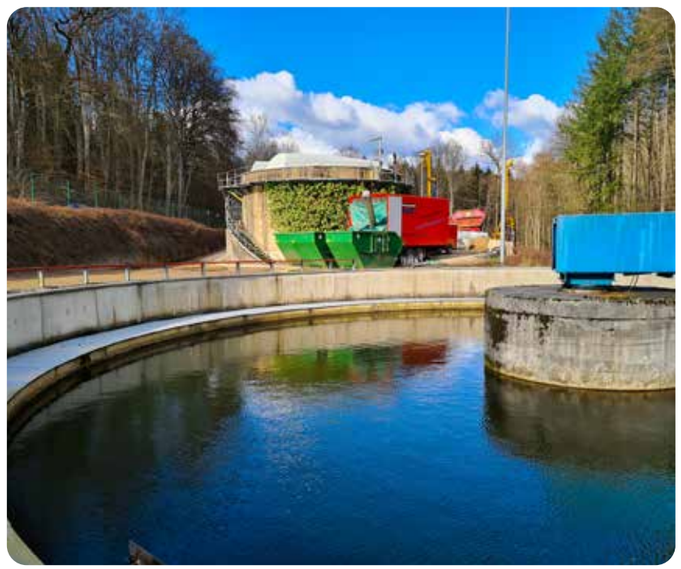
Environment

Modernising a wastewater treatment plant with BIM in Luxembourg

In the Grand Duchy of Luxembourg, BESIX Environment and LuxTP are currently modernising the electromechanical installations of the Mamer wastewater treatment plant. By implementing modern technologies, the plant's capacity and efficiency are significantly improved. In addition, a biogas production unit is installed that will produce green electricity and heat from the plant's sewage sludge. With the plant remaining operational during the works, a precise phasing and good coordination are essential.



Project details

Mamer wastewater treatment plant

Location
Mamer (Grand Duchy of Luxembourg)

Client
SIDERO

Partner
Tralux

Consultant
Holinger

Contract type
Engineering & Build

Contract value
19.2 million euros

Construction period
2020 - 2025

Double capacity

The project consists of equipping the wastewater treatment plant of Mamer with modern technologies to increase its capacity and improve its efficiency, both in terms of energy and treatment. "Thanks to the works we are carrying out, the plant's capacity will be more than doubled. This means that it will be able to treat the wastewater of 50,000 population equivalents", explains Adrien Theunissen, Senior Manager of BESIX Environment. The contract, worth 19 million euros, was awarded in July 2020 by SIDERO, the inter-municipal water depollution company of Luxembourg that covers 26 municipalities and 80,000 inhabitants in the west of the country. Project delivery is expected for 2025.

Together, LuxTP and BESIX Environment are responsible for the project's subcontractor management, the integration of the detailed design, the engineering and procurement, as well as the coordination of the electrical subcontractors and suppliers. Mabilux, an entity of LuxTP, is also involved and is in charge of the installation works of the pipes and equipment, which they are currently executing with a remarkable level of quality and efficiency.

Precise phasing

Throughout the modernisation works, the plant remains operational and maintains its current performance, both in terms of quantity and quality of treated water. Because of this, a particularly precise phasing is required. Works, which started in August 2020, are carried out in a total of 9 phases over 5 years. In 2022, the joint venture successfully commissioned the first phase, which included the electrical substation works, to the client. In the meantime, installation works of the biological treatment equipment, the Sequencing Batch Reactor (SBR), commenced in July 2022 and are now ahead of schedule. The engineering and procurement activities as well are, despite the crisis, well ahead of schedule, which allows most of the longer-term contracts to be concluded. As a result, risks regarding future price escalation and the availability of materials are limited.

BIM model helps coordination

BESIX Environment and LuxTP are also responsible for coordinating the parties involved on-site, in particular the civil engineering works contractor, Tralux, and the design office, Holinger. To support the good coordination of the different parties throughout the various phases, the BESIX Environment and LuxTP teams have produced a BIM model of the plant. For this, the original 2D plans were transformed into a dynamic virtual 3D model before construction started, which allows for an optimal management of the station's modernisation, as well as its maintenance once the station is completed.

New biogas production unit

In addition to the modernisation works, the joint venture is installing a biogas production unit, which will allow the plant to produce green electricity and heat from sewage sludge, which is its own waste. This green electricity will then be used to meet part of the energy needs of the plant itself.

"BESIX is carrying out similar projects elsewhere in the world. In the Netherlands, BESIX Environment and BESIX NL have built two of the first energy-neutral wastewater treatment plants in the Benelux. Our colleagues at Six Construct have also built a biogas production unit for Ajman Sewerage, which was designed in coordination between the Brussels and Dubai teams and successfully completed in 2022", says Adrien. "This is a technology that we now master and that BESIX and its entities can offer worldwide: our success demonstrates that we can enter new markets effectively by combining expertise within the Group."

> **Our successes in implementing wastewater treatment technologies demonstrate that we can enter new markets effectively by combining expertise within the Group.**
>
> Adrien Theunissen, Senior Manager at BESIX Environment

One-stop shop success story

It is not the first time that BESIX Environment and LuxTP join forces. Since 2018, they have worked together on several other wastewater treatment plants in Luxembourg. Over the years, the combination of the two companies has become a true one-stop shop success story. LuxTP and Mabilux bring their in-depth knowledge of the Luxembourg market and their strong local roots, whereas BESIX Environment provides the necessary technological expertise in the environmental field. Together, they have established themselves among the main players in the sector, with contracts of growing importance.

In addition to the Mamer project, the companies are close to complete the site execution of five other projects in the Grand Duchy of Luxembourg, namely in Consdorf, Wiltz, Nachtsmanderscheid, Bous, and Putscheid-Weiler-Stolzemburg.