

MSc graduation project

# Solar Energy Storage in Phase Change Materials

## Introduction

Building energy demand is 40% of total energy consumption in Europe. In Netherlands, the energy demand for low temperature space heating and domestic water heating is 65 % of energy consumed in building environment (~20% of the total energy consumption). Sun is the most important source of renewable energy. However, intermittent nature of solar energy is a major hindrance for its widespread use. There is mismatch between energy demand (building environment) and energy supply (solar energy) seasonally. To store solar energy for seasonal heat storage, a compact materials is required.

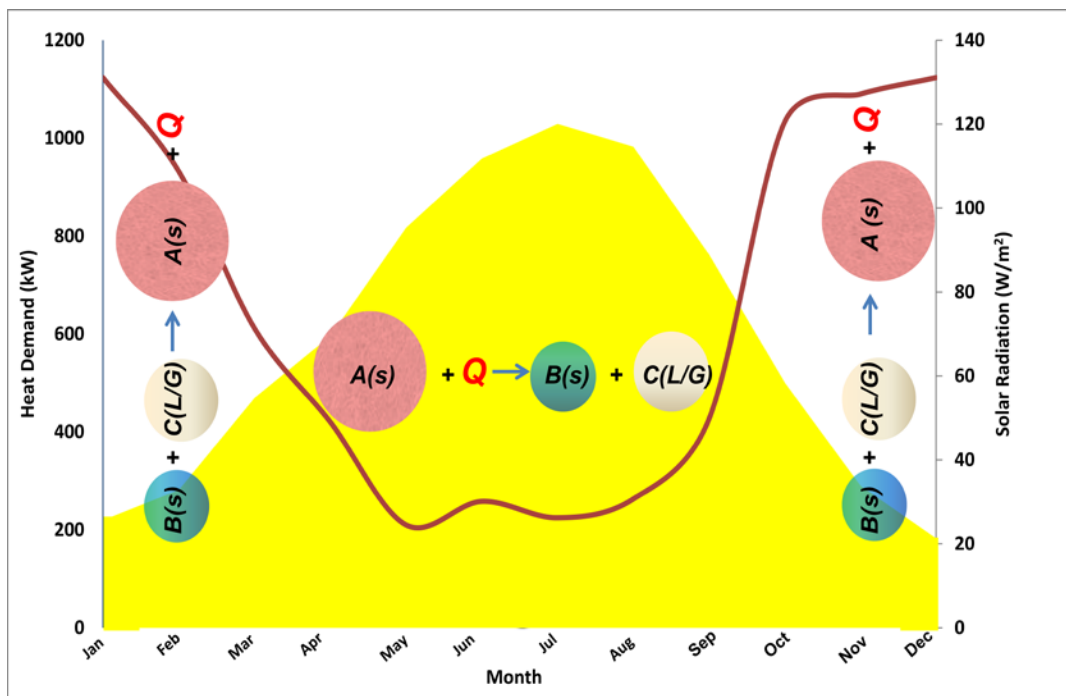


Figure 1: Thermochemical materials (TCM) for seasonal heat storage

## Project Description

In this MSc graduation project, the work will consist in the study of  $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$  as thermochemical heat storage material. The task will be to study the hydration/dehydration of this material in order to compare with the experimental results in ECN. The focus will be on computation of equilibrium composition at given Pressures  $P$  and temperature  $T$ , comparison with other TCM's from the same class, and the detailed investigation of the possibility of overhydration of this material.

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