

A CARBON INJECTION SYSTEM ON A COHPAC-EQUIPPED WASTE-TO-ENERGY FACILITY

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ABSTRACT

The SEMASS Resource Recovery Facility (SEMASS) is a processed refuse fuel (PRF) waste-to-energy plant serving much of Southeastern Massachusetts. Units 1 and 2 at the plant were designed with spray dryer absorbers (SDAs) and electrostatic precipitators (ESPs). A review of historical data from the plant indicated that in order to comply with the Environmental Protection Agency's Municipal Waste Combustor (MWC) Rule (40 CFR Part 60, Subpart Cb), which is known as the Maximum Achievable Control Technology (MACT), improved emission performance would be required from the flue gas cleaning system on Units 1 and 2. A pilot test program was conducted which led to the installation of COHPAC, or Compact Hybrid Particulate Collector units (i.e. flue gas polishing devices) downstream of the ESPs on these two combustion trains. The COHPAC units were successfully started up in June, 2000. In addition to these modifications, it was determined that further control of mercury emissions would be required. A system to inject powdered activated carbon into the flue gas was added to the plant. This paper describes that carbon injection system. A comparison between test data obtained at SEMASS is made with predictions based upon the EPA testing at the Ogden Martin Systems of Stanislaus, Inc. Municipal Waste Combustor Facility near Crows Landing, California and the EPA testing at

the Camden County Municipal Waste Combustor in Camden, New Jersey. These are waste-to-energy plants, the former utilizing an SDA and a baghouse while the latter contains an SDA followed by an ESP. In addition, the effect of carbon injection location upon mercury reduction was investigated. The results of that study are also included.

BACKGROUND

The SEMASS Resource Recovery Facility (SEMASS) is a processed refuse fuel (PRF) waste-to-energy plant serving much of Southeastern Massachusetts, Cape Cod, and the surrounding area. Energy Answers Corporation developed the project in the early 1980's utilizing its PRF technology. The first two units have been in operation since 1988 and the addition of a third unit was completed in 1993. SEMASS is owned by SEMASS Partnership, a Massachusetts limited partnership, restructured in 1996 to exist between American Ref-Fuel of SEMASS, L.P. (Ref-Fuel), and ArkMass, Inc.

Each unit is capable of processing a nominal design value of 1000 tons per day of municipal solid waste (MSW). Units 1 and 2 were originally equipped with means to achieve good combustion control, a spray dryer absorber, and an electrostatic precipitator (ESP). Unit 3 also has a spray dryer absorber, but has a fabric filter