



Biogas production for the public transport network -

Trollhättan - Sweden

In 1996, Trollhättan brought 4 buses running on biogas into its urban transport network. The biogas is provided by the Arvidstorp wastewater treatment and waste processing plant.

Target Groups	Sector	Field
<ul style="list-style-type: none"> - Local authority - Decision makers - Energy utilities 	<ul style="list-style-type: none"> - Transport 	<ul style="list-style-type: none"> - RES - Equipment / appliances

ANALYSIS

Situated to the north of Göteborg, Trollhättan has 52 000 inhabitants. The town is a centre for applied technology in the field of environment, transport and energy, and many companies are installed there.

Älvsborgstrafiken, the company which manages the urban public transport system, carries 5 000 passengers per day.

In June 1996, the experimental vehicles running on biogas began in Trollhättan, with the introduction of four buses. The project aimed to bring in fourteen vehicles altogether. Today, they are all running, and several private cars have been added to this total.

BIOGAS PRODUCTION

The biogas is produced at the Arvidstorp wastewater treatment and waste processing plant.

The material arriving at the station consists of 75% wastewater and 25% waste from the agrifood industry.

The plant treats an average of 40 000 m³ of material per day. The resulting organic material is mixed and sent through two digesters with a total capacity of 4 200 m³. It is then broken down by strong anaerobic fermentation (i.e. in the absence of oxygen). This fermentation produces biogas.

CARRYING THE BIOFUEL

After being compressed, the biogas is injected into the distribution network to be routed to the Tingvalla bus station in the town centre, where it is compressed a second time before being stored.

The gas in the vehicle tanks is compressed at 200 bar to give the vehicles maximum autonomy. One fill of fuel provides 300-400 kilometres autonomy, enough for their daily needs.

The biogas buses are generally identical to conventional buses. The only difference is in the use of modified engines and tanks so that they can run on biofuel.

MAIN PROBLEMS ENCOUNTERED

Prior to the opening of the filling station, the project suffered from financial problems (startup was subject to the payment of various subsidies). In addition to that, at first the station did not meet the requirements of safety regulations or certain environmental laws. Finally, the vehicles were delivered late. Eventually these problems delayed the production of biofuel at Arvidstorp by 18 months.

Following the opening of the filling station and during the initial phase, a few operational problems occurred, particularly:

- odour problems due to the biogas production process;
- the system used to measure the quantity of biofuel delivered to the filling station malfunctioned.

PROSPECTS

The project managers have defined an objective to expand the experiment even further. With this in mind, a new digestion unit for the fermentable fraction of municipal waste is to be built. It is designed to process 20 000 tonnes of waste per year. A gas pipeline will be built between this unit and the Arvidstorp plant where the raw biogas will be purified before being sent to the Tingvalla bus station. This will lead to a larger fleet of vehicles running on biofuel. Indeed it is planned to introduce 100 cars running on dual-fuel carburation with petrol-biofuel and 15 new heavy vehicles (buses and waste collection trucks).

TO KNOW MORE

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