

Department of Information Technology
Uppsala University
20 September 2018

Coupled Flow Solution Algorithms in OpenFOAM

Prof. Hrvoje Jasak
Wikki, United Kingdom
University of Zagreb, Croatia

Abstract

The topic of the seminar is the formulation and implementation of coupled solution algorithms in OpenFOAM for incompressible and compressible flows. While OpenFOAM provides efficient, robust and accurate flow solvers for incompressible and non-linear “complex physics” flows, its performance in aerodynamics and turbomachinery has historically been inferior to the state-of-the-art. In this presentation we shall review the modelling of turbulent flows and various solution algorithms aiming to improve OpenFOAM performance in such simulations.

The presentation will include examples of external aerodynamics and turbomachinery flows and an overview of various solution algorithms and their maturity in the code.

Short Bio



Hrvoje Jasak is a professor of Turbomachinery at the University of Zagreb, Croatia and director of Wikki Ltd (UK). The research group at Uni Zagreb focuses on CFD simulations in turbomachinery, naval hydrodynamics, non-linear solid mechanics and fundamental work on Finite Volume discretisation, numerical modelling and linear solver technology for High-Performance Computing.

Hrvoje Jasak graduated mechanical engineering at the University of Zagreb in 1992. He completed his PhD in Computational Fluid Dynamics in prof. Gosman’s group at Imperial College in 1996. He is one of two original authors of OpenFOAM, a leading Open Source CFD package today. His research interests are focused on numerical simulation in Continuum Mechanics, specifically on the Finite Volume discretisation and OpenFOAM.