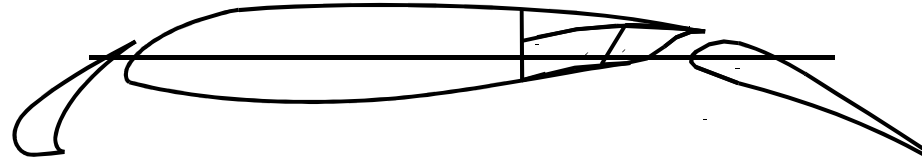




Workshop
Institute of Aviation (IoA)
Warsaw, July 7- 8, 2009



SEGMENTED EXTENSION SLOTTED FLAP for General Aviation



SESF - GA

NOVEL TRAILING EDGE HIGH LIFT DEVICE CONCEPT

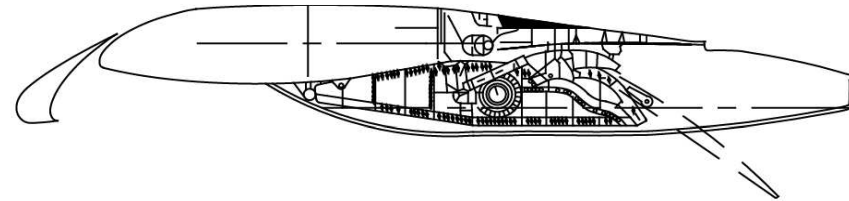
Person responsible – Włodzimierz Gnarowski
Presentation – Michał Pokorski
Institute of Aviation, Aircraft Design Department BP-1



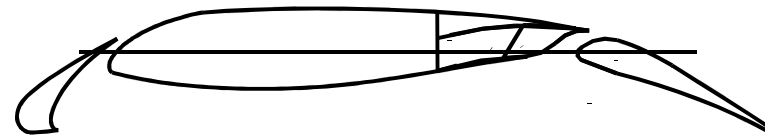
SESF CONCEPT

Developed within a framework of Airbus HELIX Programme

HELIX baseline



SESF concept



- New Geometry
- New Extension Mechanism
- Outstanding Performance

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
20 January 2005 (20.01.2005)

PCT

(10) International Publication Number
WO 2005/005251 A1



SESF BENEFITS

- Lighter and cheaper airplane
 - TOFL: 21% shorter
 - V_{approach} : 13% lower
 - DOC: 3.9% lower
 - Fuel consumption: 4.1% lower



THE WAY TO SUCCESS

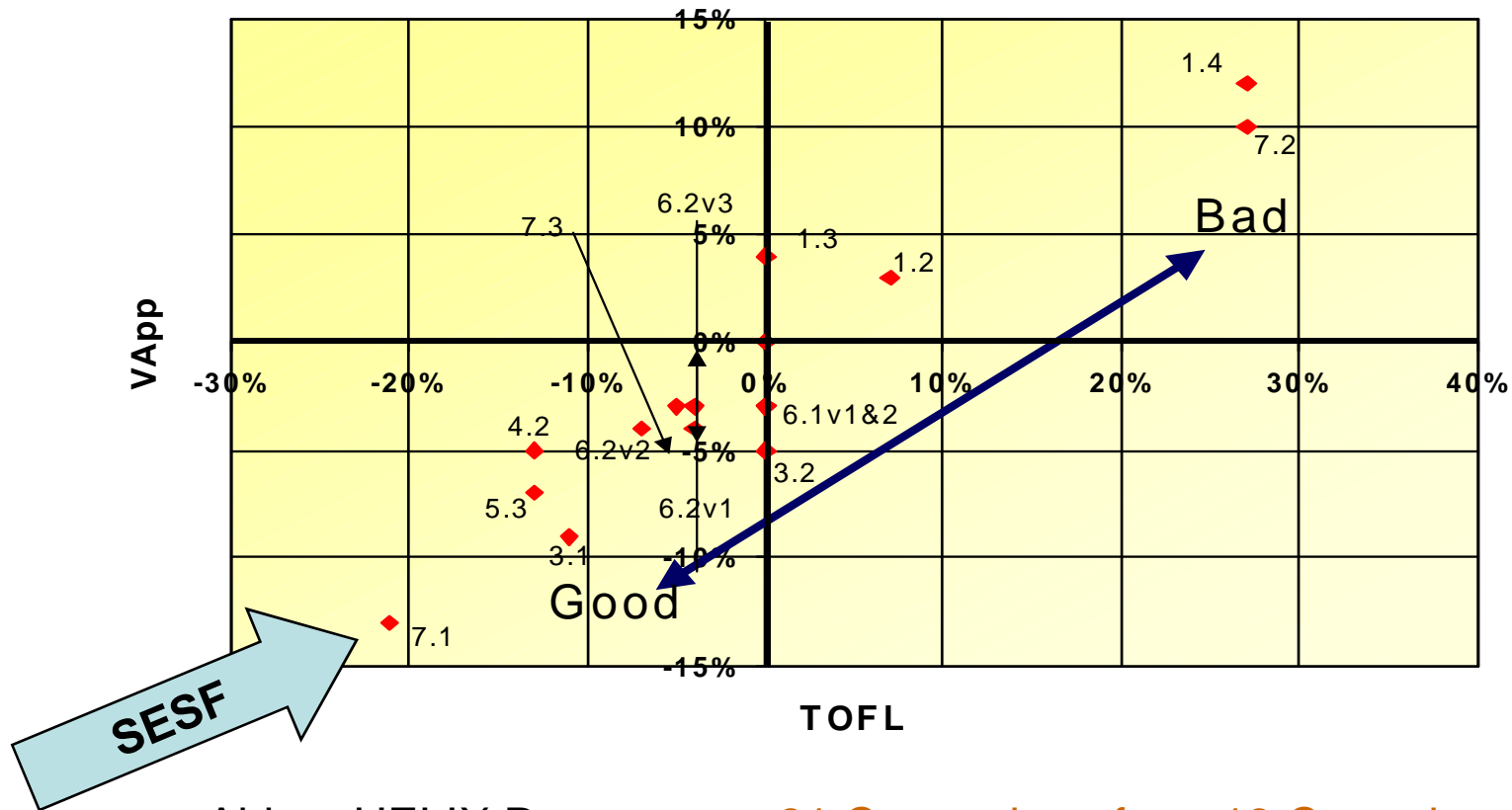
- Conceptual design – engineering methods
- CFD calculations: 2D and 3D at IoA
- First wind tunnels tests at IoA
- CFD 3D by Airbus UK
- TADPOL trade analyses by Airbus and FET by Israel Aircraft Industry
- Wind tunnel test by QuinetiQ (UK)
 - 5 m pressurized wind tunnel



Model 477 Baseline in
QuinetiQ 5 m Wind Tunnel, Bedford



EUROPEAN COMPETITION WINNER

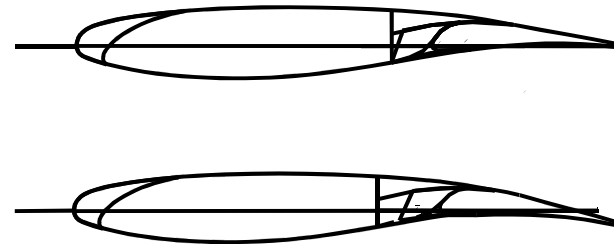


Airbus HELIX Programme: 21 Competitors from 13 Countries



SESF FURTHER DEVELOPMENT

- Leading Edge Device
- The whole mission:
 - Climb and acceleration
 - **Cruise – Variable Camber**
 - Descent and deceleration
- **Flight Demonstrator**
- Adaptive Wing / Airplane



• LARGE POTENTIAL for GENERAL AVIATION
• INCREASED COMPETITIVENESS
of EUROPEAN GENERAL AVIATION



FP7 3rd CALL PROPOSALS

• THE GREENING OF AIR TRANSPORT

- Aerostructure
- Flight Physics
- Flight Profiles
- Maintenance – Operating Cost

• IMPROVING COST EFFICIENCY

- Aerostructure
- Flight Physics

• PIONEERING THE AIR TRANSPORT OF THE FUTURE

- Lift
- Novel Air Transport Vehicles





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THE END
THANK YOU
FOR YOUR ATTENTION

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General Aviation and European Air Transport System - Third Call FP7