Institute of Turbomachinery and Flight Propulsion
Department of Aerospace and Geodesy
TUM School of Engineering and Design
Technical University of Munich

Numerical Comparison of Different Meshing Approaches

Bachelor‘s-/Master‘s-/Semester‘s thesis

Description:

An adapted mesh for a CFD simulation is essential for generating high-quality data. The structured and unstructured approaches are two ways of discretising a flow domain. They both have advantages and disadvantages, such as flexibility vs. speed. To quantify the impact on the simulation quality, the rotor of a 3.5-stage compressor will be meshed with these two different approaches, and the compressor metrics will be compared to find meshing guidelines for future projects.

Work packages:

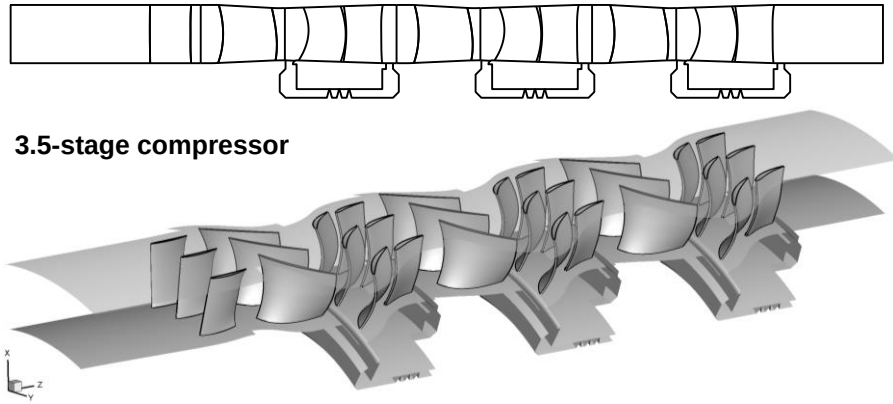
- Meshing of the 3.5-stage compressor with a comparable structured and unstructured approach
- Simulation of the compressor maps for both attempts
- Post-processing and evaluation of CFD data

Requirements/knowledge:

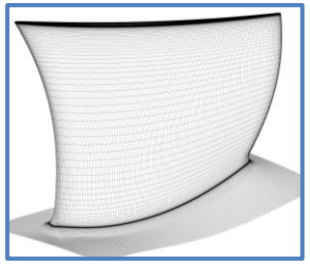
- Linux, Matlab, Python
- Compressor aerodynamics
- Basics in CFD

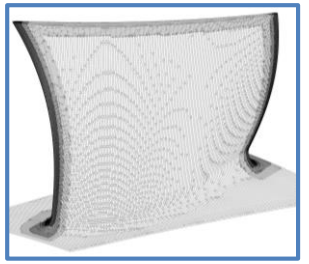
Type of research: Numerical

Begin: Sep. 2025



rotor-structured





rotor - unstructured

More under „www.asg.ed.tum.de/en/ltf/teaching-and-studies/theses“

Supervisor: Dr.-Ing. Jannik Eckel Room: MW0634 Phone: +49 89 289 16161 E-Mail: Jannik.Eckel@tum.de