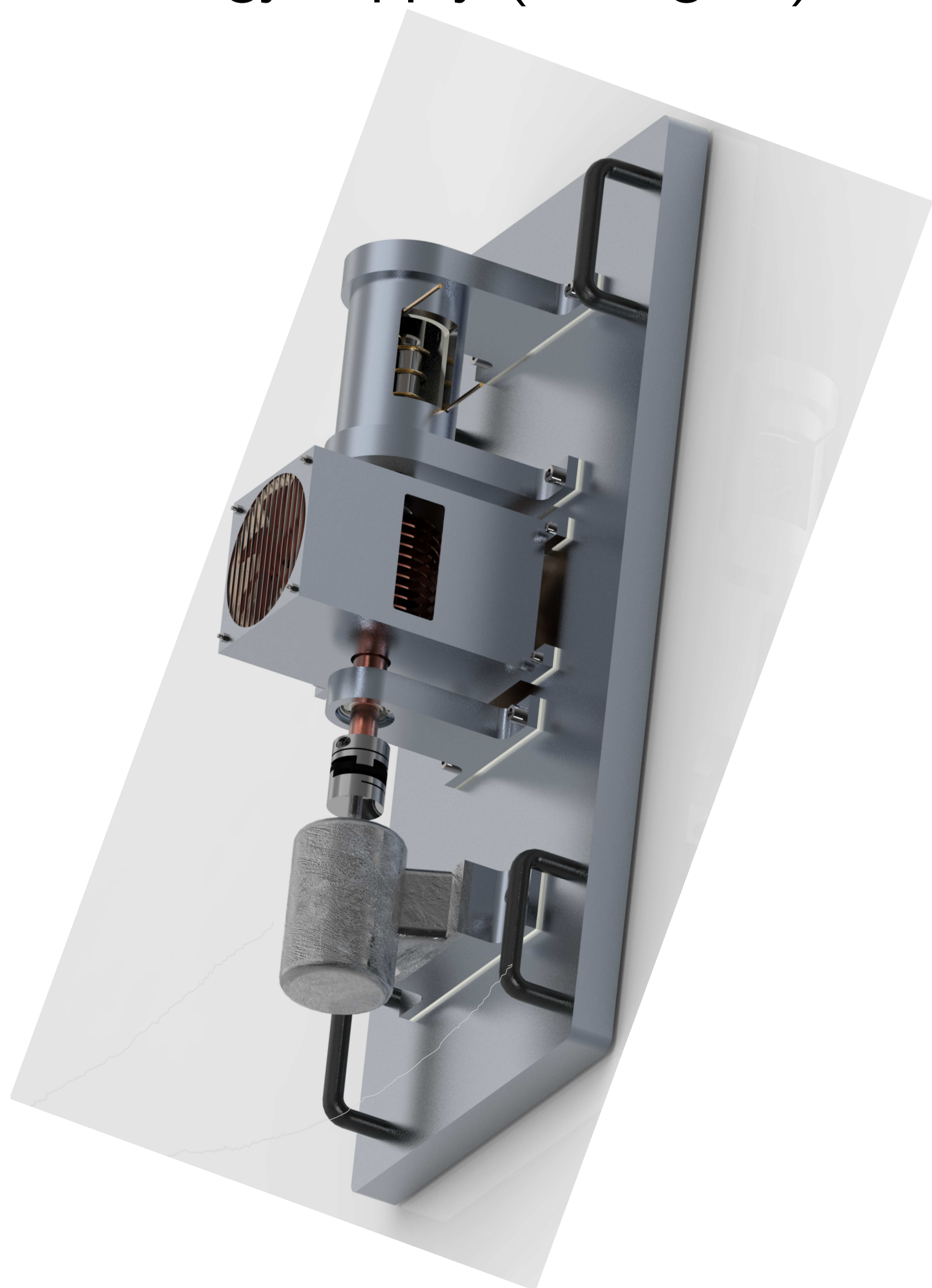


Institut für Mechanik und Thermodynamik

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Introduction

The performance of a gas and steam turbine power plant can be increased by increasing the fluid temperature. This leads to the requirement of the application of advanced cooling concepts or new materials for the turbine blades. One possible advanced cooling technology is the rotating heat pipe concept, by which a rotating shaft with hollow turbine blades can be cooled with a trapped gas inside the shaft. In this way, we arrive at a two-phase heat transfer device without additional energy supply (see figure).



Problem definition

In this work, the production planning and preparation of a designed rotating miniature heat pipe for fair presentations has to be performed. The production planning is the link between the design process and the production of the parts in companies. Production drawings has to be created and production methods has to be chosen. The design has to be optimized in order to realize an efficient production.

Work programme

The first step is the familiarisation in the design and function of the rotating miniature heat pipe. The heat pipe will be assembled on a standard trolley. The drive will be an electric motor, the heating source will be an induction heater and the cooler an electric cooling device. Then, for each part a design drawing has to be created, which includes all informations for the production in companies. This can be an iterative process with the selection of production methods. The next step is the selection of national or international companies, where the production can be commissioned. The final steps are the optimization of the design drawings with the chosen production companies and the submission.

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