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| **Bachelor Thesis** |
|  | Platz für Zertifkatlogo |

**Implementation of the Coolprop-database in GeSI and comparison of the simulation results with the Refprop-database and measured data**

Electric power generation for low-temperature cycles up to 250°C typically uses the Organic Rankine Cycle (ORC) process. The chosen working fluid and boundary conditions play a key role in the net power production and economic efficiency of the power plant.

The institute aims to improve power production by selecting an appropriate heat transfer fluid for the specific site boundary conditions. In many cases, using a supercritical live steam pressure provides a higher net power output compared to a subcritical cycle.

GeSi, an in-house Matlab code, simulates steady-state thermodynamics for ORC. The Refprop database has been used to calculate the thermophysical properties of the chosen working fluid. In an earlier bachelor thesis, the first modules were rewritten for use with Coolprop data. This work is now to be continued. Subsequently, we will compare the computational outputs of Refprop, Cool-prop, and experimental data.

The work comprises in detail:

* Literature study of Matlab, ORC and GeSi.
* Further Implementation of the Coolprop database in GeSi.
* Verification of the Results.
* Comparison with experimental data.
* Documentation of the results.

The scope of the work is designed for 3 months including literature research and documentation.

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