MECS® SULFOX™ PROCESS
FOR GAS DESULPHURISATION AND SULPHUROUS WASTE REGENERATION

SULFOX™ APPLICATIONS
- Refinery SRU
- Coal gasification SRU
- Natural gas processing SRU
- Spent acid and liquid sulphates regeneration
- Coke manufacturing
- Viscose fibres
- Mining and roasting
- Pigments production

SULFOX™ NK

PRODUCE SULPHURIC ACID INSTEAD OF SULPHUR OR GYPSUM EFFLUENT

The SULFOX™ process is a highly energy efficient technology that produces saleable sulphuric acid as the product from cleaning waste gases containing sulphur compounds.

FEATURES
- Wet catalytic oxidation of sulphur compounds with recovery of concentrated sulphuric acid
- Solution for a wide range of off gas compositions
- Efficient waste heat recovery
- High steam production for concentrated H₂S feeds
- Economical alternative with low operating costs compared to Claus (H₂S) or scrubbing (SO₂)
- No or minimal liquid effluent
- Very low cooling water consumption
- Flexible and reliable operation with high turndown ratio

BENEFITS
- Low SO₂ and acid mist emissions
- Very reliable and proven gas cleaning using DynaWave™ technology
- Simple automated operation (minimal operators required)
- Robust and low maintenance acid condensation column with short horizontal glass tubes
- Special catalyst usage for specific applications
- Long catalyst operation without screening
- Very compact modular design
The SULFOX™ process is based on the thermal and catalytic conversion of sulphur-bearing compounds into sulphuric acid. Depending on the feed gas conditions, customised plant types are offered.

For low concentrations, the feed gas is preheated to the required catalyst inlet temperature by the glass tube heat exchanger of the condensation column and an additional gas preheater from the heat recovery system. An additional direct fired preheater is used for start-up and very low plant rate operation.

For high concentration H₂S, the gas feed is burned in a combustion chamber and cooled by steam equipment to the required catalyst inlet temperature.

The converter contains catalyst beds where the sulphur compounds are oxidised to SO₂ and SO₃. The SO₃ reacts with the water vapour to form gaseous sulphuric acid. A heat recovery system transfers the excess heat to either the incoming feed gas stream or high pressure steam produced in the steam equipment.
The acid condenses in the condensation column and evaporation of water produces concentrated acid that is collected in the sump of the column.

The wet electrostatic mist precipitator (WESP) removes the remaining acid mist. A further reduction of SO₂ emissions can be achieved either with a DynaWave® tail gas scrubber or an activated carbon filter.

For dirty and wet SO₂ gases, a customised gas cleaning system is included. Spent acid or liquid sulphate feeds are regenerated by combining SULFOX™ technology with a decomposition furnace followed by steam equipment and a gas cleaning system.

The following block diagrams present the different plant configurations for the range of feed types processed:

**SULFOX™ NK**
**USED FOR LOW FEED GAS CONCENTRATION**

**SULFOX™ HK**
**USED FOR HIGH H₂S GAS FEED CONCENTRATION**

**SULFOX™ MET**
**USED FOR DIRTY OFF GAS FEEDS IN THE METALLURGICAL INDUSTRY**

**SULFOX™ SAR**
**USED FOR SPENT ACID AND LIQUID SULPHATE REGENERATION**
A UNIQUE, RELIABLE SOLUTION

The SULFOX™ process is a unique wet gas sulphuric acid process where merchant grade sulphuric acid is produced instead of unwanted process by-products, sulphur or gypsum effluent. Each SULFOX™ plant is custom designed according to the feed gas concentrations and the customer’s specific requirements while keeping the investment and operating costs as low as possible. The SULFOX™ process, which was developed to treat sulphur-containing waste gases, has over 20 years of successful field experience.

MECS is one of few companies that design and manufacture their own sulphuric acid process equipment and technologies such as catalyst, heat recovery and mist elimination. By combining process technology, materials science, the backing of DuPont and nearly a century of sulphuric acid plant expertise, MECS can provide a single point overall guarantee of quality workmanship and performance.