

Building Automation & HVAC Systems

Project: Philadelphia Water Department

A comprehensive, 3-year building automation retrofit project requiring strict temperature controls and intrinsically-safe conduits and sensors for this urban, resource recovery wastewater treatment facility.

Background

Responsible for wastewater and stormwater systems, the Philadelphia Water Department collects and treats an average of 379 million gallons per day, serving 2.2 million people. The Department maintains three wastewater plants – two of which are resource recovery facilities.

The resource recovery facilities use organic wastewater solids and biodigesters to produce a methane-rich biogas, which is then used for heating buildings, plant processes, and energy generation. Annually, the plant uses enough to offset 30,000 metric tons of carbon dioxide equivalent (mt CO₂e) emissions—that's equal to taking +6,400 passenger vehicles off the road for one year.

CM3 was contracted to install a building automation system in one of those plants, the Southwest Pollution Control Plant.

Because the plant operated 24/7, the project involved a systematic, phased replacement of controllers, sensors, systems, and conduit across three years.

Project Summary

As with any wastewater treatment facility, it was essential to implement intrinsically-safe enclosures and conduit systems to help contain the risk of igniting the surrounding flammable atmosphere.

An additional complexity was ensuring that the building automation system was capable of maintaining strict temperature controls to ensure the viability of the biodigesters.

- » 16 Buildings
- » Central plant boiler room control
- » Rigid conduit throughout
- » Intrinsically-safe valves and actuators
- » Intrinsically-safe enclosures for sensors
- » Schneider Electric TAC/IA building automation
- » Graphical front-end computer

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There are two areas which were mission critical in this application. First is the highly-specific temperature controls required to maintain the biodigesters. Second is anticipating and accounting for the challenges of working with intrinsically-safe equipment, both in terms of costs and timelines.

- Sean Bradley

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