Alfa Laval heat exchangers help boost capacity in biorefinery

SunPine AB, Sweden

SunPine increased capacity and reduced maintenance needs in its biorefinery in Piteå, Sweden by installing Alfa Laval Compabloc and spiral heat exchangers. The close cooperation between the teams from SunPine and Alfa Laval was an important part of the successful execution of the project.

Strong demand for bio-based fuel and chemicals

SunPine is one of the world's leading producers of wood-based biofuels. The company refines crude tall oil, a by-product from the pulp & paper industry, into fuels and base chemicals in its biorefinery in Piteå, Sweden.

SunPine's main product is tall diesel. This is a key ingredient in the production of Evolution Diesel, an eco-labelled diesel sold in Sweden and Norway. A total of 100 million litres of tall diesel is produced per year which helps cut CO_2 emissions by 250,000 tonnes per year. To meet the growing demand, SunPine is investing to expand capacity and is currently building a second plant which will increase the company's total output by 50%.

Profitable by-products

The refining process creates several by-products that add to the total revenue. These include turpentine, heating oil for industrial use and rosin. Waste heat from the plant is distributed to the district heating network.

Expanding diesel production

In 2018 SunPine decided to scale up its diesel production to meet rising market demand. The upgrade called for increased heating in certain positions. Since the company had good experience from an Alfa Laval spiral heat exchanger already in operation in its plant, it contacted Alfa Laval to discuss possible solutions. Engineering teams from the two companies initiated a close cooperation where operating data was analyzed and design ideas shared during several meetings.

Multiple challenges had to be overcome. The medium is a very sticky and viscous substance that quickly clogs heat exchangers that are not designed for handling difficult media. There were also requirements for low pressure drops, and the heat exchangers had to be able to fit into the somewhat limited plot space available in the plant. This meant high heat transfer efficiency was crucial in order to fulfil the increased heating requirements.

High performance and low maintenance needs

The solution comprised Alfa Laval Compabloc and spiral heat exchangers. The spiral heat exchangers are designed for handling viscous, fouling media, and the single-channel design results in a self-cleaning effect.

The units were installed and commissioned in 2019 and the SunPine team is very satisfied with the outcome, not least the long cleaning cycles spanning several months.

Andreas Bäckström is Production Technician at SunPine. “We are very happy with our cooperation with Alfa Laval. After this project we have continued working with Alfa Laval on solutions for our new tall diesel plant. We see that the close dialogue we have leads to very good results, both in terms of process performance and project execution,” he says.

Alfa Laval spiral heat exchangers are perfect for fouling media, combining high heat transfer efficiency, low pressure drop and a single channel design that helps keep the heat exchanger clean.

Fast facts

The plant

SunPine’s biorefinery in Piteå, Sweden.

The challenge

To increase capacity in the diesel production line.

The solution

Compabloc and Alfa Laval spiral heat exchangers.

The benefits

- High heat transfer efficiency resulting in compact installations that fitted into the existing spaces.
- Long cleaning cycles, despite the difficult medium.
- Low pressure drop.

SmartClean
Fast and efficient flushing of fouling material

C-Weld
Superior cleaning and extended performance

XCore
Advanced design for higher pressures

ALOnsite
Qualified support at your facility

SelfCean
Superior cleaning and extended performance

RollWeld
Automated, reliable channel enclosure

HighP
A custom solution for high-pressure duties

Learn more at:
www.alfalaval.com/compabloc
www.alfalaval.com/spirals

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com

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