

# **Boiler Modification at the Southeast Resource Recovery Facility (SERRF)**

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## Introduction

In 1988 the City of Long Beach contracted with Dravo Corporation for the design, construction, acceptance testing and operation of a 470,000 t/y waste-to-energy facility to serve the needs of the City and surrounding areas with 500,000 population.

The facility, which was completed in 1988, consists of three L. & C. Steinmüller combustion lines, each designed for 460 t/d. A boiler side elevation is shown in Figure 1.

When Dravo Corporation decided to abandon the waste-to-energy business in 1988, the City of Long Beach contracted with Montenay Pacific Corporation for the operation and maintenance of the facility for an initial five-year period. This contract was subsequently extended to the year 2012.

Ever since Montenay took over the operation and maintenance of SERRF, the City of Long Beach, Montenay and Steinmüller have collaborated in facility improvements and modifications to better plant performance and efficiency with the goal to improve revenues for both, the City and Montenay. Some of the major past improvements executed by Montenay at SERRF included:

- Installation of a Wes-Phix ash treatment system as required by California law.
- Installation of an ash screening system to permit the ash to be used as landfill cover and road material.
- Redesign and installation of ammonia injection nozzles in the boilers to enhance NO<sub>x</sub> control and ammonia consumption
- Change over from anhydrous to aqueous ammonia in the facility to improve safety.
- Redesign of the turbine nozzle block to increase turbine steam capacity and power output.
- Redesign of the secondary air nozzles in the boilers to improve combustion and reduce CO and NO<sub>x</sub>.
- Adding evaporator platens in the third pass of the boilers to increase saturated steam production and to decrease superheater inlet gas temperature.
- Providing saturated steam extraction capability from the boiler drums to the deaerator to reduce turbine extraction and increase power output.
- Replacement of the ash locks in the third pass of the boilers with an improved design to reduce gas bypass and CO emissions.
- Adding separate combustion and cooling air fans for all burners in the boilers to enhance burner stability and secondary air control.

The latest in the long line of improvements implemented in the Long Beach facility is a modification of the gas inlet configuration to the superheaters, which is the subject of this presentation.