

NETL 2007 - Abstract Submittal

Title: TOXECON™ Clean Coal Demonstration for Mercury and Multi-Pollutant Control at We Energies Presque Isle Power Plant

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Abstract:

We Energies and DOE, under a Clean Coal Power Initiative program (CCPI), have been working together for the past three years to design, install, evaluate and demonstrate the EPRI-patented TOXECON™ air pollution control process. The primary goal of this project is to reduce mercury emissions from three 90-MW units that burn Powder River Basin coal at the We Energies Presque Isle Power Plant in Marquette, Michigan. Additional goals are to reduce nitrogen oxide (NO_x), sulfur dioxide (SO₂), and particulate matter (PM) emissions, allow for reuse and sale of fly ash, demonstrate a reliable mercury continuous emission monitor (CEM) suitable for use in the power plant environment, and demonstrate a process to recover mercury captured in the sorbent.

TOXECON™ is a patented process in which a fabric filter system (baghouse) installed downstream of an existing particle control device is used in conjunction with sorbent injection for removal of pollutants from combustion flue gas. For this project, the flue gas emissions are controlled from the three units using a single baghouse. Mercury is controlled by injection of activated carbon, while NO_x and SO₂ will be controlled by injection of sodium-based sorbents. Addition of the TOXECON™ baghouse also provides enhanced particulate control. Sorbents are injected downstream of the existing particle collection device to allow for continued sale and reuse of captured fly ash, uncontaminated by activated carbon or other sorbents.

Demonstration of TOXECON™ began in February 2006. This paper will discuss the overall design of the installation, balance of plant issues, and results from mercury optimization testing, mercury long-term testing, and SO₂ and NO_x removal testing.