



Case Study Borås Energi & Miljö AB

Camilla Ölander, Biogas Operations Manager at Borås Energi & Miljö AB, is satisfied with the new pre-treatment plant, which was partly delivered by Cellwood Machinery.

Pure slurry and spotless production hall

Exemplary work environment, reduced staffing, high operational safety, and a clean substrate with a high gas content. These were some of the items high on the wish list when Borås Energi & Miljö AB 2021 invested in a new pre-treatment plant for biogas production. Part of the processing equipment was delivered by Cellwood Machinery, and now after about a year of operation, the Operations Manager Camilla Ölander concludes that all the desired features were delivered. The investment is also one piece of the puzzle that enabled a cooperative agreement with St1 – and a big step forward toward the vision of building Sweden’s most prominent sustainable city.

Case Study

In the processing hall, there is a faint smell that is hardly noticeable. The floors, staircases, and all equipment are spotless, and you wouldn't expect that this plant processes 20 tons of food waste every hour. The receiving area is located on the other side of a wall with a view from the mostly unmanned control room. This is where, every day, sorted municipal waste consisting of paper and plastic bags as well as pre-packed waste from shops and other businesses are received. The huge robotic grapple moves purposefully through the hall, descends and scoops up a big chunk of raw material: today a big consignment of sardines still in the original cans.

Challenging materials

- This is a challenging material that puts high demands on the equipment, says Camilla Ölander, while the grapple on the screen can be seen releasing a gigantic clump of sardine cans into the Grubbens HC-Pulper supplied by Cellwood Machinery. Here the material is mixed with recycled water,

before being carefully processed into minuscule particles for further transport to the GRS reject separator, also supplied by Cellwood. This is where the organic material is separated from the reject before it continues to Grubbens High-Density Cleaner for further purification through separation of heavy solid particles such as sand, glass, etc.

Twice the amount of gas

In addition to these three machines, Cellwood in collaboration with the consultant Peter Ek at GreenTech Solutions Scandinavia has delivered all the technical documentation for the plant. Envac Scandinavia Aktiebolag acted as the main contractor.

The result speaks for itself. The reject rate has decreased from almost 50% down to 20%.

- You should then bear in mind that we handle a lot of pre-packed food waste. The big difference today is that everything we receive at our facility ends up where it is supposed to be. Today, the reject



The modern pre-treatment plant is one of the basic prerequisites for the new and long-term agreement with St1 – it involves the production and refinement of large amounts of biogas that are then distributed to the vehicle gas market.

The reject rate has decreased from almost 50% down to 20%.

Camilla Ölander

contains almost no organic materials. Already when we commissioned the new plant, we noticed that the slurry volumes increased, whilst the slurry delivered to the digester was much purer. We also invested in a new post-digestion tank, and together these two efforts have had a big effect on the production. On average, we produce nearly twice the amount of gas today compared to the old plant," continues Camilla Ölander.

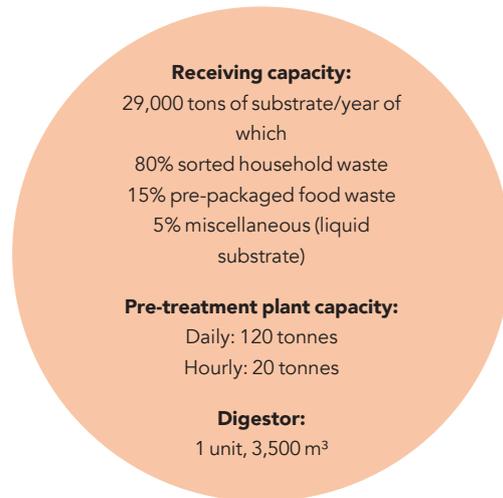
Effective and attractive

Borås Energi has produced biogas in Sobacken, slightly south of Borås, since 2008. For several years, the facility made deliveries to the city's public transport system, however, at the moment the end product is primarily used to power Borås Energi's own truck fleet. The long-term goal has been to use food waste where it can provide the most benefit in the form of crude gas for the transport industry. To reach this goal, a more efficient facility was needed – and also a more attractive workplace.

With the new pre-treatment plant, and a new digestion plant coupled with Borås city's newly built wastewater treatment plant, Borås Energi will be able to produce large amounts of biogas. And thanks to a new cooperation agreement, the gas will be refined and sold by St1 and reach a larger market. Borås Energi thus has taken big steps toward its vision of creating Sweden's most prominent sustainable city.



Nowadays, the Operations Manager **Camilla Ölander** and Operations Engineer **Erik Johansson** take pride in showcasing their workplace.



Why Cellwood?

- We are familiar with Cellwood’s technologies from before, and we have even made study visits at facilities delivered by Cellwood,” says Camilla, and she relates that there were several reasons behind the final choice of the supplier.

- This solution provides an efficient process for producing pure slurry, which was as important as improving our work environment. Also, the fact that the entire process is kept in a closed system weighed in heavily. Our permit also requires us to manage unpleasant odours here in Sobacken. Since this technology involves a closed process, we are able to deliver the concentrated process air to an odour reduction system that relies on carbon filters and UV light.

Operational safety for a peaceful workplace

It is now one year since Borås Energi’s new pre-treatment plant was put into service. Initially, there were some start-up issues resulting in a slightly delayed take-over of the plant. Apart from the increased efficiency and a clean and virtually odourless workplace, a big improvement with the new facility has also been improved operational safety which contributes to a calmer workplace for the team operating the plant.

- Previously, manual interventions were always required, we were basically cleaning the worksite nonstop and still the place never got clean. Today, our work tasks are instead focused on start-up of the plant and daily inspection. When everything is running like normal, we spend only a few hours every day inside the facility. A single person can manage the cleaning duties within four hours per week,” reveals the Operations Engineer Erik Johansson, who is noticeably satisfied with his new

work environment.

- There are almost no production interruptions, and the need for draining the tanks is infrequent. Now it is almost a year since we performed total drainage the last time, and as far as I know, there are no plans for this either. Previously, we often drained them twice a year

A cog in our Sustainability Cycle

Nowadays, Erik and the Operations Manager are proud to showcase the plant, and they are well aware that it is an important part of the Sustainability Cycle – besides, it enables the team to deliver a top-notch product.

- We can now maintain a high level of quality and we have excellent recovery from the processed organic material. The new demands on pure biofertilizers are taken care of already in the pre-processing stage, which means that we are far above the SPCR 120 threshold for the end product. Still, weighing in the current debate around microplastics, the requirements will surely become much stricter in the future. With this in mind, we have a strong position going forwards, explains Camilla, and she also tells us the produced bio fertilizer is highly attractive.

- Especially these days when fertilizer costs have gone through the roof! We now work with a hired contractor that distributes the product to different warehouses and farmers.

In the facility, there are still minor adjustments that need to be made since it was commissioned. Thanks to an existing service contract, Cellwood Machinery performs regular service visits to the facility to inspect the equipment and replace wear parts as required.