CASE HISTORY
(PCC Projects 3500 & 3586)

Application: **Landfill Gas**
Customer: Confidential
Location: Confidential

As a supplier of environmental equipment, PCC is especially proud of projects where the environmental impact can be quantified and appreciated. The landfill gas-to-high BTU gas market has become an emerging niche for PCC over the last 10 years as a result of renewable energy efforts. Landfill gas is an easily recovered and desired resource, especially in regions where natural gas is not readily available. ***Such projects make wise use of otherwise wasted valuable energy, eliminate harmful compounds from the environment, and reduce the dependency upon other fuel sources***

Background Information:
The end user's overall project initially processes approximately 3,000 scfm of raw landfill gas and is expected to eventually process a maximum of nearly 6,000 scfm before declining due to the typical production rates expected within a landfill over its lifespan. Due to the composition of landfill gas (~50% methane/~50% carbon dioxide/trace VOCs), the thermal oxidizer system will process about half of the flow of raw landfill gas (1500 scfm to 3000 scfm).

PCC's thermal oxidizer system for this landfill gas project included design challenges in the form of multiple streams with frequently varying compositions, flow rates, and pressures from the customer's separation process.

The raw landfill gas enters a separation system (supplied by others) that removes the methane from the carbon dioxide, water vapor, and VOCs. As the bulk of the methane is captured, our thermal oxidizer system processes the waste portion of the stream that consists mostly of carbon dioxide with some VOCs, although it can also be briefly fuel rich and exothermic when the pressure swing adsorbers vent. It is a continuously dynamic process with brief steady state operating scenarios.
Understanding that the customer would possibly want to maximize the efficiency of the system and increase the net recovery of methane from the landfill gas, our unit was designed with flanged nozzles for the future addition of heat recovery in the form of a heat exchanger or boiler. PCC supplied a thermal oxidizer system designed to achieve the reliability, efficiency, and emission targets.

Highlighting the environmental impact for this project, the landfill's venting emission of methane is reduced by 16,500 tons/year and the emission of carbon dioxide is reduced by 41,000 tons/year, the overall project will produce 25,000 gallons of compressed natural gas (CNG) fuel per day, or 8.4 megawatts of electricity at the initial flow of 3000 scfm. This is equivalent to the energy required to heat 10,000 homes.