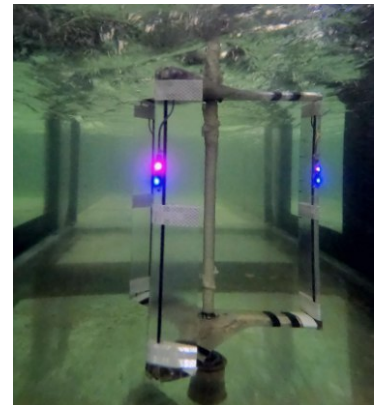


EXPERIMENTAL INVESTIGATION OF THE CHARACTERISTIC CURVES OF CROSS-FLOW TIDAL TURBINES WITH DIFFERENT BLADESHAPES

Bachelor/Master Thesis (LSS-XXX/XX) at the *Lehrstuhl für Strömungsmechanik und Strömungstechnik, OvGU*

The Turbomachinery Group of the Chair of Fluid Dynamics and Technical Flows collaborates in terms of the OPTIDE Project with the Chair of Electrical Drive Systems at OvGU, the Laboratory of Steel and Lightweight Design at the Hochschule Magdeburg-Stendal and the Laboratory of Ecological and Industrial Flows (LEGI) in Grenoble. This interdisciplinary research team aims for the development and optimization of a cross-flow tidal turbine with continuously pitched blades.

In previous work conducted in the OPTIDE project a cross-flow tidal turbine flume model has been developed. Additionally, a numerical optimization was carried out to determine the most suitable bladeshape for the rotor. Aim of this work is to conduct measurements of selected bladeshapes and to compare them with given numerical results. These experiments will be performed in the flume facility in the laboratory



The work to be conducted comprises the following steps:

- Understanding the physics and the state-of-the-art in cross-flow tidal turbine research with focus on experiments
- Understanding the experimental turbine flume model and the related experimental setup in the water channel
- Setting up the turbine flume model with the specified bladeshapes
- Measurements of the characteristic curves (performance curve) of the turbine with different bladeshapes
- Post-processing and analysis of the results
- For a Master's thesis: additional measurements of the flow field using PIV (Particle Image Velocimetry)

Aim of the work is to measure, post-process and analyse the characteristic curves for at least two different bladeshapes of the cross-flow tidal turbine.

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