OPERATING TEMP.
750 - 1,200 °C for SO₂ production

FUELS
Fuel gas, Coker gas, Light / medium / heavy Fuel oils, Liquid residues

SULFUR COMPOUNDS
Liquid sulfur, Rich gas (high concentration of H₂S and/or CS₂)
Lean gas (low concentration of H₂S and/or CS₂)
Spent acid of varying compositions and qualities

SCOPE OF SUPPLY
- Burner with gas lances and nozzle system
- Nozzle system for spent acid
- Assembled valve rack including all required fittings and measurements
- Electrical control and safety system (BMS)
- Blowers for combustion air and lean gas
- Pump station for liquid sulfur and spent acid
- Combustion chamber incl. refractory
- Engineering and documentation
- Erection and commissioning of the plant
- Waste Heat Boiler

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The WSA process is a process for the conversion of sulphurous streams into sulphuric acid. WSA is short for Wet gas Sulphuric Acid, meaning that contrary to conventional sulphuric acid processes, the WSA process treats the process gas with all of its water content. Gases as H₂S-Gas and Lean Gas as well as liquid sulphur and spent acid are incinerated to SO₂ in a burner followed by a waste heat boiler. If the feed gas or liquid H₂S containing fuels does not contain enough combustibles, support fuel will be necessary. The gas leaving the waste heat boiler will have a temperature of approximately 400 °C. The gas then enters the SO₂ reactor which will contain one, two or three catalytic beds. As the reaction in the reactor is exothermal, the gas is cooled between the beds in order to optimise the SO₃/SO₂ equilibrium. The process gas then goes to the WSA condenser, where final hydration and condensation of acid takes place.

Spent Acid Decomposition Plant

**Haldor Topsoe A/S**
**Petrochemia Blachownia S.A.**
**Kedzieryn - Koźle / Poland**

CS delivered a combustion unit consisting of a horizontal combustor with a central burner for start-up, support heating and combustion of waste gases. Radial around the burner are positioned three spent acid lances for thermal recovery by using a WSA process of Haldor Topsoe. The spent acid has a very high fraction of Tar (CₓHy) that means the calorific value is very high (10.0 MJ/kg). For this reasons each spent acid lance will be additionally fed with combustion air around the lance. Because of the high calorific value of the spent acid the operating temperature of the combustor is very high, about 1,300 - 1,350°C. The brick lining used for the combustor is resistant up to 1,600°C. To protect the boiler from sulfuric acid containing droplets a checker wall is installed in the last third of the combustor.

**Burner Capacity**
7.0 MW

**Operating Temp.**
max. 1,350 °C

**Combustor Dim.**
Ø 2.3 m x 9.5 m

**Combustor Weight**
Steel structure: 14.5 t / brick lining: 58.0 t

**Fuel Consumption**
Coke Oven Gas max. 665 Nm³/h
Light Ends Gas max. 98 Nm³/h
Spent Acid max. 1,600 kg/h

**Start Up**
1st quarter 2010