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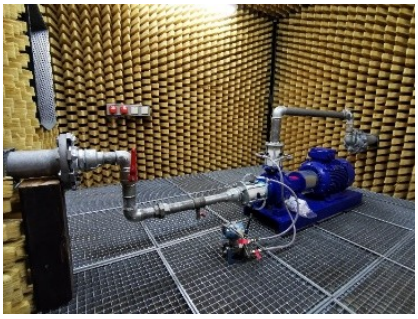
Master Thesis
Fluid Mechanics and Hydraulic Machinery

Supervisor: M.Sc. Hanbing Ma
Begin: asap

Topic: **Pump Operating Points Estimation by Analysing Structure-borne Sound**

Motivation

Nowadays, pumping units are installed in many plants for a wide variety of applications. Structure-borne sound, which propagates through the solid materials of the pump and its housing, carries valuable information about the pump's operational state. By developing advanced methods to interpret these acoustic signals, we can gain insights into the pump's performance, detect anomalies, and predict maintenance needs without interrupting the ongoing processes.




Problem statement

Conduct a literature review on the current state of structure-borne sound preprocessing methods. Implement and evaluate a range of these methods, such as time-based, frequency-based, and feature-based approaches. Compare these methods with machine learning techniques, including supervised and unsupervised approaches.

Prerequisites

- Programming skills (Python)
- Experience with machine learning advantageous