

Bachelor's Thesis in Energy Systems Engineering

The Analysis of Energy and Waste Concept of Odermatt



A comparative study on heating alternatives best suitable for Odermatt

Building energy consumption accounts for massive amounts of CO₂ from the combustion of fossil fuels. To achieve the 2050 goal around 80 % of CO₂ emissions from the building sector should be decreased. Furthermore, the shortage of non-renewable is increasing day by day. The Russian attack on Ukraine has made clear that dependence on fossil fuels (natural gas and oil) imports can put countries in a critical place.

Odermatt is a carpentry company in Adligenswil. This prospective study was designed to investigate Odermatt's present energy concept for the replacement of the oil heating system. The aim of this study was to create comparative research for various heating alternatives, restricting the consumption of fossil fuel.

After coming up with a list of heating systems, district heating and borehole heat exchanger heat pump were considered. As a methodology, qualitative approach has been taken. Both the heating alternatives were evaluated.

Firstly, the emission caused by each heating systems were projected. District heating emits almost zero tonnes and borehole heat exchanger emits CO₂ due to electricity consumed. Investment and energy cost for both the heating systems were estimated. The Levelized cost of heat helped in stating that district heating is cheaper than borehole heat exchanger heat pump.

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