

Case Study: Coke Plant Scrubber Water



Customer:



ThyssenKrupp

Partners:



Location: Duisburg (Germany)

Conditions:

Capacity	400 m ³ /h
Particle size	1 – 250 micron
Particle type	Coal dust, tar, organics
Temperature	15 – 60 °C

Challenge

For the production of coke, volatile constituents of the coal —including water, coal-gas, and coal-tar— are driven off by baking in an airless furnace at temperatures as high as 2.000 °C. The flue gas goes through an ammonia-based scrubbing process. The resulting scrubber water contain small coal-tar and other organic particles (1-250 micron) that cause scaling in the pipes and trays of the adsorption/desorption tower (see picture). Thus, all pipes and trays had to be fully replaced every 2-3 years.



Solution

The pilot plant (400 m³/h) contained 3 automatic filters with a metal mesh size of 100 micron. The plant was commissioned in June 2014 and treated 100% of the scrubber water from July 2014. Due to the good results the customer decided to integrate the pilot in its regular operations and roll out the solution in another coke plant. The pilot is fully automated and is operated 24/7.

Results – Coke Plant Scrubber Water

A significant removal of particles down to 10 micron was achieved and it is expected that the scaling in the pipes and trays is reduced drastically. The operation of the plant has suffered no downtime since its commissioning.

- ✓ The payback time of this project for ThyssenKrupp is less than 1 year.

