

Best-Practise-projects for bioenergy utilisation in urban environments



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Project name: Biogas plant Landfrisch creamery Wels reg.Gen.m.b.H.

Location: Upper Austria, 4600 Wels, Schubertstr. 30

Bioenergy technology concerned: biogas

Executive summary (1-2 sentences):

The 500 kW_e and 550 kW_{th} biogas plant inclusive biomass heat and power plant of the creamery Landfrisch Wels uses whey and waste water of the production process. The produced electricity is fed into the net and the produced heat is used for the hot water supply in the production process.

Case description (half page)

Background:

Whey and in particular sour whey is still a residual substance (by-product) of the milk-processing industry, which is afflicted with utilization problems. Apart from the conventional utilization in the animal fodder and foodstuff industry (e.g. beverages) increasingly new ranges of application are looked for. Partly known but so far little thought of is the possibility of the production of energy from whey.

Description:

During the production of energy the content lactose, which can be used only with difficulties, acts as energy source. Through anaerobic fermentation of the lactose, existing in whey, about 20 m³ biogas per m³ whey can be won. The disposal of the bio mud is made by a public purification plant and/or agriculture.

Technical data (capacity, output, etc.):

Approx. 129,600 m³ whey and waste water per year ~ 10,000 tons per year

8500 working hours per year

Output: 90 °C hot water 4.658 MWh/a, electricity 4, 038 MWh/a

Financial data (investment, subsidies, etc.):

Investment costs 1.9 million Euro, 400,000 Euro annual operating costs, subsidies from government of Upper Austria 100,000 Euro

Which main problems had to be overcome?

Legal factors :

In principle there were no larger problems with the legal grant of the plant, since the authorities were informed in every detail about the project and all necessary editions were fulfilled. At the beginning only the competence for the grant had to be clarified, that means they had to clarify whether the industrial law department or the environment law department is responsible for this licensing procedure.

Socio-economic factors:

From the neighbours there was an objection concerning smelling nuisance. However this plant is world-wide the first, which is operated with whey and not loaded waste water, there were no empirical values in this regard; that's why the biogas plant was approved only for one year test run. Further doubts from the neighbours came concerning the near petroleum company and fears due to danger of explosions with the biogas plant. These doubts were eliminated by the responsible authority, since the fermentation gas container is not under pressure and therefore it exists no danger of explosion. The moreover traffic through whey transportation could be stopped because of the in-house use of the whey, whereby partly occurred noise disturbances also were omitted.

Economic:

Economically there were no problems with the biogas plant – in the opposite, it will both the thermally and electrically won energy used for 100 %.

Others:

Already three years before start-up considerations for the establishment of the biogas plant were made. The main problem was to find someone who explained ready to accomplish attempts with the use of whey in biogas plants, since there were no empirical values due to the uniqueness of this plant.

Information flow (which information needed, sources, difficulties, etc.)

The idea for the establishment of a biogas plant was based on the risen production of milk products and the surplus of whey as by-product, which had to be used. After examinations and basic considerations with support of an expert it was decided to establish a biogas plant. The difficulty was to find a company which accomplish attempts with the production of fermentation gas from whey and not loaded waste water in its test ranges, since there were no empirical values because world-wide exists no plant of this kind. After successful accomplishment of these hurdles a company was found, which could establish the plant in Wels. During the whole project engineering and execution was always paid attention to reach the best for the enterprise.

Lessons learned:

In principle it can be said that with consideration of all editions and characteristics with the establishment of such a plant as well as with good co-operation with the authorities the execution of such a project result no larger problems or difficulties. Since it is the first biogas plant of this type, many experiences will have to be made with the operation.

Contact: office@landfrisch.at, www.landfrisch.at

Pictures:

