

APC RETROFITS AND TECHNOLOGIES LOWER EMISSIONS AND OPTIMIZE WTE PRODUCTION

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Abstract

Air pollution control (APC) systems in waste-to-energy (WTE) plants are facing many of the same challenges that independent power facilities (IPP) have dealt with for years. The most prevalent problems being corrosion and emissions. An IPP plant in the southeastern U.S. illustrates the cause and effect that corrosion played in the plant's operation, as well as the engineered solution designed to address the issue. The result has performed beyond expectations and lends itself well to the same issues in the WTE plants. The paper also provides information regarding the conversion of the electrostatic precipitator (ESP) to a fabric filter baghouse. By utilizing the existing housing of an ESP, a higher particulate collection efficiency can be achieved at a fraction of the capital cost. Finally, the paper discusses filter changeout to filter bags laminated with highly efficient expanded polytetrafluoroethylene (ePTFE) membrane. This media change addresses the demanding environmental regulations the industry faces, as well as providing benefits to the WTE APC system such as superior cleandown, increased airflows, and extended filter life. The ultimate results of these three technologies can help decrease maintenance time and cost and increase WTE facility production.

Introduction

Waste-to-energy (WTE) presents air pollution control (APC) challenges unique to this industry. Operationally, the WTE industry is facing numerous changes in the coming years. Fortunately, WTE plant personnel are among the most informed in any industry as to their process and equipment understanding. This knowledge is invaluable as it will help them overcome common problems and ensure they continue to increase their output and profitability.

Corrosion: The Sneaky Thief

Municipal solid waste (MSW) is a difficult fuel. The variable Btu value of MSW can cause these plants to experience swinging boiler loads, varying levels of moisture, inconsistent incineration characteristics, etc. Each of these challenges present this industry with damaging and difficult to manage corrosion. Many times, the corrosion is not a linear progression, it can be affected by a single upset condition, or by many upset conditions. Unnecessary startups and shutdowns cause excursions through the dewpoint resulting in high acid conditions and accelerated corrosion. Corrosion is common to all WTE APC systems but there are engineered solutions available which can help you battle this tireless enemy.

Independent power plants (IPP) that have been built in the past 8-10 years have been designed to burn coal efficiently. They achieve the maximum Btu values from the coals that they burn, and produce the finest ash of any coal burners. These systems were expertly designed to meet very stringent environmental regulations, however, there is an unanticipated