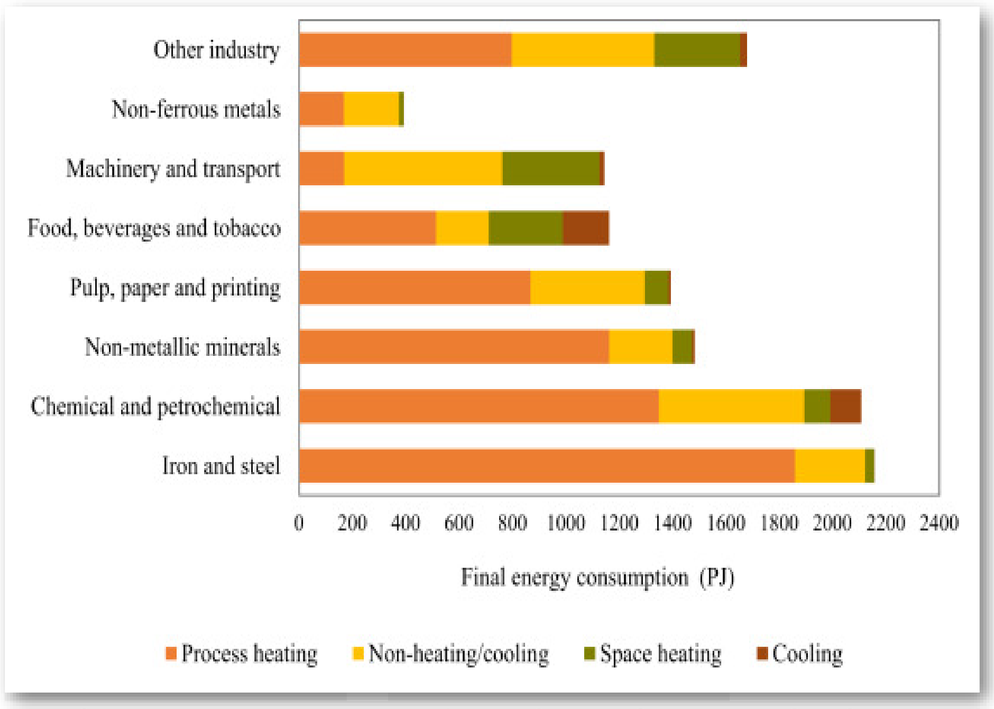
HSLU Hochschule Luzern

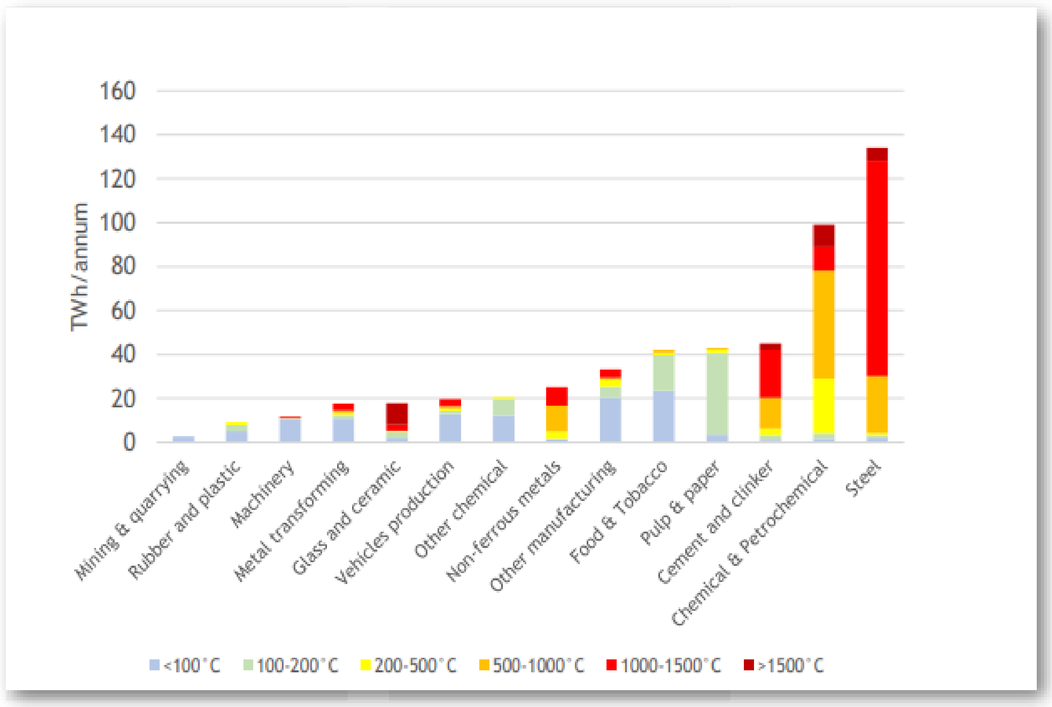
Technik & Architektur
Master-Thesis in Business Engineering

Master of Science in Engineering, specialization: Business Engineering

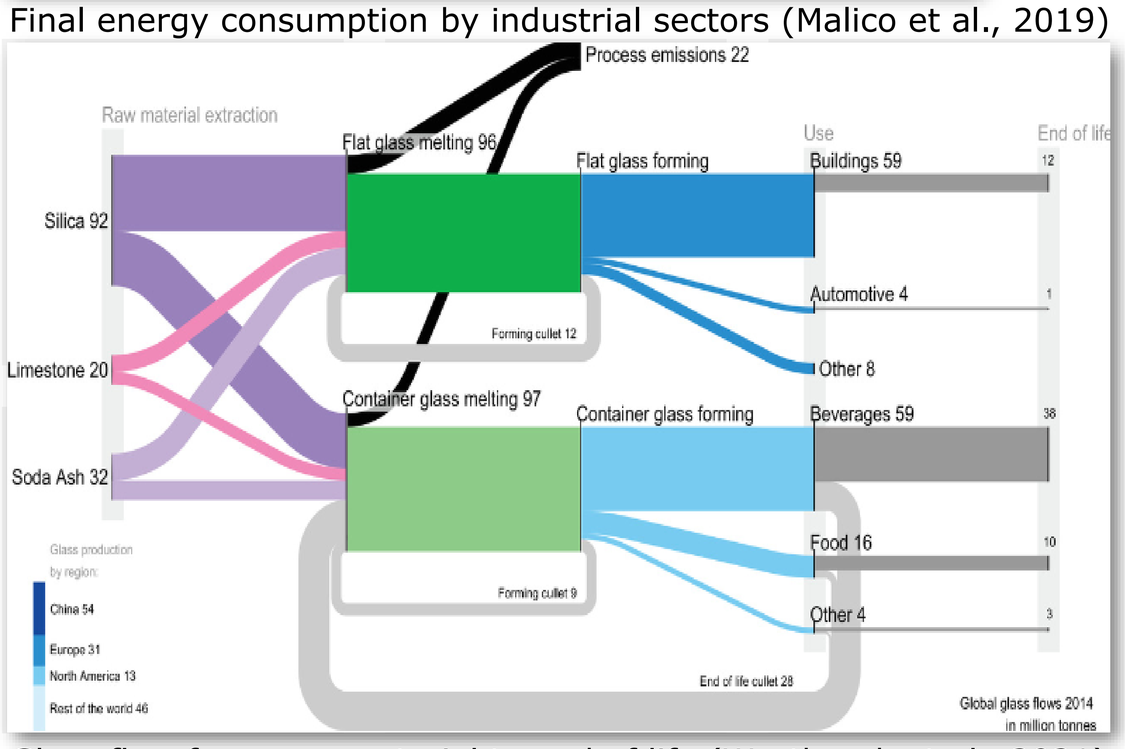
Market research and analysis of industrial processes above 900°C



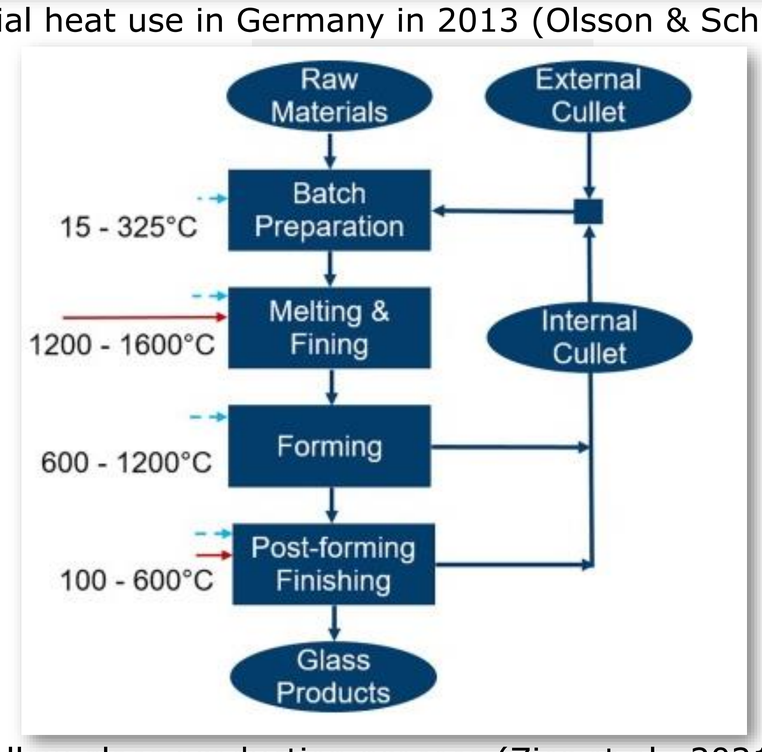
Final energy consumption by industrial sectors (Malico et al., 2019)



Industrial heat use in Germany in 2013 (Olsson & Schipfer, 2021)



Glass flow from raw material to end of life (Westbroek et al., 2021).



Hollow glass production process (Zier et al., 2021)

Problem Statement

Leister was interested in performing market research to find whether there were possible applications for a high temperature range (more than 900°C) tool in order to develop a new tool with a new technology that would cover that market. Identification of industries with industrial processes at high temperature and what are the needs was the first part of the project.

The second part of the project was focus in the glass industry. The glass industry has been selected to do a market research in deep regarding heat treatment processes.

Methodology

The methodology used in the project includes interviews with industry experts and Leister employees, a exhaustive market research, complemented with market segmentation and competitor analysis. Some other methods being used in the curse of the project were stakeholder map, lifecycle of a product and megatrend analysis.

Results

Regarding the heat use and the industries with industrial processes that require high temperature (higher than 900°C) the steel, chemical and petrochemical, cement, non-ferrous metals, vehicles production and glass and ceramics were identified. All these industries are considered to be energy-intensive and to require a high capacity in terms of production and therefore the equipment needs to have a high power (daily production of a cement plant is 2500 tonnes, glass production line 450-600 tonnes per day). The flat and container glass production process that happens at 1550°C is the melting of batch. The traditional furnaces work with gas and new developments can work with oxy-fuel, hydrogen or with electricity by heating electrodes (in a small scale). The tin bath process for flat glass starts at 1100°C and finishes at 600°C and the annealing lehr takes place below 600°C (flat and hollow).

Laura Badia de Antonio

Hauptbetreuer:
Prof. Dr. Silvio Di Nardo

Experte:
Christoph Bölsterli

FirmenName:
Leister Technologies AG

LEISTER

FH Zentralschweiz

MSE | MASTER OF SCIENCE IN ENGINEERING