



GENERATING POWER FROM WASTEWATER

APPLICATION

Combined Heat and Power (CHP)

MARKET SECTOR

Wastewater Treatment

CLIENT

Eastern Ohio Regional Water Authority

COMMISSIONED

2019

EQUIPMENT

GT333S

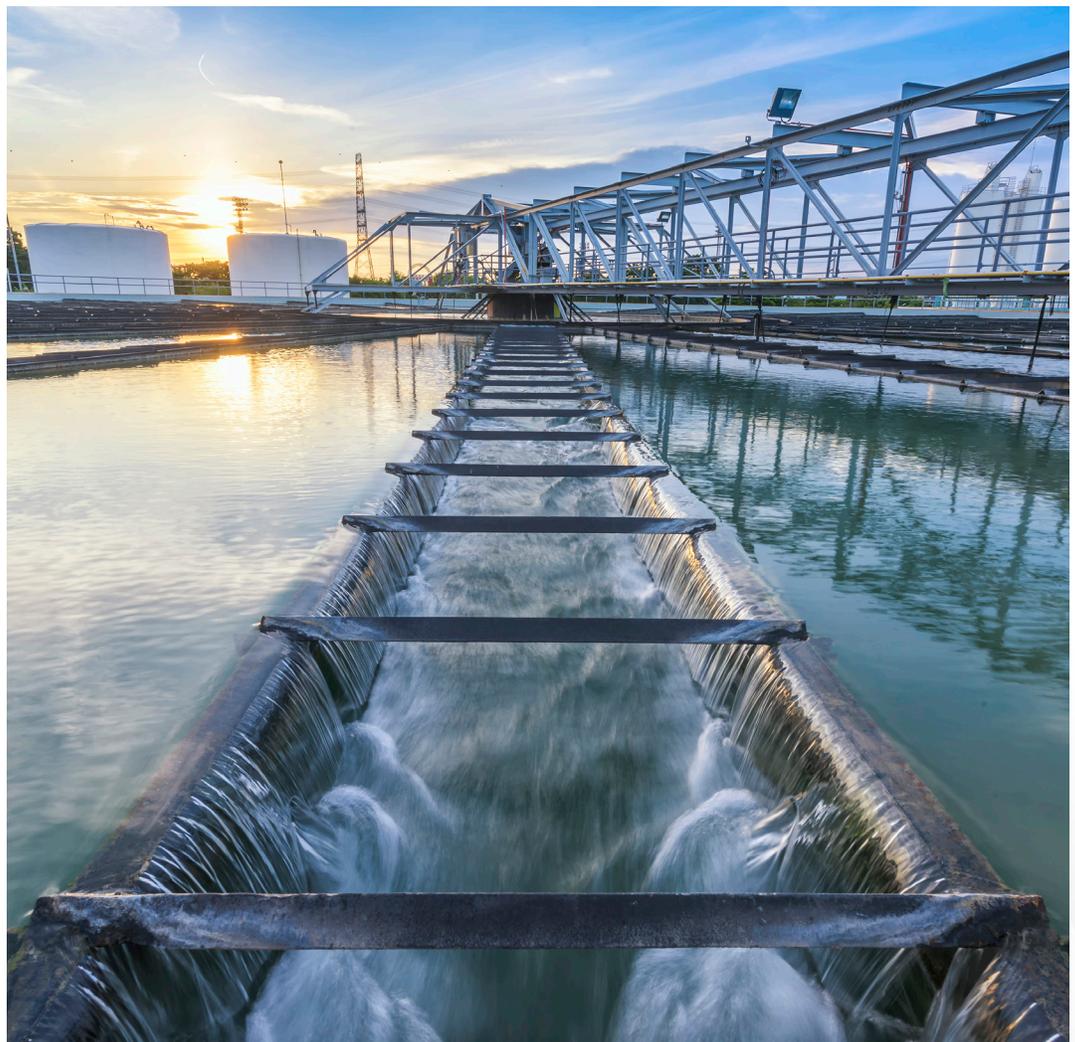
LOCATION

Bellaire, OH

FUEL

Digester Biogas
Created On-site

The Eastern Ohio Regional Wastewater Authority (EORWA) was one of the first wastewater treatment facilities in the state to become energy neutral when they upgraded their Resource Recovery plant in Bellaire, Ohio. The \$5.3 million project, led by Quasar Energy Group, constituted design-build services of an anaerobic digestion system that was retrofitted into the plant's existing assets. Fully powered by a Flex Turbine® which converts gasses from the digesters into electricity, the system also includes flexible membrane roofs, heat exchangers, feedstock receiving, mixing systems, and a pre-digestion Class A system.



In addition to enabling the facility to go off the grid, the upgrades gave EORWA an ability to harvest additional renewable energy from residual organic waste that would otherwise be sent to landfills and buried. The new anaerobic digesters divert this waste and turn it into biogas for the microturbine. Upgrading to anaerobic digesters effectively addressed infrastructure improvements without passing the costs on to ratepayers. Anaerobic bacteria break down the volatile solids in the digester, releasing biogas, which is then combusted by the Flex Turbine to generate electricity. The electricity generated then helps power the system, further enabling energy neutrality.

The industrial Flex Turbine GT333S that powers the system is the most advanced in the industry with up to 85% Combined Heat and Power (CHP) efficiency and variable inlet guide vanes. With less than 9 ppmv of NOx the Flex Turbine readily meets even the strictest air quality standards and environmental regulations. The turbine has proven reliability (99+% uptime) and runs continuously off grid using the site's digester biogas. This provides both clean air and renewable energy for the plant 24 hours per day, seven days per week.

The resulting biosolids generated at the EORWA facility are designated as Class A/EQ Quality, which meets U.S. EPA guidelines for land application with no restrictions. Thus, the resulting class A biosolids will be used as a replacement for commercial fertilizer in the region. Primarily used on area farms for wheat, corn, and soybean crops, the commercial fertilizer offsets the use of chemical fertilizers that are derived in part from mining minerals and/or burning fossil fuels.

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RESULTS

Enabled plant to go off grid

Reduced/eliminated utility costs

Meets strict air quality standards

Harvests wastes for 24/7 power generation