SecureChain
sustainable biomass energy

Pilot Project Factsheet

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Biomass mobilisation through implementation of flue gas condenser

Project partners

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The essence of the project was to find the most appropriate way to exclude fossil fuel from the energy mix into a heat plant. The feedstock consists of wood biomass, mostly wood chips. Waste heat is brought into the grid of Lessebo from the nearby small pulp mill. The peak – and backup load is secured by bioenergy fuelled combustion facilities in three of these communities. The community of Kosta is the exception, where the deliveries are secured by a fossil liquid gas-fuelled facility. Fossil energy in the energy mix in combination with an expected increased demand of heat from a big costumer, were the main driving forces to investigate various options on how to exclude fossil fuel out of the energy mix.

Partners

Lessebo Fjärrvärme is the pilot project coordinator. It is an enterprise, owned by the municipality of Lessebo, located to the southeast part of Sweden. The enterprise is the owner of heat plants which they operate and maintain. The enterprise supplies heat into four various grids in four communities in the municipality of Lessebo. These communities are populated by between 1000 and 3000 inhabitants each, where some of the households, premises and industries have other heating systems, but district heating. ITK Envifront is the supplier of the flue gas condenser.

Activities

It has been a discussion during several years at Lessebo Fjärrvärme on how to exclude the fossil fuel in the energy mix in the heat plant of Kosta. The question became even more relevant when a big customer of the heat announced their plans for expansion of their business, with the consequence of a bigger demand of district heating. The opportunity to take part of the support from the SecureChain project appeared by that time. After taken part of presentations from two consultants, where one of them was hired after a recommendation from one of the other granted SMEs, a decision was made to implement a flue gas condenser. Discussions started with suppliers, one of them a young regional company, ITK Envifront.

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SecureChain Partners

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Results

There will be an investment in a flue gas condenser. This condenser is the first-of-a-kind. The construction is based on a new, innovative technology. An additional value for Lessebo Fjärrvärme is that this novel technology guarantees that the emissions will be lower than the new limits for emissions, which will soon be introduced according to EU legislations.

A new interesting business model has been agreed on for the purchase of the condenser. The rent Lessebo Fjärrvärme will pay during a couple of years is equal to the cost of the fuel they are going to save because of the higher efficiency of the plant in total. The business risk for the SME is minimal, and the supplier is supported by a demonstration plant implemented in the region in which they are operating.

The new EU legislation for emissions from combustion plants in the scale up to 20 MW, affects several of the energy companies in the region. With existing technology, it is primarily a problem to meet the limits of heavy metal emissions. Since the supplier of the condenser guarantees that their new construction meets the new requirements, the SecureChain project enabling the introduction of this technology, is of great value.

Part of the interieur of the heat plant in Kosta

Follow-up

The RLP has been in contact with the supplier with the help of Lessebo Fjärrvärme. It has been discussed, that during the upcoming yearly event "The Bioenergy day of Växjö", there will be a focus on novel technologies and best practise in order to enable the heat delivery companies to keep the emissions under the new limits according to new EU-legislations – a seminar where one of the highlights would be this new technology and, if possible after the condenser been in operation for a while, to present how the new condenser has affected the efficiency of the plant and the decrease of emissions. Lessebo Fjärrvärme will measure the emissions, probably by the help of students from the Linnaeus University.

Part of the system for fuel feeding