



How Worcester WWTP Increased Biogas Production Without Increasing Sludge Feed



Background & Challenge

Worcester WWTP, operated by Severn Trent, is a 115,000 people municipal wastewater treatment plant with **anaerobic digestion** producing biogas for combined heat and power.

The site processes a mix of primary and biological sludge, with no dedicated thickening step on primary sludge and **limited optimization** of feed quality to digestion.

The challenge was to **increase biogas production** and energy recovery without increasing sludge feed volume, while maintaining stable digester operation and working within existing infrastructure constraints.

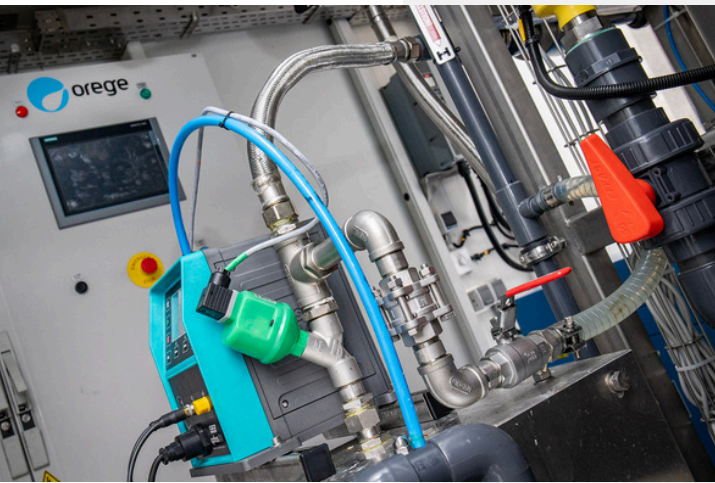
Orege's Solution & Service

Orege implemented its **SLG-based conditioning** and thickening solution on both primary and secondary sludge streams upstream of digestion.

The objective was to improve sludge quality and increase **organic load to the digesters** without changing daily feed volume.

The solution was deployed as a pilot under real operating conditions, maintaining existing process flows while **enhancing solids concentration** and **digestion efficiency**.





Results and Benefits

Orege's solution delivered a **significant increase in biogas production** while maintaining the same sludge feed volume.

Methane production increased by approximately +1,092 m³/day, translating into an additional ~4 MWh/day of energy and around 1.5 GWh/year, creating **tangible value** in terms of energy recovery and **plant efficiency**.

These results highlight the direct impact of **improved sludge conditioning** and thickening on digestion performance.

By increasing the organic load available to the digesters without changing flow rates, the process enabled more efficient conversion of sludge into biogas. Bench-scale findings were successfully confirmed at full scale, demonstrating both reliability and scalability under real operating conditions.

Overall, the project shows that wastewater treatment plants can **unlock additional energy potential** from existing sludge streams. By optimizing sludge quality upstream of digestion, sites can increase energy production, improve process efficiency, and generate added value without investing in new infrastructure.

Orege enabled Worcester WWTP to increase biogas production and energy recovery using existing assets, without increasing sludge input.