Landfill Gas to Energy Control System

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Landfill

- Utilizing the methane gas produced by landfills to generate clean power, this plant also benefits the community by creating jobs, reducing odor emissions, and improves the tax base.

- Three GE/Jenbacher Engines, with the plans for a forth, were installed to produce a total of 6 MW of power from the existing Chicopee Landfill.

- Integrated Process Controls, an Intellution iHistorian Information System, and an Intellution Webserver allow for viewing the critical plant information securely over the internet from the customers remote offices.

Challenges

- Tuning the gas compressor blower skid such that the blowers had to maintain a 4.0 PSIG engine header pressure, as well as being aggressive enough to handle the starting and stopping of the engines without tripping the plant.

- Sequencing the appropriate pieces of equipment based on key conditions in order to bring the landfill gas conditioning system online safely.

- Effectively communicate engine data from the three (3) DIANE control panels and the landfill gas quality from the Daniels 2350A Gas Chromatograph to the SCADA system and then to the webserver.

TVC Systems

Ameresco-Chicopee;
Chicopee, MA

Solutions

- Designed and Delivered by TVC Systems
- Intellution iFix version 3.0
- Allen-Bradley SLC5/04 Platform
- Intellution ABR (Allen-Bradley RSLinx) communication driver (communicates to the gas conditioning skid)
- Intellution MBE (Modbus TCP/IP) communication driver (communicates to the engine controls)
- Intellution MB1 (Standard Modbus) communication driver (communicates to the Daniels Gas Chromatograph)
- Realtime display of system data as well as historical links to iHistorian
- Communications to multiple systems via DH+, Ethernet, and Modbus for control and data acquisition

Results

- Operations
- Financial
- Regulatory
- Reliability

- The BOP consists of:
  - Intellution iFix Version 3.0 Software
  - Allen-Bradley 1746-L543 SLC5/04 PLC
  - One SCADA and One iHistorian/iWebserver computers
  - Ethernet communications 100baseT
  - Modbus communication
  - Data Highway Plus communication
  - Custom developed screens

TVC Systems

System Architecture