

Waste-to-Energy in Europe and Technology Highlights from Von Roll Inova Projects

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Abstract: Von Roll Inova is a major provider of thermal treatment technologies ranging from combustion, energy recovery, air pollution control, and residue processing. The company is headquartered in Switzerland and its portfolio includes over 300 WTEs around the world, processing more than 100,000 metric tons of solid wastes per day. This paper discusses the technological and political trends in Europe regarding waste-to-energy, the state-of-the-art-technology and presents an overview of recently executed projects by Von Roll Inova. During the hiatus on new plant construction in the U.S., European countries pursued a variety of different approaches. Not all the results showed environmental, social or economic promise. Of the aspects developed since the mid-nineties, some are applicable to the United States. Particularly the advances in air pollution control technology and improved thermal efficiency will be useful as new Waste-to-Energy capacity is added in the U.S. and delays in permitting may be avoided by taking advantage of such experience transfers.

1. Introduction

Limited landfill space in densely populated European Countries and the desire to protect the surrounding environment from the negative aspects of waste disposal drove many jurisdictions to mandate appropriate treatment of solid waste. Incineration represented the technology of choice, since it significantly reduced the volumes requiring disposal and converted the waste products into mostly innocuous by-products. Although alternative technologies were tried, combustion remained the most versatile and reliable method.

In a subsequent step technologies were developed and perfected to treat the one by-product that still posed a potential threat: Flue gas. Further improvement of those air purification technologies have resulted in comprehensive waste treatment systems that meet even the most stringent expectations.

More recently, the recognition that society's garbage represents a welcome source of energy drove the development of "incineration" (i.e. the destruction of waste) towards the more technologically advanced "thermal treatment" with an eye towards efficient recovery utilization and the beneficial reuse of residuals. Concurrently with this development increased reliability and availability of the treatment plants became important aspects to justify these significant private or municipal investments. Today, thermal treatment of municipal solid waste represents an accepted technology that has been integrated into the infrastructure of many large municipalities.

European cities now locate their treatment plants in places that are driven by logistics. Optimized transportation routes and closeness to energy consumers (heat and electricity) are the most important siting criteria.

During the last decade no significant new thermal treatment capacity has been constructed in the