SEMASS Resource Recovery Project Expansion

The Expansion project added capacity to the SEMASS Facility completed by Bechtel in 1989.

Bechtel provided project management, engineering, procurement, construction, startup, and operations services to expand capacity at the SEMASS (Southeastern Massachusetts) Resource Recovery Facility, a 1,900-tpd waste-to-energy facility producing 53 MW of commercial electricity completed by Bechtel in 1989, located in Rochester, Massachusetts. The Expansion added a fourth municipal solid waste (MSW) shredder and boiler to increase MSW processing and combustion capacity by 950 tpd, which produces about 20 megawatts (MW) of additional power. Expansion construction began in October 1991, and commercial operations began in October 1993.

PLANT CONFIGURATION

The facility uses the Energy Answers Corporation's proprietary Processed Refuse Fuel technology and includes Riley Stoker traveling grate boilers. MSW is delivered to the plant via trucks and railcars and dumped onto an MSW receiving building tipping floor, where rubber-tired loaders stockpile the refuse and feed it to a processing system for shredding. The shredded MSW is then passed under an electromagnet to remove ferrous metals. The end product, now called processed refuse fuel (PRF), is returned to a PRF storage building where it is either stockpiled or fed to a conveying system and transported to the Expansion boiler. The fuel is fed into the boiler using a combination of drag chain feeders, vibrating surge bins, and vibratory feeders that distribute and disperse the fuel into the boiler with the assistance of forced air as the fuel enters the boiler. A combination of underfire and overfire combustion air serves to combust the PRF either in suspension or on the traveling grate. Steam generated in the boiler drives a General Electric (GE) turbine generator to produce electrical power.

Location:
Rochester, Massachusetts, USA

Customer:
SEMASS Partnership (Energy Answers Corporation, Managing General Partner)

Scope of Services:
Project Management
Engineering
Procurement
Construction
Startup
Operations

Project Completion:
1993

Units and Megawatts:
1 x 20 MW

Significant Features/ Accomplishments:

- Operated and maintained by Bechtel for the SEMASS Partnership from 1988 through 1996
- Flue gas cleanup system incorporates spray-dryer absorber for acid removal; Expansion uses a baghouse for particulate removal and includes a selective noncatalytic reduction (SNCR) nitrogen oxide (NO_x) control system
- Post-combustion bottom ash sent to a SEMASS-affiliated company-owned ash processing plant to recover additional ferrous metals, nonferrous metals, and coins to produce Boiler Aggregate, a lightweight building product trademarked by Energy Answers Corporation
- Plant is a zero discharge facility; all process and domestic water supplies are from onsite water well. Air-cooled condensers condense the turbine exhaust for existing and Expansion units