



WASTE-TO-VALUE: ENGINEERING AN INDUSTRIAL BIOGAS PLANT

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Bilfinger Tebodin provides consultancy and engineering services to Green Create for an industrial biogas plant to process chicken manure in Wijster, the Netherlands. Green Create builds, owns and operates integrated biological

waste-to-value systems. They work primarily with anaerobic biological technology, which as a by-product of processing organic waste or wastewater streams, generates rich biogas. This gas can be upgraded into a

number of useful energy forms, targeted at producing electricity and thermal energy to be used by the primary process. The treated water is free of contaminants, making it environmentally safe for reuse or discharge.

The main objective of the biogas plant is the treatment of biological waste material, in particular chicken manure, to create green energy in the form of electricity and gas in combination with the production of high-quality fertilizers. The electricity and produced heat will largely be used for the energy consumption on site. The produced gas will be led into the local public grid.

"We are in a unique position with this. There are other ways to process chicken manure in the Netherlands, but not the way we are going to do it and certainly not to this extent," says Menno Wichers, Procurement Manager Global at Green Create.

CONSULTANCY AND ENGINEERING

Green Create develops, engineers and constructs the biogas plant, and requested Bilfinger Tebodin to assist them. "Green Create asked us to assist them by increasing the engineering capacity needed for this project," says Kris Dambrink, Lead Engineer at Bilfinger Tebodin. "The design and construction process is linked to a challenging schedule and occasionally decisions have to be revoked due to restrictions or challenges in other areas. Bilfinger Tebodin includes all

fields of expertise required to assist Green Create, which is a great benefit to the client because they have one point of contact. For us it is easier and more efficient to resource the required specialists internally which saves a lot of time having to introduce new people to the project."

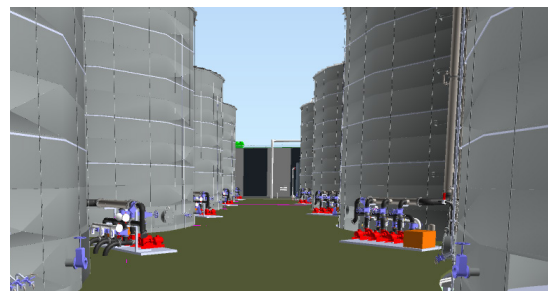
The scope of work consists of:

- P&ID generation, including derived engineering data (lists)
- Process design support
- Piping design in an overall 3D model
- Piping contracting specification
- HAZID and HAZOP studies
- Traffic movement studies
- Foundation design
- Electrical basic design
- Atex studies

Menno Wichers: "We selected Bilfinger Tebodin to assist us with consultancy and engineering services because they are a flexible and reliable partner with high quality and safety standards. Especially the fact that they have multiple disciplines in-house is very valuable to our project."

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The input of chicken manure results in biogas production that will be led into the local public grid. The spent digestate is dewatered and sent to a drier to process into dried digestate used to produce a pellet that can be used as a fertilizer. The digester tanks and all the auxiliaries are designed specifically for this purpose. The combination of process equipment will transform a product normally regarded as waste to multiple valuable products: green gas, solid fertilizer pellets and liquid fertilizer. The production of green gas adds to the sustainability goals of the Dutch government and reduces the requirement of foreign gas and/or natural gas from domestic sources. Hence the designation 'Waste-to-value' by Green Create for this project.



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