAP after applying AS13004, AS13003 and AS13006
70 consecutive parts now delivered Defect Free
Manufactured by GKN, Newington
PPAP completed in 6 months instead of the usual 18 months

IPT Turbine Blade machining using AS13006 Real Time SPC
98% of features Cpk >2, the other 2% Cpk >1.67
Zero Defect standard met since production start (5,000 blades)