



## PEL-SKIN

**Project ID:** 334954

**Funded under:** [FP7-TRANSPORT](#)

### PEL-SKIN: A novel kind of surface coatings in aeronautics

**From** 2013-06-01 **to** 2015-11-30, closed project

#### Project details

<b>Total cost:</b> EUR 792 520	<b>Topic(s):</b> <a href="#">AAT.2012.6.3-1. - Breakthrough and emerging technologies</a>
<b>EU contribution:</b> EUR 599 990	<b>Call for proposal:</b> FP7-AAT-2012-RTD-L0 <a href="#">See other projects for this call</a>
<b>Coordinated in:</b> France	<b>Funding scheme:</b> CP-FP - Small or medium-scale focused research project

#### Objective

"The PEL-SKIN project aims to deliver a novel airfoil coating to improve the global aerodynamic performance and manoeuvrability of future air transport. We propose to investigate drag reduction from a prefabricated coating composed of a densely packed arrangement of flexible fibres that can be attached directly onto a wing or aerodynamic surface, in the region of separated flow.

Inspired by the 'pop up' of birds feathers in certain flight modes, the amelioration of aerodynamic performance via a Porous and ELastic (PEL) is based on the concept of reconfiguring/adapting to the separated flow, thereby directly changing the near-wall flow and the subsequent vortex shedding; which can lead to reduced form drag by decreasing the intensity and the size of the recirculation region. This concept of flow control is novel, more efficient than classical actuators, and can lead to significant increase in the aerodynamic performances.

The objective of the project is to investigate the performance benefit this technology can deliver for flow at high Reynolds number, relevant for the next generation of aircrafts. The research will endeavour to deliver a clear physical understanding of the principle flow control mechanism and an accompanying numerical model of the phenomena, which shall be implemented and tested into industrial aerodynamics software tools; ready for more detailed downstream design work. Although this research is motivated from low to moderate Reynolds number flows, it is expected that the understanding of the physical mechanisms will pave the way to the development of breakthrough control strategies for separated flows at higher Reynolds-numbers for larger aircraft. The success of this project can thus be expected to deliver direct impact on the environment in long-term; where in the EU, it is currently estimated that 25% of CO2 emissions come from the aeronautical sector."

#### Related information

<b>Result In Brief</b>	<a href="#">Innovative wing surface coating to reduce drag</a>
<b>Report Summaries</b>	<a href="#">Final Report Summary - PEL-SKIN (PEL-SKIN: A novel kind of surface coatings in aeronautics)</a>

## Coordinator

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## Subjects

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[Scientific Research](#)

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