

PCM Cold Storage

Graduate



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Initial Situation: In the age of digitalization, a lot of energy is needed for cooling server rooms, and the tendency is on the rise. Therefore the Cool-Data team, which includes various companies and researchers from DTU, works on a sustainable solution. Financially the Cool-Data project is supported by the Innovation Fund Denmark. A storage unit has been produced with which tests can be carried out. With a test setup, energy can be supplied or extracted from the storage utilizing a heat exchanger. Material investigations have been carried out, and a PCM has been determined, which was used for the tests

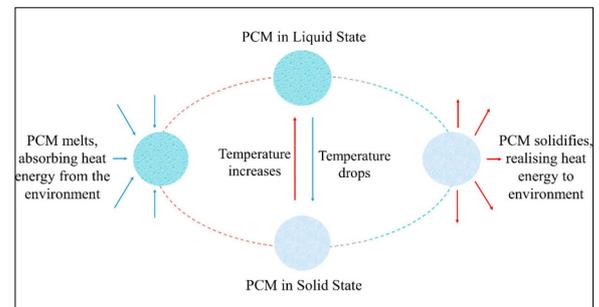
Definition of Task: The mentioned storage, the heat exchanger, and the PCM were tested with experiments. The data obtained was then evaluated. The findings were used to make recommendations for the continuation of the project, which includes the components mentioned. The results were recorded in a report.

Approach: Knowledge was acquired through literature research, which was needed to understand the topics and interrelationships. Test cycles and steady-state tests were carried out to obtain data. In addition, the handling of the test equipment was practiced with the empty storage. The test cycles had a specific temperature profile. In addition, these cycles were carried out at different flow rates. The steady-state tests were done at different temperatures to determine the heat loss coefficient. Using Excel, the data was analysed, and recommendations were made based on the findings

University at which I carried out the work
<https://www.sensus.org/detectus-3>



PCM circuit
<https://www.mdpi.com>



Test setup

Own presentation



Examiner

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Co-Advisor

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Subject Area

Solar thermal technology, Thermo- and fluid dynamics, Building technology, Building physics, General energy technology