A320-ATRA functional model

Airflow optimisation to reduce fuel consumption

Brief description

In order to illustrate the diverse missions of DLR's largest research aircraft, the A320-232 'D-ATRA', a highly detailed technical scale replica of the ATRA has been produced using almost 400 exchangeable individual components. The model is currently demonstrating two innovative technologies being investigated at DLR – using a vertical stabiliser with an extraction system and active flow control at the UHBR engine-wing transition.

Aims

Measurement and test fittings can be flexibly added to the model in order to demonstrate the use of the ATRA platform across various disciplines. The technologies currently shown on the vertical stabiliser and wing-engine transition serve to optimise airflow and reduce fuel consumption.

Parties involved

DLR and project partners,
RPT – Rapid Prototyping Technology GmbH Gifhorn

Applications

- Aerodynamics
- Aeroelastics
- Cabin research, acoustics, climate
- Flight systems technology
- Flight control
- Communications, navigation
- Combustion technology, atmospheric research

Outlook

- Demonstration of advanced aeronautics research topics using the ATRA functional model
- Transfer of research findings/ technologies from the various application areas to future aircraft generations

Facts and figures

- **Individual components:** 395
- **Production processes:** 9
- **Main materials:** 5
- **Scale:** 1:13,6
- **Length:** 2.77 m
- **Span:** 2.50 m
- **Height:** 0.90 m
- **Weight:** 97 kg
- **Paintwork:** same as ATRA/DLR design