



Trash-To-Energy Plant Case Study

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Objective

The waste-to-energy facility in Pennsylvania contracted WaterSolve to help them better manage the contact water system by developing a process that would filter out the ash residuals introduced during cleaning and maintenance procedures. The waste-to-energy facility incorporates two large utility-type power boilers designed to recover the thermal energy released during the waste combustion process. This energy is recovered in the form of high-pressure steam and is converted into electrical energy in a steam turbine generator. Prior to working with WaterSolve, dealing with the problems and costs associated with the contact water generated from the boiler cleaning and maintenance activities was considered to be just part of the business. After testing a wastewater sample it revealed this would be a good application for Geotube® dewatering technology. Several specially designed Geotube® containers and the polymer feed system were installed in June 2012 to manage residuals as a cost effective dewatering method in order to accommodate the volume of residuals.

Conditioning Chemical

After bench testing at WaterSolve's laboratory in Grand Rapids, Michigan, Solve 162 was determined to be the ideal polymer for dewatering the residual into the Geotube® containers. Dewatering polymers were evaluated based on water release rate, water clarity, and flocculent appearance. In addition, dosing rate(s) were determined during bench-top dewatering experiments and recommendations were provided to the facility during this phase of the program.



In the picture above the tan tube was designed by the facility personnel and made a effective tool to enhance the polymer make-down unit. Below the polymer injection connection to either unit 1 or unit 2.



**Treatment Products, Solutions
& Services**

**Through Science, Engineering
& Management**

Geotube® Container Sizing

Geotube® containers are manufactured from high strength polypropylene fabric and developed to allow effluent water to escape through the pores of the fabric while retaining the chemically conditioned solids. For this site, several specially designed Geotube® containers manufactured by Tencate™ were used.

The Result

After working with WaterSolve, the facility has realized immediate improvements in the contact waste system performance, housekeeping conditions, rental equipment costs, as well as employee morale. In addition to this, the facility has been able to eliminate the risks associated with managing up to 20-temporary water storage tanks that used to be required. The contact water generated from the boiler cleaning and maintenance procedures is now treated with Solve 162 polymer and the entrained ash is collected and dewatered in Tencate™ Geotube® containers. It is reintroduced into the plants ash system and disposed of as treated ash residue. Due to the lack of available space, specially designed containers manufactured by Tencate™ were used. In the end we have improved contact water quality to a point where the contact water system can be operated as originally designed. This eliminates the need for additional temporary water storage as well as much of the labor intensive tasks that went into managing and maintaining the system as the inherent storage system no longer fills with ash residue. This is an example of the kind of successful results you can achieve when the customer, consultant, and manufacturer work closely together to develop and implement sound solutions.



Above a large Geotube® containers for coarse material and below a small Geotube® container for the fine material.



Below the result of the boiler ash residue conditioned with the WaterSolve polymer-Solve 162.



 **TENCATE**
Geotube®