

Feasibility studies for SDH in Västra Götaland

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Region	Västra Götaland (B-region)
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Feasibility studies - Summary

Feasibility studies for potential solar district heating plants based on a market survey of existing block and district heating plants based on wood fuels in Region Västra Götaland. The market survey is described in Factsheet D4.1.

Initial situation

Region Västra Götaland comprises 1.6 million inhabitants on 24 000 km², i.e. 66 inhabitants per km², which is equal to the average population density within Europe. The region has 49 municipalities, the smallest with 5 000 inhabitants and the largest with 500 000 inhabitants (City of Gothenburg). All municipalities have one or more block and/or district heating plants using solid wood fuels. A couple of municipalities already have a solar heating plant.

Many heating plants using solid biofuels, especially wood chips, have often only one boiler that runs all year around, sometimes with sometimes without a buffer storage tank. This means in many cases that the boiler runs on very low power with low efficiency due to the low heat demand during the summer months. A combination with a storage and solar collectors makes it possible to run the boiler with a higher efficiency (and less emissions) and thereby save more wood fuels than the amount replaced by the solar heat. However, the low price for wood fuels together with lack of awareness about solar collectors, etc. creates small incentives to invest in a solar system.



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Objectives

The aim here is to investigate the interest and the possibilities to complement existing block and district heating systems based on solid biofuels with a solar heating system within Region Västra Götaland. The project is anticipated to result in the realization of at least one demo plant during 2018.

Strategy

First, a **market survey** is initiated and evaluated. The survey will result in a list with information about plants in order to enable a selection of potential plants that may be complemented with a solar heating system.

Second, **feasibility studies** will be carried out for a number of plants identified in the first step. The most feasible plants (site and economics) will go on to a pre-design study and an application for co-financing if and when required.

Third, individual or common calls for tenders will be prepared based on a couple of pre-design studies and communicated to interested contractors, with the aim to realize at least one plant during 2018 that can be used as a demonstration plant for other interested actors.

This fact sheet presents the result of the **feasibility studies**.

Barriers and opportunities

The main barriers for the implementation of SDH in Sweden are: lack of regional and governmental incentives and low costs for bio fuels (wood chips).

The use of block and district heating is common practice in Sweden. The large number of existing heating plants using biofuels holds barriers, as well as opportunities. The barrier is the present low cost for solid biofuels. The opportunity is that these plants are suitable for implementing solar heat, as it can improve their technical and environmental performance (improved boiler efficiency and reduced transports of fuels). Thus, it has to be proven that they are feasible from technical, environmental, and especially, economic points of view.

The starting point is to identify existing heating plants suitable to be complemented with solar heating and then help the plant owners to get the information they need to take necessary decisions on the way to the realization of a plant.

Results

The first step, i.e. a market survey of existing block and district heating systems based on solid biofuels with a solar heating system within Region Västra Götaland, was carried out in 2016 (See factsheet D4.1).



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The survey revealed that there are >100 plants based on solid biofuels, where it was interesting to carry out feasibility studies for at least 10 plants.

Three feasibility studies have been carried out and presented in a paper at the SDH conference in Graz and a regional seminar (in Kungsbacka) 2018. One for a plant in Borensberg with poor conditions (difficult to find areas for collectors, as the village is surrounded by woods), one for a plant in Hemse with good conditions (old plant in need of new boilers, available land, see picture below) and one for a plant in Vara with conditions somewhere between the first mentioned (available land, less interest).



The result from the feasibility studies, will be developed in cooperation with the plant owners. The result from the feasibility studies will also be used to initiate the development a technology procurement project with financial support from the Swedish Energy Agency.

Lessons learned

The plant owners were positive to get the feasibility studies, and gathered data in the feasibility studies are of great value for the continuation of the project. It will however be necessary to communicate the result from one or several feasibility studies before the real interest among the plants owners can be evaluated.

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