Proceedings of NAWTEC16
16th Annual North American Waste-to-Energy Conference
May 19-21, 2008, Philadelphia, Pennsylvania, USA

NAWTEC16-1921

Advances in Fabric Selection for Dust Collection Equipment in WTE Plants

Robin C. Linton
Sales Leader-Combustion Industry
GE Energy
(800) 821-2222 x 4339
Robin.Linton@ge.com

Fabric selection is a critical component in the operation of a dust collection system venting a waste to energy boiler. This paper will discuss the factors to be evaluated when selecting the proper fabric to use in filtration systems venting waste and refuse derived fuel fired boilers. Consideration will be given to the type of scrubbing equipment, the type of cleaning system, the design parameters of the unit, and the gas stream chemistry. Operating experience from existing filtration systems will also be presented. Special emphasis will be made on equipment design, particulate capture and filter service life. A look at new developments in fabric filtration, including fabric blends, micro-denier filtration, and the use of pleated filter technology, will complete this overview.

Across the world, new waste to energy and power facilities are being built and/or retrofitted to more current air pollution control systems. At GE Energy, we see a lot of the newest technologies worldwide for the entire energy market.

Historically, when the primary dust collection vehicle on a boiler was a fabric filter, power generation facilities utilized woven fiberglass filter bags. The collectors were structural reverse air collectors with large filter bags (normally a 11.5" diameter by thirty feet in length) designed to operate at a 2:1 air-to-cloth ratio. These designs are dominant in the industry and offer an expected filter life of four to eight years. However, the trend in new installations of fabric filter collectors in the power generation industry is to install pulse jet collectors. This change is a direct result of cost considerations and the desire to use the baghouse to scrub gases with the addition of spray dryer atomizers (SDAs), selective catalytic reactors (SCRs), and selective noncatalytic reactors (SNCRs) before the dust collection system. Carbon, trona, and other injectables are utilized as well. While initial investment is lower for pulse jet collectors, long term operating costs may be higher due to costs of more frequent bag changes.

Pulse jet collectors offer several inherent advantages over the traditional reverse-air systems. First, the systems can operate at higher air-to-cloth ratios (3-4:1) that allow for a smaller housing footprint. In addition, pulse jet collectors employ filters with a felt construction which offer the potential for higher efficiencies than woven filter media used