Transonic High Reynolds Number Testing of a Large Laminar Wing Half Model

Fact Sheet

Project Information

HiReLF

Grant agreement ID: 323452

Status
Closed project

Funded under
FP7-JTI

Overall budget
€ 1 199 972

EU contribution
€ 899 979

Coordinated by
EUROPEAN TRANSONIC WINDTUNNEL GMBH
Germany

Objective

The main objective of the present proposal is the performance of wind tunnel testing of a half model at transonic speed and near flight Reynolds number. The model wing featuring a natural laminar flow (NLF) design will be subject to artificially generated surface steps and imperfections allowing investigating the resulting effect on the flow behaviour on the wing. The proposed activities comprise the design and provision of a controlled high pressure air supply inside the model, the model preparation and the test performance. Basic investigations on NLF wings have already been performed in a recently completed EU research project ensuring the availability of test capabilities, tools and appropriate techniques for an achievement of the defined objectives. Forces and moments will be measured with a classical strain gauge balance inside the tunnel ceiling while the PSI system is going to record the large amount of tap based pressure data. Model deformation in wing twist and bending due to aero loads will be monitored by the highly qualified stereo pattern tracking system. The
The visualization of laminar flow areas as well as the transition line will be achieved by applying the temperature sensitive paint (TSP) technique, which has been developed and enhanced by DLR and ETW to a mature state over the recent decade. A team of long experienced and highly skilled staff will take the responsibility for a successful performance of the described activities.

To meet concerns of the given complexity of the work an extended risk assessment with corresponding contingency plans has been prepared. Exploitation and an enhanced dissemination address the uniqueness of the expected results.

The proposed investigations on a Natural Laminar Flow model refer to a key technology stream within the SFWA programme contributing to achieving the technology readiness level 6, thus supporting the realization of the Vision 2020 goals of the European Union.

**Field of science**
/engineering and technology/mechanical engineering/vehicle engineering/aerospace engineering/aircraft

**Programme(s)**

**Topic(s)**

**Call for proposal**

SP1-JTI-CS-2012-01

**Funding Scheme**

JTI-CS - Joint Technology Initiatives - Clean Sky

**Coordinator**

**EUROPEAN TRANSONIC WINDTUNNEL GMBH**

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Activity type
Other

EU contribution
€ 899 979

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