



Mosserud Biogas Plant, Karlskoga Energi

Background

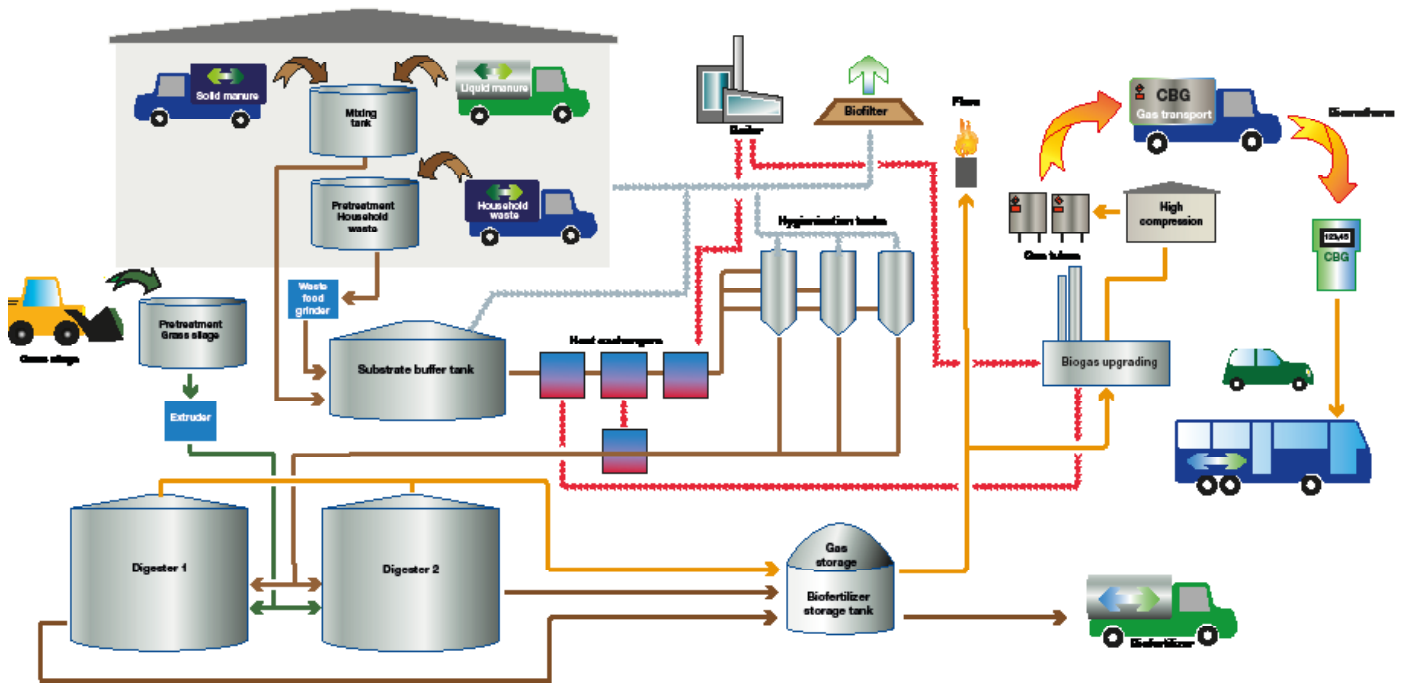
Karlskoga Biogas AB is a company, owned by Karlskoga Energi & Miljö AB, a municipal company which handles electric and heating energy, waste water, potable water and waste management. Biogas is one of the most environmentally friendly fuels and thanks to local production and the wide range of raw materials many advantages compared with, for example ethanol. The use of CNG in Sweden has risen sharply in recent years and are expected to show good growth. According to studies, the need for vehicle fuel in the Örebro region is large and there is a need for greater expansion.

Solution

Karlskoga Biogas has built a new biogas plant in Mosserud, Karlskoga. The biogas plant receives manure, organic household waste and grass silage from the nearby region. The produced biogas is upgraded to vehicle fuel and distributed through a filling station at the plant and with container trucks to the region's filling stations. The produced waste product, digestate, goes back to the farmers and acts as a very good fertilizer for the cultivation of food and feed.

Purac AB has installed three separate lines for three different substrates.

- Manure
- Organic household waste
- Grass silage



Process

Manure and slurry from household waste is pretreated in a pasteurized step before reaching the digestion. The pasteurization is done in batches of 70° for one hour. The substrate is circulated over heat exchangers to reach the correct temperature at 38°. After this treatment the substrate is pumped into the digesters.

Digestion takes place in two reactors, 6000 m³ each.

In the digesters the organic substrate is converted into methane gas and carbon dioxide by different anaerobic bacteria.

The raw biogas upgrades in a CApure® treatment plant. The CApure® plant upgrades the biogas to bio-methane, classified as vehicle fuel.

The digested substrate is stored in a combined storage tank for substrate and biogas. The digestate is collected by the trucks delivering liquid manure and transported back to the farmers as good fertilizer.

The bio-methane is compressed in the the CApure® plant and transferred in a pipeline to a high-pressure compressor plant.

The HP-plant compresses the bio methane to 250 bar and is filling gas containers and feeds the filling station with pure, "green" and powerful vehicle fuel.

Result

Substrate wet ton volumes/year:

- Food waste 18 000 tons/year
- Grass silage 20 000 tons/year
- Liquid manure 40 000 tons/year
- Solid manure 1 000 tons/year
- Oil/Grease WWTP 3 600 tons/year
- In total 82 600 tons/year

Total biogas production: 7 800 000 Nm³/year

- Methane content is 62 %
- Biomethane production for vehicle fuel is approx 48 GWh/year or equivalent to 5 million litres of gasoline

Bio fertilizer production

- Approx. 90 000 ton/year of Bio fertilizer goes back into farming as a high quality fertilizer