

NAWTEC17-2381

AMSTERDAM WASTE FIRED POWER PLANT®, FIRST YEAR OPERATING EXPERIENCE

Hendrikus A.A.M. de Waart,
Amsterdam Waste and Energy Company
The Netherlands

Abstract

Mid 2007 the Amsterdam Waste and Energy Company (AEB) commenced initial operations of their new Waste Fired Power Plant® (WFPP). The unit processes 530,000 metric tons of unsorted municipal solid waste producing electricity with a net efficiency of 30%. (Picture 1) The major contributor to the efficiency increase from the conventional 22% to 30% is a new and patented technology, whereby steam from the high pressure turbine is reheated by steam, rather than flue gas, before entering the low pressure turbine. The WFPP facility has operated successfully throughout 2008 and to this date.

Also, for a period of nearly three years, AEB operated a commercial scale pilot plant, with a maximum capacity of 50 tons per hour, to develop the necessary process steps, to recover ferrous, non-ferrous, as well as precious metals from the bottom ash. In this recycling process, heavy metals and other toxicants are removed from the ash, rendering it suitable as a raw material for use in building materials, leaving less than 5% material to be landfilled.

The operating results of both experiences are presented in this paper.

Corresponding author: Hendrikus de Waart"
<hdewaart@aol.com>



Picture 1

Introduction

As a brief introduction, AEB is a Public Utility Company and is 100% owned by the City of Amsterdam. Amsterdam's waste management started back in 1882 and the first waste to energy was inaugurated in 1919. AEB is a self sustaining operation with a mission for optimal environmental performance, creating maximum benefit to the citizens, and nurturing home-grown R&D.

The following is a summary of salient details:

- World's largest WtE facility; 1,500,000 MTPA
- WFPP® most efficient facility; 30% (850 kWh/MT MSW)
- Amongst the world's cleanest, emissions < 20% EPA limits
- Overall solids recycling rate 95% :
- Zero liquids discharge is an option
- Avoided CO₂; 600,000 MTPA
- Turnover € 200 million
- Lowest tipping fees in the Netherlands; €75/MT average