Fortum Waste Solutions, Norrtorp

Semiwet flue gas cleaning followed by MERCOX™ and ADIOX® for acids, mercury and dioxin polishing including energy recovery.

Babcock & Wilcox Vølund AB (formerly Götaverken Miljö AB) has provided flue gas cleaning system to Fortum's hazardous waste incineration plant, line 2, followed by a MERCOX™ polishing scrubber common for lines 1 and 2. The scrubber is used mainly for polishing of acids and mercury but is also equipped with ADIOX® tower packing and droplet separators for additional dioxin removal and prevention of “dioxin memory effect”.

The very efficient gas treatment allows Fortum to process highly contaminated waste without emitting any waste water from the flue gas treatment. The plant has been prepared for future installation of flue gas condensation to recover additional energy from the flue gas.
Plant description

Fortum Waste Solutions’ incineration plant for hazardous waste in Norrtorp/Kumla, Sweden originally consisted of one line equipped with a semiwet absorber and an electrostatic filter. A baghouse filter was added in 1990. The EU legislation on emissions of HCl, SO2 and Hg necessitated an extension of the plant. The flue gas cleaning system was upgraded with a MERCOXTM mercury removal scrubber plant in year 2000, designed to also handle flue gas from an additional future incineration line. With this installation, Fortum is able to manage the peaks in mercury content that occasionally occur during combustion. Furthermore, the plant is prepared for future flue gas condensation to recover energy from the flue gas.

In 2002 Babcock & Wilcox Vølund AB supplied a semiwet flue gas treatment system including a spray dryer and a baghouse filter, installed after a new second incineration line. ADIOX® dioxin removal has been installed since 2004 in order to reduce the dioxin memory effect in the scrubber and to improve the overall dioxin removal of the system. The scrubber was initially designed and prepared for later addition of an energy recovery system by flue gas condensation. This process was installed in 2017 and recovered approximately 5 MW of heat to the district heating system.
The ADIOX® AND MERCOX™ processes were developed by Babcock & Wilcox Vølund AB in collaboration with KIT (Karlsruhe Institute of Technology, Germany. In the MERCOX™ process, mercury (Hg) is separated from the flue gas by injection of the environmentally friendly oxidizing agent hydrogen peroxide plus an additive. The ADIOX® tower packings consist of polypropylene with carbon particles. Dioxins are captured in the patented ADIOX® dioxin removal material and can be incinerated after use. The dioxins are then destroyed.