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CASE STUDY OF WTE AND GASIFICATION

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ABSTRACT

Great interest surrounds new technologies that are being offered as alternatives to conventional combustion of waste. Developers have identified the benefits of emerging technologies over existing technologies. In the years since many of today's existing waste-to-energy (WTE) facilities were built in the United States, the technology required to process waste has improved dramatically in both environmental and operational performance.

This technical paper presents a hypothetical study comparison of a generic WTE plant with plasma-arc gasification or other gasification technology. The case study represents a greenfield facility that would process 1000 TPD of MSW in two trains of 500 TPD each. The comparison includes the following elements: 1. General physical description of the facilities; 2. Emissions performance; 3. Byproduct and waste generation; and 4. Energy production. The comparison also discusses differential capital and operating costs, but does not attempt to establish these costs or compare economic feasibility.

INTRODUCTION

For many years there was little interest in expanding waste-to-energy (WTE) in the North American market. Today interest appears to be on the rise with the recent startup of an expansion unit at Lee County, two other expansion units under construction, and proposal and permitting activity for several other locations. This change is the result of several factors, including:

- increased landfill cost;
- increased energy costs;
- from a legal perspective, the Oneida-Herkimer decision opened the door for public authorities to control waste stream and direct waste to their facility; and
- greenhouse gas (GHG) considerations.

The rebirth of WTE and other advanced technologies in the North American solid waste industry appears to be underway, although the industry today is different from the industry in the late 1980s and early 1990s. For one thing, fewer established technologies exist today based on consolidation and lack of projects leading to some technologies no longer being available from vendors. Surviving vendors continue to build facilities in Europe and Asia and new innovations bring performance improvements. At the same time, costs have increased significantly. Some issues remain unchanged, including the