

Pharmaceuticals and Cosmetics, Penzberg, Germany

Roche: Anaerobic solution



The challenge

The Roche Penzberg site in Bavaria with a size of approx. 350,000 m² is one of the largest biotech centers in Europe and one of the leading biotechnology research, development and production hubs of the Roche group worldwide. In addition, the site is an important international center for the Group for development and production in healthcare diagnosis. The initial wastewater treatment process separated the wastewater into 3 streams with individually adapted process treatment. This solution was costly, difficult to manage and not environmental friendly, generating hauling costs for some off site treatments.

Roche decided to build a new plant with a combined process treating the total stream on site to meet their targets:

- operational cost cutting,
- CO₂ footprint reduction
- energy savings.

Additional requirements included continuous operation on site and a smooth transition between the existing and the new process.

In 2010, Veolia was awarded the contract

Veolia's solution

The plant was converted from an energy consumer to an energy producer. The heat produced feeds a local heating grid. This grid serves three production and one administration building. Aquantis, a subsidiary of Veolia, built this new plant. The new system treats partial wastewater flows especially rich in carbon and biologically degradable liquid waste from the bio-technological production.

WASTEWATER TREATMENT SWITCHING FROM AEROBIC TO ANAEROBIC TREATMENT - METHANIZATION -



CONTRACT SCOPE

Site: Penzberg
Scope: Wastewater treatment

CONTRACT DATA

Duration: 2010-2011
Contract type : Design & Build

ACTIVITY SECTOR (client)
Pharmaceuticals & Cosmetics

Priority segment
Methanization

EXPERTISE

- Volumetric load: 14kg COD/(m³*d)
- COD load : 6.5t/d
- COD reduction: 95 %
- Biogas production: 2,770 Nm³ / d
- Methane content: 71 %

480 m³
Reactor volume

2,770 Nm³ / d
Biogas produced

950 tons per year
of carbon dioxide emission avoided



The benefits for our client

With this new process, Roche achieved an important contribution to their corporate sustainability targets:

- Reduction of energy demand of the WWTP process by 90%
- Reduction of CO2 emissions by 950 tons per year
- Simplified waste management : truck transports are avoided
- Increase the capacity of the WWTP: 50% of the COD bio-degradation capacity of the WWTP is now available for further extension of the site.
- Saving of consumables: reduction of pure oxygen consumption by 80%, reduction of flocculants for P removal
- Significant efficiency improvements of the total process
- On top of all these benefits, cost reduction is around € 700k per year.

Process description and flow diagram

Aquantis solution

The plant uses a 480 m3 Biobed EGSB reactor (Expanded Granular Sludge Bed) for the biological treatment, as shown in the plant diagram. The CHP facility has a capacity of 388 kW of electricity and 473 kW for heat.

This results in an annual production of 2700MWh of electricity.

Heat feeds a district heating grid

In the course of this process energy-rich biogas is produced, collected and processed. The gas is used in a combined heat and power plant in the Penzberg site boiler house to generate both forms of energy (electricity and heat). The WWTP produces more energy than consumed for cleaning of the wastewater.

Further savings have been achieved by the elimination of the previous upstream aerobic high-load stage. The carbon dioxide emission is reduced by about 950 metric tons a year, so that Roche achieves a sustainable reduction of their carbon footprint at the Penzberg site.



PLANET

Reducing costs and environmental footprint:
carbon dioxide emissions are reduced by about 950 metric tons a year

Commercial Use ONLY

Update: 2014

Contacts:
Catherine.coulomb@veolia.com

Created by:
I&M department

Veolia Water Technologies

