

# **Case story**

**Flue Gas Cleaning system, based upon dry absorption  
for Municipal Waste Incineration**

**AB Fortum Varme – Project Avesta - Sweden**



**Filcon ApS**

**Pilagervej 9**

**DK-4200 Slagelse**

**Phone: +45 40 21 78 02**

**E-mail: [sa@filcon.dk](mailto:sa@filcon.dk)**

**[www.filcon.dk](http://www.filcon.dk)**





## **AB FORTUM AVESTA – MUNICIPAL WASTE INSTALLATION OF FLUE GAS CLEANING SYSTEM – DRY ABSORPTION AND FILCON BAG FILTER**

### **Introduction:**

The existent Flue Gas Cleaning system at AB FORTUM – AVESTA in Sweden, contained a Semidry Reactor (Lime-slurry injection for SO<sub>x</sub> removal) and a Squared Bag Filter for removal of residues and used absorbent.

AB FORTUM is incinerating Municipal Waste in 2 Boiler (Total 30 MW), with a common Flue Gas Cleaning system.



Existent Semidry system

### **Purpose / Requirement:**

AB FORTUM had big problems fulfilling the emission demands on SO<sub>x</sub> and a high consumption of Absorbent (Hydrated Lime).

Further they had high maintenance costs, due to Build up inside the Reactor and Bag Filter and corrosion problems in their complete Flue Gas Cleaning system.

### **Emission demands:**

The new installation should fulfil all emissions according to the EU-Directive: EU 2000/76/EC

The below table shows the Inlet Flue Gas data and the required Emissions:

SEAN: PUT IN THE EMISSION STANDARD TABLE





### **Solution:**

Installation of 2 FILCON Bag filters, which should be installed at the existent foundation / supporting structure, incl. complete residual product handling (mechanical transport), Flue Gas Duct, dampers, insulation and maintenance platforms.

New Activated Carbon silo, incl. pneumatic injection system.

Complete new dosing Equipment system (Filcon Design) for Hydrated Lime and recirculation of residues, incl. common pneumatic injection system.

Implementation of complete new ABB800 control system, incl. Electric work (cabling) and commissioning / Start up



Complete Reactor  
Lift – not possible



Spilt of the Reactor due to the  
weight (Build up inside)

### **Carrying out:**

Due to Heat production, the Plant had to be installed in 2 steps and production stop of maximum 5 and 2 days.

#### **STEP 1: (5 day stop)**

Dismantling of existent Reactor and installation of Filcon Bag Filter No.1 and installation of a Temporary Dosing and injection system for Hydrated Lime / Activated Carbon, as well as a temporary control system for the new FILCON Flue Gas Cleaning system based upon dry absorption for removal of Acid components ( $\text{SO}_x$  / HF / HCl) and dust.





Installation of FILCON Bag Filter No. 1

#### BETWEEN STEP 1 AND 2:

Dismantling of existent Bag Filter.

Installation of FILCON Bag Filter No. 2, complete Activated Carbon silo, as well as complete new FILCON dosing system for Hydrated Lime and Residual product, incl. pneumatic injection system.



Dismantling of existent Bag Filter



Installation of FILCON Bag filter No.2

#### STEP 2: (2 day stop)

Connection and Start up of Filcon Bag Filter No. 2, Dosing and injection system for Hydrated Lime, Activated Carbon and Residual product, as well as implementation of the complete new ABB800 control system.





### **Conclusion:**

The complete installation / commissioning was carried out according to the Main Time Schedule, in a close cooperation between AB FORTUM AVESTA and Filcon.

The New Flue Gas Cleaning system fulfilled all EU-emission demands from day 1 (Installation of FILCON Bag Filter No. 1).

As the Plant had installed continuous Emission measurement equipment, AB FORTUM decided NOT to carry out any official emission test for the approval of the Plant, as all emissions were fulfilled and the consumption of Hydrated Lime and Activated Carbon was Extremely low, compared to Their existent system.



Final Plant, incl, Machine room for residue handling below the FILCON Bag Filters.