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### INTEGRATION OF AN ENERGY FROM WASTE FACILITY INTO AN URBAN ENVIRONMENT

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#### ABSTRACT

The maximum environmental benefits from a new Energy from Waste (EFW) facility may require locating the new plant close to both the source of the waste and the potential energy customers. This paper will present design features that were incorporated into several new EFW facilities to allow them to be located directly into urban environments while minimizing their impact on the community and often improving the quality of life for the surrounding communities. Locating the EFW facility directly into an urban community:

- Minimizes the cost and the environmental impact of waste transport.
- Allows electrical power to be generated at the point of consumption.
- Provides thermal energy for district heating and cooling.
- Reduces the dependence on imported fossil fuel for electrical generation and for heating / cooling.
- Provides secure and well paying jobs for members of the community.
- Reduces the carbon foot print of the community.
- An EFW plant typically leads to higher recycling rate, both pre and post combustion.

Some of the specific measures that have been considered for EFW plants in urban environment have included architectural enhancements, more stringent noise and odor control, significant reduction or even elimination of visible plumes. The two case studies included in this paper will be the new Isséane EFW plant in Paris and the recently awarded Riverside EFW plant in London.

**Keywords:** Energy-from-Waste (EFW), green house gases, distributed energy generation, thermal treatment.

#### 1. INTRODUCTION

EFW is getting growing acceptance worldwide as an important part of the waste treatment hierarchy (reduce, reuse, recycle, recover and dispose, with EFW being considered part of "recover") [1][2]. However, the traditional approach in North-America has been to locate EFW plants away from

urban environment to either remote locations or to heavily industrialized areas. This approach tended to limit the potential of energy recovery to the production of electrical power. In Europe on the other hand, EFW plants were often built closer to the communities to take advantage of the potential for thermal energy sale (in the form of heating or cooling) in addition to electrical power generation. This paper will look at two recent projects, the new Isséane EFW plant in Paris that entered service in December 2007, and the Riverside EFW plant in London that is currently under construction and is expected to enter into service at the end of 2010. This paper will review the benefits obtained by locating an EFW facility in an urban area, as well as the additional challenges that come with this type of location.

#### 2. BENEFITS OF LOCATING IN AN URBAN AREA

Locating an EFW plant in an urban area as compared to the more traditional approach of locating it in a remote or industrialized area (often close to a former or still active landfill) brings several additional challenges, the most important being acceptance by the community surrounding the proposed new EFW plant.

Locating the new EFW plant in the urban area has the potential to bring significant benefits to the community. Some of these benefits are:

- Minimizing the cost and the environmental impact of transporting the waste over long distances by treating the waste where it is produced. This contributes to a reduction in the number of trucks on the roads, a reduction in emissions from these trucks, a reduction in Green House Gas (GHG) emissions with reduced transport fuel requirements, a reduction in the potential for odors and spills with shorter transport distances.
- Providing electrical power generation at the point of consumption, offering more supply security to the community since they are not as exposed to the potential for breakdown of the transmission grid. An EFW plant can easily be designed to operate in island mode to maintain power in the neighborhood

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