Master project
Design of copper coils for additive manufacturing

Background
Copper coils are used in a variety of space applications such as actuators, sensors, but also in the production of space components. Coil dimensions, core sizes and winding numbers are usually customized to meet the specific requirements with respect to mass, size and power supply. This vast coil variation requires time consuming manual production or a large number of tooling. Additive manufacturing is a promising process to be able to master those demands because it offers the ability to quickly adjust to the market demand as well as to produce customized and optimized winding shapes. As part of this master project, a suitable case study for the demonstration of copper additive manufacturing for electromagnetic coils for space applications is to be identified. The selected use case is to be designed and analyzed.

This project is conducted in cooperation with the industry partner ZARM Technik AG.

Illustration 1: Concept of an additive manufactured copper coil (source: ZARM Technik AG)

We search for students with:
- basic knowledge in design in CAD software
- basic knowledge in Finite Element Analysis
- basic knowledge in magnetics

We offer:
- expertise in additive manufacturing
- the opportunity to write the master project in home office
- online meetings on a regular basis

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