DevTMF

DevTMF

Clean Sky 2

Development of Experimental Techniques and Predictive Tools to Characterise Thermo-Mechanical Fatigue Behaviour and Damage Mechanisms

What is DevTMF?

The DevTMF project focus is on the characterisation of thermo-mechanical (TMF) behaviour of superalloys to allow for more accurate prediction of design lives of present and future gas turbine components.

The ultimate goal is to enable a further increase of operation and service life, which will subsequently provide environmental and economic benefits to the European gas turbine industry and Europe as per High-Level Objectives set by Clean Sky 2.

Objectives

- Improvement and development of advanced standard and non-standard TMF experimental methods to enable standardisation across the field by performing comprehensive studies for a range of representative parts
- Advanced metallurgical assessment of advanced structural disc alloys taking into account the effect of multiple critical variables to determine active damage mechanisms that control the life under TMF operating conditions
- Development of advanced TMF prediction models, with experimental validation, capable of predicting TMF initiation and propagation lives of components subjected to complex engine cycles.

Rolls-Royce

LINKÖPINGS UNIVERSITET

Prifysgol Abertawe
Swansea University

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

This project has received funding from the European Union's Horizon 2020 research and innovation programme and Joint Undertaking Clean Sky 2 under grant agreement No 686600.

The Consortium at a Glance

DevTMF takes the collective technical expertise and experience of working on thermo-mechanical fatigue (TMF) problems related to large aero-engines from three major centres of TMF research, namely Linköping University, Swansea University and the University of Nottingham in order to perform the activities of this topic.

Project coordinator

Svjetlana Stekovic

Department of Management and Engineering
Division of Engineering Materials
Linköping University
Linköping, Sweden

svjetlana.stekovic@liu.se
+46 701 91 66 76

For standardisation of TMF testing

Mark Whittaker

Institute of Structural Materials
Swansea University
Swansea, UK

m.t.whittaker@swansea.ac.uk
+44 1792 295 573

For modelling of TMF

Christopher Hyde

Department of Mechanical, Materials and Manufacturing Engineering
The University of Nottingham
Nottingham, UK

christopher.hyde@nottingham.ac.uk
+44 1159 513 735

LINKÖPINGS UNIVERSITET

Prifysgol Abertawe
Swansea University

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

This project has received funding from the European Union's Horizon 2020 research and innovation programme and Joint Undertaking Clean Sky 2 under grant agreement No 686600.