

COGENERATION SYSTEM
Water Reclamation Plant
Rochester, MN (2008)



Objective

To replace an existing 400 kW natural gas generator and utilize digester gas (methane) effectively throughout the plant.

Project Description

In 2007 the Rochester Water Reclamation Plant (WRP) wanted to determine the most cost effective way to utilize digester biogas and needed to replace an existing 400 kW generator used for backup and emergency purposes. Integrated Technology (ITE) provided the city with an energy utilization & consumption study to determine whether to use digester gas in boilers or in the gas generator. The study showed that it was most cost effective based on current energy costs to use the digester gas in the boilers in the winter, the generator in the summer, and split between the boilers and generator in the spring/fall.

Based on this data, ITE conducted another study to determine what to replace the existing 400 kW backup generator with. The study determined that a 1 MW natural gas / digester gas generator would meet the city's needs.

Project Summary

Once the evaluation was finished the project was initiated and ITE began the design and construction phases of the project. Some of the key features of the system include:

- Use of digester biogas to produce electricity
- Exhaust energy recovery system
- Engine jacket heat recovery system
- Backup electrical generation when main generator is under service
- Allow for plant expansion to utilize biogas

ITE provided mechanical, electrical, and control system engineering as well as construction management services for the project.

The **City of Rochester** relied on **Integrated Technology** throughout the project for evaluation of replacement alternatives, return on investment analysis, mechanical and electrical engineering, control system/automation development, and construction management.

