

SYNCOM - THE NEXT STEP IN MODERN MASSBURN TECHNOLOGY

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ABSTRACT

A well proven, environmentally sound method for the ultimate disposal of solid waste is a modern, stoker fired, massburn waste-to-energy facility. To meet the ever increasing demands to reduce air emissions and residues left for landfilling, a next generation combustion technology has been developed in Germany. The Syncom process (Synthetic Combustion) was developed to meet and exceed all existing or presently considered regulations and offers benefits expected from the next generation facilities in Europe. Existing massburn waste-to-energy technology consists of a stoker fired combustion system with heat recovery in a steam boiler and flue gas clean up in a sophisticated air pollution control system. Syncom adds to this the following main components:

- Oxygen enriched primary combustion air
- Flue gas recirculation (FGR) for secondary combustion air
- Infrared (IR) camera guided combustion control
- Fuzzy logic combustion control design

The resulting advantages over conventional approaches to massburn are:

- Flue gas quantity reduced by 40-50%
- Size of air pollution control equipment reduced by up to half
- Mass air emissions reduced by up to half
- Improved ash quality to ensure recyclability

The paper will describe the process in detail and

contain tables and diagrams based on results obtained from full scale testing and comparing this advanced technology to the presently applied or considered regulatory requirements in Europe and the United States.

INTRODUCTION

Waste-to-energy facilities have been widely employed to solve the pressing problem of ultimate solid waste disposal. Worldwide they contribute considerable to overall waste management practices. Modern, stoker fired massburn facilities equipped with the appropriate air pollution control systems achieve very low air emission levels. During the 1980's and early 1990's allowable air emission levels and ash quality requirements were restricted significantly by the environmental regulatory authorities in the USA, Europe and elsewhere. While in the USA private companies build and operate these facilities and offer designs that while meeting the regulatory requirements, are also cost competitive, many European countries followed until very recent the practice to have consulting firms specify individual plant components. This led to often excessive costs for air pollution control equipment due to the fact that nearly all of the in the market place available pieces of equipment were simply included in the plant specification according