

Registration

www.ercoftac.org

Location

GE Centre
Freisinger Landstrasse 50
D-85748 Garching b. Munich
Germany

The GE centre is located on the outskirts of Munich with excellent access to the centre and Munich Airport by the autobahn, ring road and train networks.



Course fees

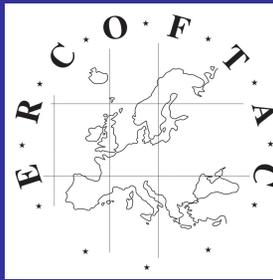
€640 ERCOFTAC members
€995 Non-ERCOFTAC members

This fee includes: course registration, course material, lunch and refreshments. Please note that accommodation is not included in this fee.

Registration

Places are limited. Please contact Dr Richard Seoud at the earliest opportunity to reserve a place:

Dr. Richard E. SEOUD
ERCOFTAC Industry Engagement Officer
Tel: +44 (0)208 543 9343
Email: richard.seoud-ieo@ercoftac.org

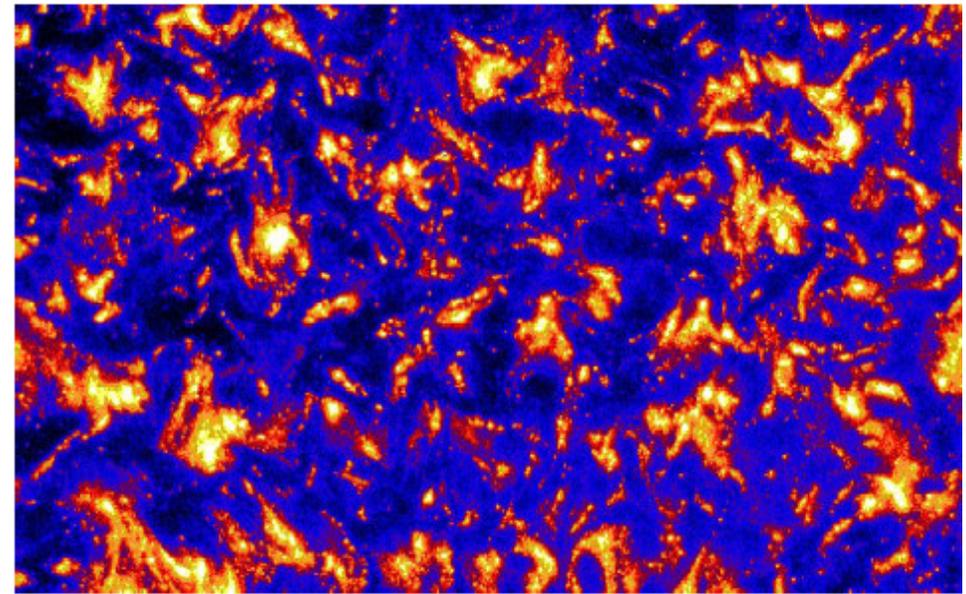


Hybrid RANS-LES Methods for Industrial CFD:

Overview, Guidance and Examples

*Best Practice Guidance Series:
2nd Industrial Course*

www.ercoftac.org



2nd - 3rd of June 2009

GE Centre, Munich,
Germany

Information

ERCOFTAC, a world leader in applied fluid mechanics, is proud to announce a 2 day course on 'Hybrid RANS-LES Methods for Industrial CFD' as part of the **ERCOFTAC Best Practice Guidance Course series**.

Turbulence is one of the last remaining challenges in the simulation of fluid flows. Although RANS (Reynolds-Averaged Navier Stokes) turbulence models are still very widely used, these approaches are being slowly supplanted by Large Eddy Simulation (LES). However, LES is prohibitively expensive for the industrial simulation of wall-bounded flows, especially at high Reynolds number. As a result, a family of Hybrid RANS-LES techniques, of which Detached Eddy Simulation (DES) is one member, has recently received much use for the efficient modelling of flow in and around complex geometries. Due to the current lack of readily-available expert guidance on the application of Hybrid RANS-LES techniques, and the emergence of DES as the tool of the trade, ERCOFTAC has drawn upon its worldwide network of academic and industrial experts to provide a training course aimed at an industrial CFD audience and relevant to a wide range of industry sectors including: Aerospace, automotive, chemical and process, civil and built environment, power generation and the wider engineering community. Specifically, this course aims to provide:

- An overview of turbulence modelling.
- A firm foundation in the theory and ideas underlying, RANS, LES and Hybrid RANS-LES techniques.
- Recommendation and guidance for the appropriate and effective application of Hybrid RANS-LES. Examples from real-world engineering simulations, using the DES class of models.

Speakers

- Prof. Bernard Guerts,
University of Twente
- Prof. Michael Leschziner,
Imperial College
- Prof. Michael Strelets,
University of St Petersburg
- Dr. Florian Menter
Ansys, Germany
- Dr. Charles Mockett,
University of Berlin
- Dr. Dominic Von Terzi,
University of Karlsruhe

Programme – Day 1

Tuesday, 2nd of June 2009

8:45 **Registration and coffee**

Overview

9:15 Modelling and simulation in the context of turbulent flow CFD – an introductory overview *Prof. M. Leschziner*

10:20 Quality and reliability of Large Eddy Simulations of turbulent flows *Prof. B. Guerts*

11:20 **Refreshments**

Unsteady methods for Industrial applications

11:40 Overview of Hybrid RANS-LES methods *Dr. D. VonTerzi*

12:30 **Lunch**

13:30 URANS:Applicability, pitfalls and recent developments *Dr. F. Menter*

14:35 DES:Motivation, formulation, and enhanced versions *Prof. M. Strelets*

15:35 **Refreshments**

15:55 Open panel discussion *All Speakers*

16:40 Day 1 closes

19:30 **Course Dinner**

Programme – Day 2

Wednesday, 3rd of June 2009

- 8:30 **Refreshments**
- 9:00 DES: Motivation, formulation, and enhanced versions *Prof. M. Strelets*
- 9:50 WMLES: Alternative approaches, examples, strength & weaknesses *Prof. M. Leschziner*
- 10:50 **Refreshments**
- Recommendations & guidance for Hybrid RANS-LES***
- 11:10 Mesh design for Hybrid RANS-LES *Dr. C. Mockett*
- 12:00 **Lunch**
- 13:00 Numerical solution techniques *Dr. F. Menter*
- 13:50 Solution set-up and post processing *Dr. C. Mockett*
- 14:35 Implementation and validation *Dr. C. Mockett*
- 15:10 **Refreshments**
- 15:20 Open panel discussion *All Speakers*
- 16:00 Day 2 closes

End of Course