



Masterarbeit Nr.: LSS-Mxx

Aufgabenstellung für die Masterarbeit von: xxx (Matr.-Nr. xxx)

TITLE: Constructing and testing an innovative water wheel design in a water flume

SHORT DESCRIPTION:

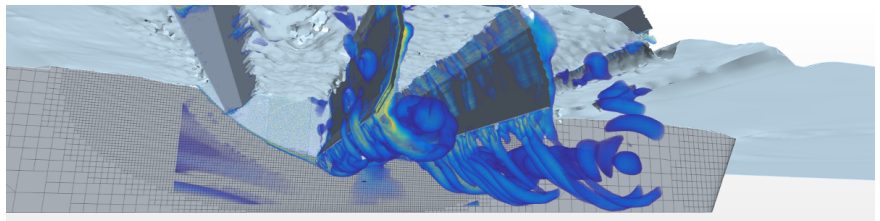
Our group has been working during the last 5 years on the optimal design of modern water wheels, since such systems show many advantages in terms of robustness and low ecological impact. Based on this work, a radically new design has emerged as being potentially very promising, but has not been tested under real conditions up to now. Central objective of this project is to design practically and build a small-scale prototype (typical wheel diameter: 30-40 cm) and to test it under realistic operating conditions in our water flume to obtain the characteristic line of this device. This is a practically-oriented project involving CAD, construction, 3D printing and experimental tests with the support of our technical team.

Major steps:

- Get acquainted with the subject by reading the available literature on the topic, starting with [1]
- Design the prototype
- Build the prototype
- Obtain the characteristic line by experimental tests in our water flume
- Document and analyze the obtained results

Pre-requisites:

- Experience with CAD and construction (if possible 3D printing)
- Interest for renewable energy and practical work



Supervision:

- Prof. Dominique Thévenin (ISUT/LSS)
- Dr. Emeel Kerikous (ISUT/LSS)

Beginning: **as soon as possible**

Due: xxx

[1] O. Cleyen, *Optimization of low-impact hydropower devices*. Ph.D. Thesis, Lehrstuhl für Strömungsmechanik und Strömungstechnik, Fakultät für Verfahrens- und Systemtechnik, Univ. of Magdeburg "Otto von Guericke", 2022.