

# Efficient energy generation from wastewater



The Clinton River Water Resource Recovery Facility in Michigan, USA, is a municipal facility that focuses on wastewater treatment. With the aim of reducing operating costs while making efficient use of sustainable energy sources, the wastewater treatment plant opted for a modern CHP solution from 2G Energy. The generation of electricity and heat from existing sewage gas contributes significantly to the optimization of the on-site energy supply.

Two avus 500plus units were installed

directly in the energy recovery facility at the Clinton River plant in Oakland County, Michigan. The key task was to reliably generate electricity and heat from the existing sewage gas and supplementary natural gas. The 2G solution was implemented as a complete package including planning, delivery and on-site integration.

**Combination of sewage gas and natural gas operation ensures supply**

The special feature of the project is its

dual-gas operation: the CHP plants primarily use sewage gas from wastewater treatment and supplement this with natural gas as required. This optimizes energy production and maximizes plant availability.

In addition, both CHP units are capable of island mode operation, meaning they can continue to supply power independently of the external grid. In the event of a power outage, this feature enhances the resilience and operational reliability of the wastewater treatment facility, allowing essential processes to continue without interruption.

### **Efficient heat recovery for process demands**

The heat recovery process can be separated into two distinct parts — the production of hot water for process use and the generation of steam for additional thermal demand.

#### **1. Hot water generation for process heating**

The first stage of heat recovery uses the thermal energy from the CHP's cooling circuits to produce hot water. This hot water is used directly in various processes within the wastewater treatment plant, improving overall thermal efficiency and reducing the need for external heating sources.

#### **2. Steam production from exhaust heat**

For the second stage, the exhaust heat from both CHP units is captured by an integrated steam generator. Instead of releasing this heat into the environment, it is converted into usable steam that supplies the plant's process heat requirements. This additional utilization step ensures maximum energy recovery, conserves resources, and further lowers

operating costs.

### **Energy supply with added value**

By generating its own electricity and heat from renewable sewage gas, the sewage treatment plant significantly reduces external energy procurement costs and CO<sub>2</sub> emissions. With an electrical output of 600 kW (per module), the plant reliably supplies a large part of the internal processes, thus contributing to a sustainable infrastructure. The operation of the two CHP plants supports the optimization of resource use and strengthens the economic efficiency of water treatment. In addition, the electrical efficiency is 42.8% and the thermal efficiency is 40.6%.

With the implementation of this project, 2G Energy confirmed its role as a reliable partner for decentralized, sustainable energy supply in municipal wastewater treatment. The innovative dual-gas concept, combined with proven CHP technology, ensures a high level of supply security and at the same time contributes to the local energy transition.



#### **Clinton River Water Resource Recovery Facility**

2 x avus 500plus  
Sewage gas/ Natural gas  
2 x 600 kW electric  
2 x 569 kW thermal

