

## HITEC Day and Lab

**Title:** Introduction to Applied Computational Fluid Dynamics with OpenFoam®

**Date:** May 16th & 17th 2018

**Time:** 9:00 – 16:00

**Location:** Forschungszentrum Jülich ► IEK-6, Bld. 16.5 R 54a

Computational Fluid Dynamics (CFD) is a method, widely used in research and industrial applications (e.g. prototyping, chemical engineering or aerodynamics). In particular for scientific applications, CFD complements the experimental approach. Its ability to resolve a flow field down to the smallest time and length scales allows us to gain insight into a fluid, heat and mass transfer problem, where measurements can hardly be applied. Furthermore, the technique is practically scalable as the governing equations don't contain reference scales and allow us to transfer experimental results to application scale.

The workshop aims at providing you with a brief overview of the CFD approach and first practical hands-on application on the basis of the open source CFD tool-box OpenFoam® (openfoam.org). Our aim is to give you a basis to decide whether CFD & OpenFoam can become a useful technique to be applied in your PhD project rather than an advanced training on specific topics like coding, turbulence modeling, coupling etc.

### The course will cover:

- CFD workflow - from a CAD geometry to flow visualization
- Fundamentals of numerical fluid mechanics
- Application of the OpenFoam® toolbox
- Tips & Tricks

### Who should attend:

HITEC PhD students and Post-Docs in an early stage of their project with no background on CFD or OpenFoam®. Application and theory are combined, i.e. participants have to take HITEC day and lab together.

### Requirements:

- Own Laptop with Virtualbox (www.virtualbox.org). We'll distribute a preconfigured virtual machine.
- Basic knowledge of Linux is helpful.

### HITEC Days

HITEC Days are an inherent part of the graduate school Helmholtz Interdisciplinary Doctoral Training in Energy and Climate Research (HITEC). They devote a whole day to a method or a scientific topic with lectures and discussions. The methodological days serve to encourage scientific interdisciplinarity and will enable the PhD students to extend their range of methods with respect to their own scientific work. HITEC Days always end with a 'Get together', some snacks and drinks. HITEC Days are open for HITEC Ph.D. students and other interested young scientists.