

FLOW CONTROL AND DRAG REDUCTION

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ABSTRACT

Aerodynamic drag reduction of future civil aircraft will play an important role in achieving the goals of Europe's Vision for Aviation "Flightpath 2050." Without such drag reduction measures, reducing of aircraft CO₂ emission by 75% in 2050 would not be feasible. Advanced technologies such as natural and hybrid laminar flow around the wing and other aircraft parts represent a significant potential. Flow control technologies will be needed to further increase high-lift and cruise performance and also to reduce the noise of future aircraft. A number of European research projects addressing these critical issues are presented in this Special Technology Session.

The DESIREH project, supported by the 7th Research Framework Programme (FP7) of the EU, investigates the high-lift aspects of a laminar flow wing.

The RECEPT project addresses transition prediction methods beyond the state of the art and will validate them with wind tunnel experiments. These research activities will result in increasingly accurate and reliable tools for transition prediction, enhancing our ability to design aircraft with natural-laminar-flow wings.

The NOVEMOR research project investigates novel air vehicle configurations with new lifting concepts and morphing wing solutions. The design and development of the proposed solutions will be an integral part of future aircraft design concepts.

Flow control and laminar flow technologies, as well as related design will be presented in two papers of the AFloNext project. One paper will discuss the different aspects of hybrid laminar flow technology, the second one will address active flow control technologies for loads and noise control.

REFERENCES

- [1] Aeronautics and Air Transport Research - 7th Framework Programme 2007–2013
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