

IMPROVEMENT IN OPERATING AND MAINTENANCE COST WITH A FABRIC FILTER CONVERSION USING POLYTETRAFLUOROETHYLENE (PTFE) MEMBRANE FILTER MEDIA

AUTHORS:

John Darrow
W. L. Gore & Associates, Inc.
P. O. Box 1100
Elkton, Maryland 21921-1100

Paul Grego
Wheelabrator Technologies Inc.
North Broward County Plant
2600 NW 48th Street
Pompano Beach, Florida 33073

Brenda Austin
Midwesco Filter Resources, Inc.
400 Battaile Drive
Winchester, Virginia 22601

ABSTRACT:

Wheelabrator Technologies is owner and operator of the 2250 ton per day North Broward County, Florida, facility. The plant consists of three lines rated at 750 tons/day. Each line is equipped with a spray dryer absorber/fabric filter. The original fabric filter design was a shake-deflate baghouse with ten compartments of 180 bags each.

The typical bag life was one year with the shake-deflate baghouse using standard woven fiberglass bags. Frequent bag failures led to high operating and maintenance cost for the system. The initial upgrade was a conversion from a shake-deflate baghouse to a reverse-air baghouse with sonic horns. The resultant bag life was improved to two years, which represented a significant reduction in maintenance cost.

The latest upgrade for the baghouse system was the installation of PTFE membrane/fiberglass filter bags. The change in the filter media resulted in a dramatic improvement in performance. The baghouse cleaning frequency dropped from 360 cycles per day to approximately 50 cycles per day. The average differential pressure across the baghouse system also dropped by 6 in. w. g. The membrane filter bags have achieved over two years life to date and have significantly reduced operating and maintenance costs associated with the baghouse.

This paper will detail the steps taken in the conversion from the original shake-deflate design using standard filter bags to the reverse-air with sonic horns using membrane bags. An analysis of the cost

of the upgrades and subsequent savings for each step will be included.

INTRODUCTION:

Wheelabrator Technologies is a wholly owned subsidiary of Waste Management, Inc. They currently operate 17 waste-to-energy facilities in the United States ranging in size from 200 tons per day (TPD) to 3000 TPD. Their first plant was a 1500 TPD facility in Saugus, MA, which has been operating since 1975. Since then, Wheelabrator Technologies has safely processed more than 100,000,000 tons of solid waste and generated over 50 billion megawatt-hours of electricity.

Started in 1991, the North Broward County facility is located in Pompano Beach, FL. This facility serves Broward County and receives waste from Dade and Palm Beach Counties. The plant has a rated capacity of 2250 TPD and generates 67.5 megawatts (MW) of electric power.

The plant consists of three combustion trains rated at 750 TPD each. Two overhead cranes deliver the refuse to three Von Roll reciprocating grates. The combustion temperature is above 2500°F and the heat is recovered in waterwall boilers that generate a total of 576,000 pounds per hour of steam at 900 pound per square inch (psig) at 830°F. The steam generates 67.5 MW of electric power that is sold to Florida Power and Light Company. The combustion gas is treated by a spray dryer absorber/fabric filter and