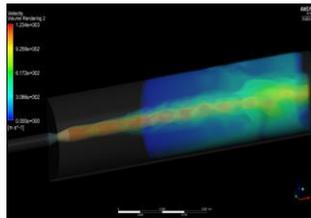
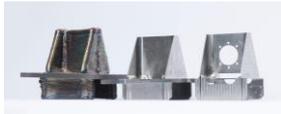


Topic: Design and optimization of shielding gas nozzles for wire and arc additive manufacturing using flow simulations



Betreuer:

Name: Lukas Oster

E-Mail: oster@isf.rwth-aachen.de

Phone: 0241 80 96258

Room: Libo 5

Art der Arbeit:

Bachelorthesis	x	Experimental	x
Projectthesis		Construction	x
Other		Theoretical	x
Masterthesis	x	Literature	

Start: Now

Specialist field:

Mechanical engineering / CES / Informatik

Previous knowledge: Basics of FE-Simulation

Aufgabenstellung:

Wire and arc additive manufacturing (WAAM) is one of the most promising processes for 3D printing of large-volume components and is currently under intensive research. The development of new welding processes in the field of regulated short arc processes opens up the possibility of establishing a generative manufacturing process which combines the previous contradictions of high flexibility / component complexity and high melting performance / process speed.

The ISF is currently developing a new welding process which for the first time will make it possible to add structures with graded material properties and thus produce components with smooth transitions between very different material properties. The fluidic design and optimization of the inert gas nozzles is of particular interest here, as the process is particularly endangered due to the multi-wire technology with regard to oxygen input.

The aim of your work is to map the protective gas nozzle(s) used so far by means of flow simulation (Ansys) in order to enable a better understanding of the flow processes in the process zone. The influence of the workpiece geometry to be printed as well as the eccentrically fed wires should be considered.

We offer you a flexible design of your workflow, a nice working atmosphere and the possibility to develop competences in the field of high performance additive manufacturing.

If you are interested, feel free to visit us at any time or call us.

Please note, that we cannot offer you a hiwi job for the thesis.

