Design Organisation Approval

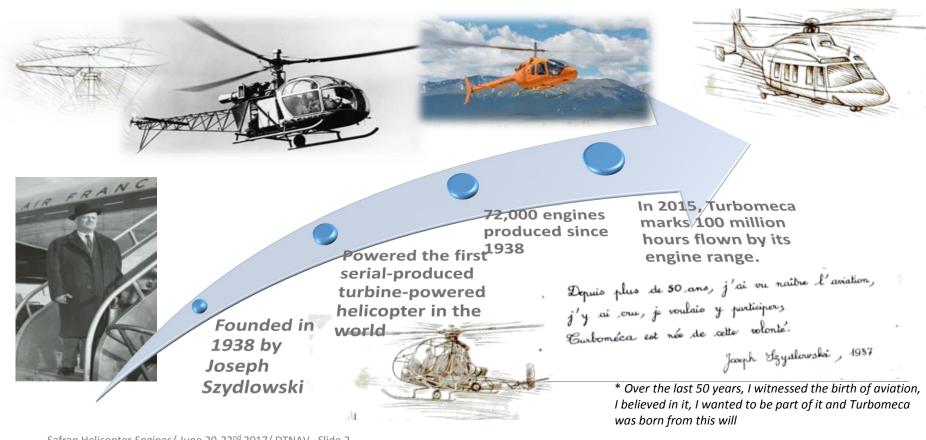*SAFRAN Helicopter Engines – Jean-Luc THOUVENOT*

SAFRAN Helicopter Engines: 79 years of excellence

Founded in 1938 by Joseph Szydlowski

Powered the first serial-produced turbine-powered helicopter in the world

72,000 engines produced since 1938

In 2015, Turbomeca marks 100 million hours flown by its engine range.

Depuis plus de 50 ans, j'ai vu naître l'aviation, j'y ai cru, je voulais y participer, Turboméca est né de cette volonté.

Joseph Szydlowski, 1987

* Over the last 50 years, I witnessed the birth of aviation, I believed in it, I wanted to be part of it and Turbomeca was born from this will

THE WIDEST RANGE OF HELICOPTER ENGINES

+ Classic engines: Turmo, Astazou, Artouste, etc

- Experience of certification – 16 EASA active TC's
  - 58 variants and 20000 active engines worldwide
    - Ardiden 1 & 3: 3 variants
    - Arriel 1 & 2: 25 variants
    - Arrius 1 & 2: 10 variants
    - Artouste 2 & 3: 5 variants
    - Astazou 2 & 3 & 14: 5 variants
    - Makila 1 & 2: 5 variants
    - TM333: 2 variants
    - Turmo: 1 variant
    - RTM322: 3 variants

- ➤ DOA Organisation defined in a handbook
  - ➤ One CEO to allocate design resources
  - ➤ One HDO ultimately responsible for the design activities and technical content
    - ➤ Nominated after an audit by EASA DOA team leader
    - ➤ Declares conformity of the design to airworthiness rules
  - ➤ One COA directly reporting to the HDO
    - ➤ Manages the staff in charge of airworthiness activities
    - ➤ Is allowed to make any decisions in terms of safety, despite any hierarchical considerations
  - ➤ One ISM reporting to the Quality organisation
    - ➤ Defines / performs internal audit plan and reports to HDO

DOA Status - privileges

DOA EASA.21J.070 for turbine engines and associated design changes or repairs

Privileges

- Acceptance, without EASA verification, of documents issued for obtaining:
  - Aircraft flight conditions required for a permit to fly
  - A type certificate or a major change approval
- Classification of changes and repairs
- Approval of minor changes and minor repairs
- Approval of major repairs for the Turbomeca engines
- Issue of information and instructions approved under the authority of our DOA

DOA – Certification roles and responsibilities

- EASA verifies, through audits, the ability of the DOA holder to design and to show compliance with the regulations
- DOA Holder is fully responsible for the content of the technical justifications, and their completeness
  - Certification reports shall show the methods used and main data for showing compliance to the requirements, and state that the requirements are met
  - Detailed analysis or calculations are not part of certification reports
- EASA responsibility is to accept that the statements provided by applicant fulfil the requirements
  - Do not verify the technical analysis performed by DOA holder
  - Can question in case the demonstration looks incorrect or needs clarification

➤ What did the DOA concept change?

  ➤ Mindset of applicant's personnel is different

    ⊃ They feel more responsible for what they state

    ⊃ They do not seek for EASA acceptance of justifications they would not be convinced with themselves

  ➤ Increased confidence of Authority in the applicants

    ⊃ EASA resources used only to understand applicants reports

    ⊃ EASA resources not used to look for potential applicants "lies"

    ⊃ Applicant declares by himself whenever a wrong statement was provided , and proposes corrections

  ➤ Certification process is smoother and less costly

Certification process EASA + Applicant

- **Step by step approach with frozen outputs**
  - Familiarization meeting → freezes the overall design and limitations
  - Certification basis → freezes the requirements, assuming familiarization meeting design and limitations unchanged
  - Means of compliance → freeze the methods agreed to show compliance
  - Certification reports → progressive acceptance of conformity with CS-E paragraphs
  - Declaration of compliance → final declaration, ready for EASA issuance of TC
- **Changes occur only if project hypothesis change**

- Safran HE Experience of foreign validations
  - First validation occurred in 1977 (2002 for CAAC)
  - 620 validations obtained since then (25 for CAAC)
  - In 90 countries
  - 39 engine variants are concerned
- 3 classes of validations depending on authority/ complexity of project
  - Automatic validation based only on application
  - Validation by mails based on a set of data
  - Familiarization Mtg + Set of data + Audit Mtg + …

LAST SLIDE

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