



Project coordinator contact Details

Project coordinator: Mark Scully

Company: Rolls-Royce plc

Email: mark.scully2@rolls-royce.com

Tel: +44 1332 708720

Project participants and key contacts:

Organisation	Contact
Rolls-Royce plc	Mark Scully
GKN AEROSPACE SE	Anders Sjunnesson
SWEREA SICOMP AB	Patrik Fernberg
INSTITUTO DE ENGENHARIA MECANICA E GESTAO INDUSTRIAL	Pedro Camanho
SUMITOMO PRECISION PRODUCTS CO., LTD	Kazushi Watanabe
THE UNIVERSITY OF TOKYO	Professor T Watanabe

Project Abstract

The Project aim is to develop and demonstrate an advanced structural surface cooler mounted in a core fairing composite structure. Surface coolers contribute to achieving the best engine performance by maintaining oil and fuel temperatures within defined limits. Oil and/or fuel is cooled by the passage of cool engine bypass air flow over the air washed surface of the heat exchanger. Current surface coolers are parasitic to the existing engine structure, and occupy surfaces that can also be used for acoustic treatment to control engine noise. As such the weight, volume and efficiency of the surface cooler are all of great importance. The design and installation of a compact and lightweight structural surface cooler in a core fairing structure will contribute positively to the efficiency of the power-plant by providing the necessary oil cooling at minimum overall weight and hence optimal fuel burn. Also it is envisaged that surface cooler/composite core fairing designs will evolve that employ novel structural design, advance manufacturing techniques, potentially novel materials and new concepts in utilising air washed surfaces on the engine. The structural integration of the metallic structural surface cooler to a composite core fairing type structure will be developed. The joint must allow a strong load path, handle dissimilar degrees of thermal displacement and provide sealing yet being light and durable. Mounting of such a surface cooler in a composite core fairing structure will also be researched for future engines where composite air washed structures may be used.

Figure 1: Current aero engine surface cooler installation

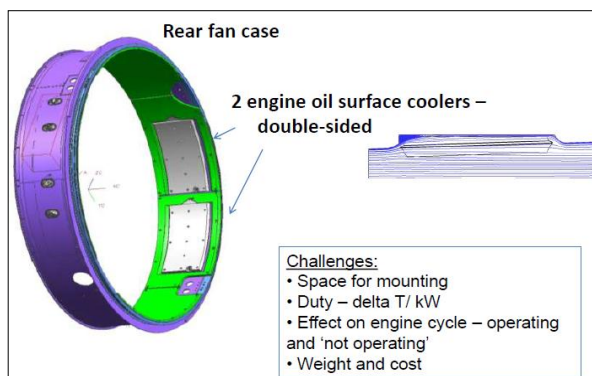


Figure 2: Core mounted structural surface cooler installation

