

# Concept development for the implementation of thermal measurement techniques in a high pressure turbine

Konzeptentwicklung für die Implementierung von thermischen Messverfahren in den äußeren Ringkanal einer Hochdruckturbinen

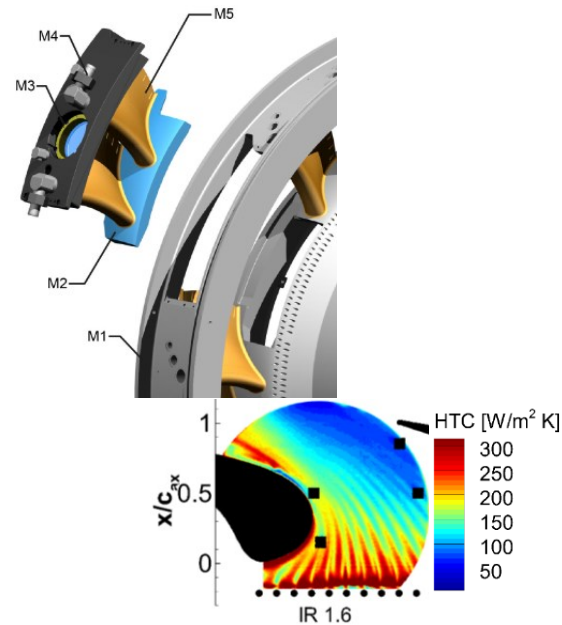
*Advanced Design Project (ADP)*

## Background

Heat transfer as well as film cooling effectiveness are crucial for the validation of cooling geometries from high pressure turbines. In preceding research projects thermal measurements have been conducted at the hub-side endwall of the Large Scale Turbine Rig (LSTR). For upcoming investigations of outer annulus cooling geometries new thermal measurement techniques have to be developed for the housing of the LSTR. The concept development has to address measurement techniques as well as analogies to transfer the results of thermal measurements at the cold-operated LSTR on real high pressure turbines of jet engines and stationary gas turbines.

## Tasks

- Literature research and review of thermal measurement techniques
- Development of new concepts for thermal measurements in the outer annulus region
- Design of all necessary components within the given requirements
- Documentation of the results



Bilder: Werschnik, Holger (2017)

Werschnik, Holger (2017), „Aerodynamic Impact of Swirling Combustor Inflow on Endwall Heat Transfer and the Robustness of the Film Cooling Design in an Axial Turbine“. Dissertation. Technische Universität Darmstadt, Darmstadt, 2017

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Schwerpunkt

x	analytisch
x	konstruktiv
	experimentell
	numerisch