



Studien- oder Masterarbeit

(deutsch oder englisch)

Cool Solutions for Extreme Heat: Dive into Rocket Engine Cooling Research!

Rocket engines are one of humanity's most extreme achievements. Imagine temperatures over 3000 K on the hot side and as low as 20 K on the cooling side—just millimeters apart! Heat transfer rates reach megawatts with limited coolant. These challenges make rocket engine cooling both crucial and exciting. At IRAS, we're leading the way in addressing these challenges. Through our MOZART project, we're developing a state-of-the-art test stand for small-scale methane-oxygen rockets. This allows us to explore cooling phenomena and push technological boundaries.



Figure 1: RS-25 engine (Ours is smaller, because this one's too big for the lab!).
<https://www.zmescience.com/research/technology/nasa-mars-mission-engine-17082015/>

Why You Should Join Us and What You'll Bring:

- **Hands-On Experience:** Engage in cutting-edge research and real-world applications and work on actual rocket engines!
- **Innovative Tasks:** Conduct heat transfer studies, create cooling analyses, develop new cooling designs, or bring in your own idea!
- **Useful Skills:** You have an understanding of thermodynamics and heat transfer, general knowledge of rocket engine design, and experience in Catia, Ansys, OpenFOAM, Python, or Simulink (depending on topic).

Join us in exploring a thrilling and impactful topic in the field of actual rocket science while gaining valuable insight into advanced propulsion research.

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