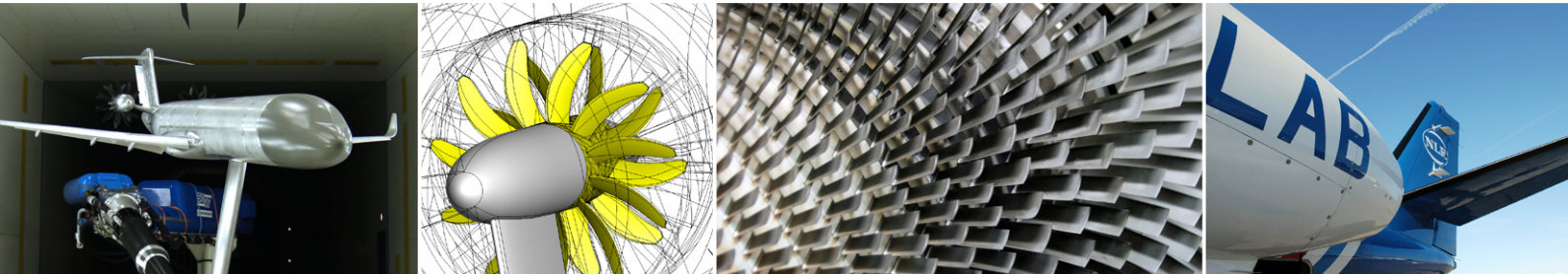




High-Fidelity Flow Analysis of Aero-engines



 Aerospace Vehicles Division
Flight Physics and Loads

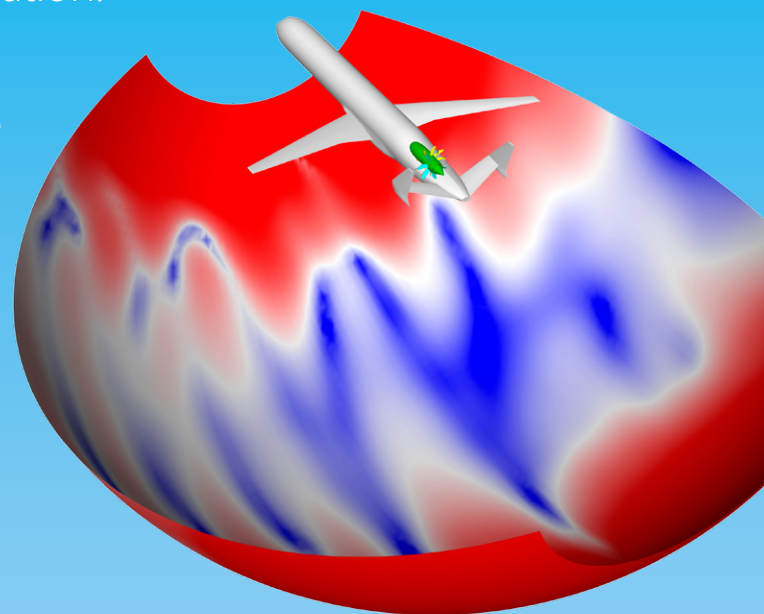
 flightphysics@nlr.nl

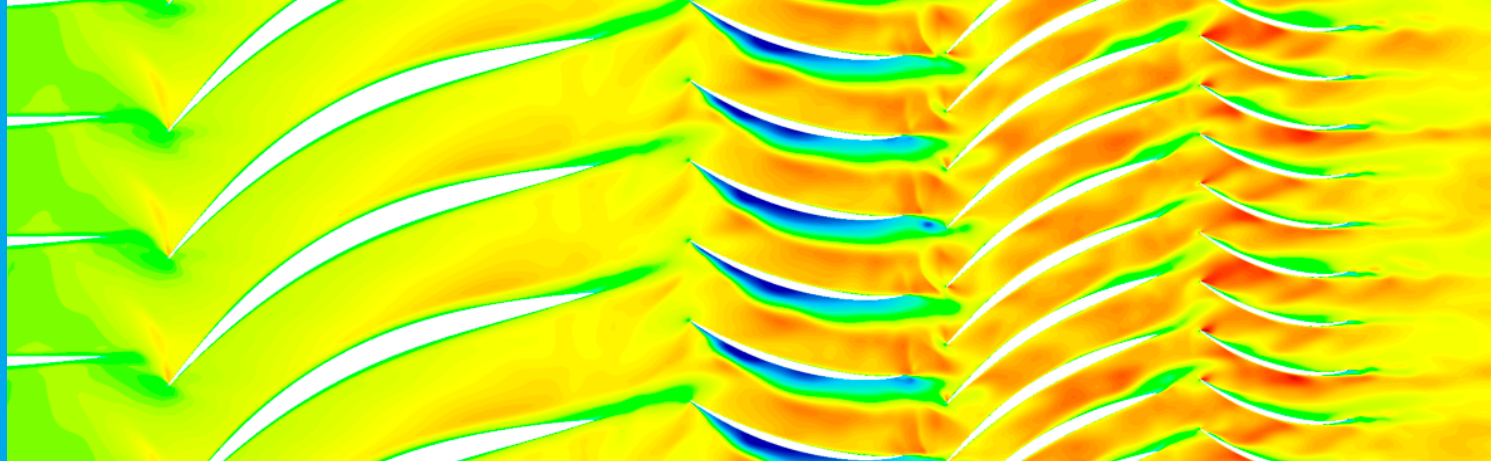
 +31 88 511 31 65

Looking for a partner to develop your engine?

At NLR we have the knowledge, tools and experience to help you. We perform highly sophisticated CFD analyses for aerodynamic performance, aeroelastic behaviour and noise. We analyse seal performance, investigate the influence of blade refurbishment on engine performance, perform blade vibration studies and redesign compressor and turbine blading using three-dimensional optimisation and inverse methods. We also optimise aircraft-engine integration.

Together with our specialists in engine performance analysis, thermal & stress analysis, life analysis, materials engineering and failure analysis, we can make the most of flow analysis results.





Capabilities

We use our state-of-the-art flow solver ENSOLV to find solutions for complex aerodynamic, aeroelastic and aeroacoustic problems. Ensolv can solve problems with multiple bodies that can be fixed or moving, rigid or flexible. Specialised models are available for applications requiring the highest accuracy, such as X-LES and a fourth-order low-dispersion and low-dissipation scheme. For optimisation purposes, a powerful adjoint-based method is integrated into ENSOLV.

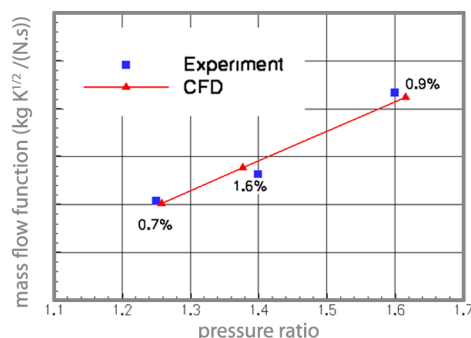
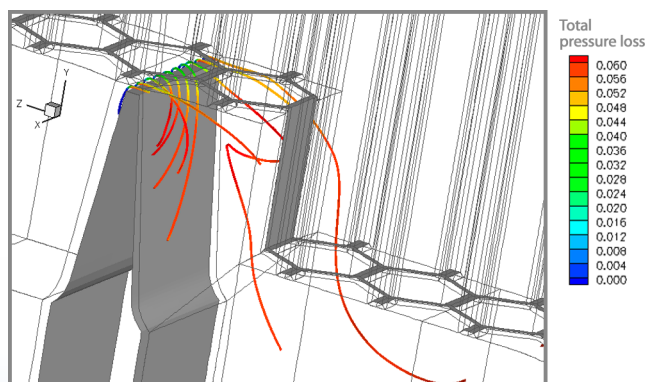
To ensure that even large and complex problems can be analysed in a short time, we have our own high-end computing server. Besides ENSOLV, we use a variety of other in-house and commercial tools for CFD analysis and redesign.

Access to Ensolv

ENSOLV is available through our e-CFD service with which partners can run calculations on NLR's computing server.

Visit <http://ecfd.nlr.nl> for more information.

ENSOLV can also be licensed to partners. A free trial version can be downloaded from the e-CFD website.



About NLR

The National Aerospace Laboratory (NLR) is the key center of expertise for aerospace technology in the Netherlands. NLR's facilities include wind tunnels (for development and testing of new aircraft produced by Airbus, Boeing, Lockheed Martin and others), simulators (e.g. for testing and training the safety of new flight procedures) and laboratory aircraft.

For more information about NLR and its activities, please visit www.nlr.nl.

