CASE HISTORY

SEMICONDUCTOR
SOLAR
PHARMA
POWER GENERATION
FOOD & BEVERAGE
PULP AND PAPER
CHEMICAL
OIL AND GAS
MINING
AEROSPACE AND TRANSPORT
METAL FINISHING
MUNICIPAL

HAGER+ELSÄSSER
An aquarion Group Company

TOVEKO Filters

Wastewater Filtration for Exhaust Gas Cleaning, Denmark

The city of Aabenraa is located in the South East corner of the Peninsula of Jylland, a part of Denmark close to the German border. The city is nicely situated near the sea of Lilla Baelt, a beautiful part of Denmark with deep blue seawater, green woods and hills. The local inhabitants are understandably very proud of their environment. One local industry dominating the local landscape is the South Jylland Power Plant, owned by majority owners from the Danish energy producing industry. This is a combined coal and oil fuel heating plant, producing 600 MW in normal operation and up to 645 MW for short periods. The plant consumes 200 tons of coal per hour at full load. As a part of the process the flue gas is treated to remove sulphide and NOx. The supplier of the desulphurisation system is FL Smith, Denmark.

The flue gas volume is 2 million Nm^3/h with a feed temperature of 125°C, reduced to 70°C after treatment. 97.5% of the sulphide content is removed, equivalent to 30.000 tons/year. 92% NOx removal equates to 8.000 tons/year. Desulphurisation is achieved by absorption into a limestone solution, producing gypsum as a commercial side product.
The limestone solution is sprayed on the exhaust gas, when the sulphur dioxide reacts with the lime to produce gypsum (calcium sulphate). 50.000 tons/year of limestone are consumed to produce 90.000 tons of gypsum.

After separation of heavy metals and other contaminants, the treated water is reused in the process.

In August 1995, two Model S-600 Toveko sand filters were supplied to FLS Miljö for final filtration of semi-treated wastewater form the flue gas treatment plant.
Production records and analysis were taken continuously from 21st November – 20th December 1996 (720 hours). The analysis records for discharge of heavy metals, such as cadmium, nickel, zinc, lead, chrome etc. show that the Toveko sand filter well outperformed the official government requirements:

Metal	**Requirement**	**Actual**
Cadmium	0.009	0.0006 - 0.0008
Nickel	0.09	0.066 - 0.08
Zinc	0.2	< 0.02
Copper	0.02	0.002 - 0.003
Lead	0.09	0.0002- 0.0006
Chromium	0.1	< 0.002

FL Smith Miljö was responsible for the process and operation management until December 31 1996 when the operation was officially taken over by Sönderjyllands Höjspenningsvaerk A/S, Denmark.

H+E ranks among the world's leading suppliers in the fields of: water & wastewater treatment, and energy efficiency. Based on its global presence, the **H+E GROUP** has completed projects in over 50 countries.

HAGER+ELSÄSSER

An aquarion Group Company

Tel: +44 1403 272772

sales@he-water.co.uk
www.he-water.co.uk