

*Master's thesis project at Division of Energy Technology, Department of Space, Earth and Environment, Chalmers University of Technology*

## Drying of concrete with heat pump

### Background

When buildings in concrete are erected, drying of the concrete is an important and energy consuming part of the project. The drying should be fast to shorten project time, still it needs to fulfill all quality requirements of the dried concrete.

Today, drying is carried out using direct electricity, district heat or other means such as gas or pellet burners. By instead using a novel heat pump concept, the purchased energy for drying could be significantly reduced. In this diploma work you will gain knowledge about how a heat pump works and finding heat pump solutions that work for this specific industrial application.

### Research tasks:

This diploma work comprises of:

- Understanding the heat pump thermodynamic cycle
- Developing the scope of the study
- Understanding the concepts and requirements for drying of buildings and corresponding monitoring techniques
- Designing a heat pump concept that is adaptable and robust to fit requirements from industry
- Evaluate total cost of ownership and other critical KPI's
- Interpretation of the results
- Presenting the finding to internal and possibly external audiences"

**Requirements:** Master programme Sustainable Energy Systems (MPSES) or Sustainable Chemical Engineering (MPISC) Background in chemical, energy, or mechanical engineering, interest in process modelling and industrial energy systems analysis. Experience with process modelling software (e.g. Aspen Plus) is a plus.

**Group size:** 1 student

**Supervisors:**

**Co-supervisors:** Roger Nordman (CIT Renergy)

**Examiner:** Simon Harvey

**Timeframe:** 5 months for M.Sc.; 4-6 months for research internship

**Start:** January 2024

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