



EUROPEAN AVIATION SAFETY AGENCY
AGENCE EUROPÉENNE DE LA SÉCURITÉ AÉRIENNE
EUROPÄISCHE AGENTUR FÜR FLUGSICHERHEIT

Panel 2: New technology: A challenge for regulators?



EASA / FAA International Aviation Safety Conference

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EASA Certification Director
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Introduction

➤ The Panel:

- **Ms Dorenda Baker**, Director, Aircraft Certification Service FAA
- **Mr David Turnbull**, Director National Aircraft Certification, Transport Canada
- **Mr Randy Robertson**, Corporate Fellow Electronics, Honeywell Aerospace USA



- *"Safety is not a force that hinders technological progress, on the contrary: Safety is the source of technological innovation. However, as new technologies aim for higher efficiency and more reliability, they may also post a challenge to regulators to follow this rapid pace of technological change. As designers and manufacturers are inserting advanced technology into their products, are regulators well equipped to fulfill their role?"*



History and Future Challenges

- There were many examples in the past for which the regulators demonstrated to be ready *and* able to address new technology challenges
- There will be many additional challenges in the future which will have to be addressed properly and timely by the regulators



Forward-Facing Cockpit

- 1980 Discussions on „Forward-Facing Crew Cockpit“
- 1980 Pilots Unions disagreed with „Two-Pilot Cockpit“
- 1982 Swissair, KLM, later Lufthansa decided to get Two-Pilot Cockpit
- 1983 Type Certification Airbus A 310 with „Two-Pilot Cockpit“



ETOPS (Extended Range Twin Operations)

- Until 1985 transatlantic flights with minimum three engines
- From 1985 Certification >240 Min. from suitable airports
- Airworthiness and Operational Specifications to be complied with
- Engine Reliability had to be shown



Fly-By-Wire

- 1988 A 320 Certification with Fly-by-wire, Side-stick, „Glass Cockpit“
- Special Conditions complemented the Existing TC Basis
- Electromagnetic Interference and Software were Key Items
- Automatic Functions, Cockpit Human Factors, Pilots Training

New Technologies Certification



Research Advanced Technologies Testing Aircraft

- 1985 Experimental Fly-By-Wire Flight Control System
- Backup: Mechanical Flight Controls
- Certification with Exemptions/Special Conditions
- „In-Flight“ Simulator VFW 614 ATTAS



Very Light Jets

- Below 5,7 t, Max. Range 2.500 km, Max. Speed 700 km/h
- Short Landing/Take-off Distances
- Cessna, Embraer, Eclipse, Piper, Diamond, Cirrus, etc.
- Certification Basis: „CS 23 +“ (EASA Certification Review Items)



New Aircraft Technologies

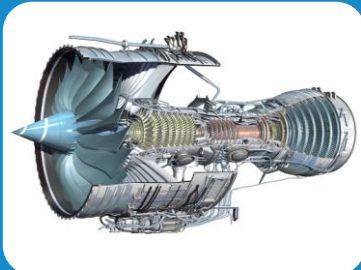
- Carbon Fibre Boeing 787/Airbus A 350
- Reduction of Fuel Consumption, Emissions and Noise
- Electronic Flight Bags
- High Lift Systems, Cabin Systems, Cargo Loading Systems

New Technologies Challenges



New General Aviation Technologies

- Diesel Engines/Electrical Engines
- New Composite Technologies
- Unmanned Aircraft Systems (UAS), Unmanned Aerial Vehicles (UAVs), Remotely Piloted Aircraft Systems (RPAS)
- Sub-orbital Aircraft, Mach 3.5, 100 Km altitude, 11 t, 6 Pax



New Engine Technologies

- Noise Reduction, Lower Fuel Consumption, Less Weight
- New Efficient and Environmental-friendly Concepts
- Alternative/Synthetic Fuel and Bio Fuel
- Open Rotor Concept



New Systems Technologies

- European/US Air Traffic Control/Management System
- SESAR - Single European Sky ATM Research Programme/NextGen
- Satellite Navigation for all Phases of Flight
- EVS – “Enhanced Vision System” using Head-up Display



Discussion

- Is the industry satisfied with the regulators responses to new technologies?
- What are the main challenges now and in the future for regulators?
- Is the industry properly preparing the introduction of new technologies and supporting the regulators sufficiently?
- Are the regulators with their experts prepared to address new technologies properly?



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Thank you for your attention!



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