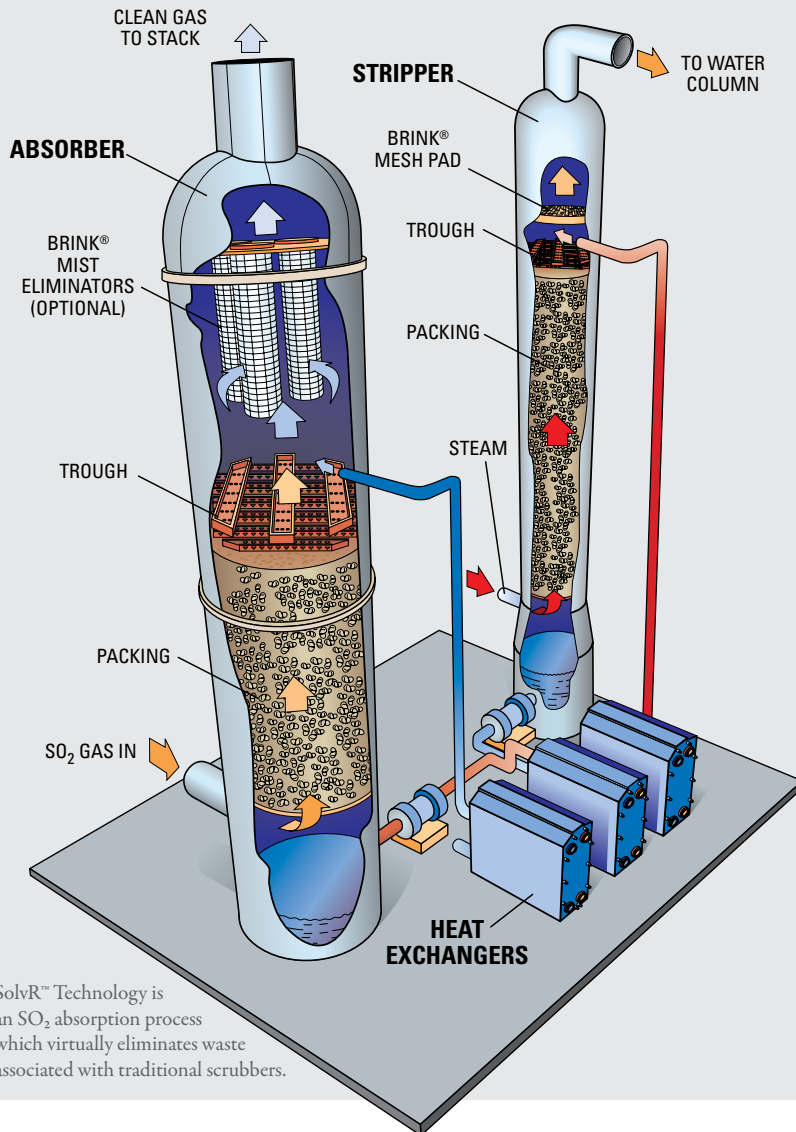


# MECS® SolvR™ TECHNOLOGY FOR REGENERATIVE SO<sub>2</sub> RECOVERY



SolvR™ Technology is an SO<sub>2</sub> absorption process which virtually eliminates waste associated with traditional scrubbers.

## AN ENERGY EFFICIENT SO<sub>2</sub> ABSORPTION PROCESS WITH NEARLY ZERO SO<sub>2</sub> EMISSIONS

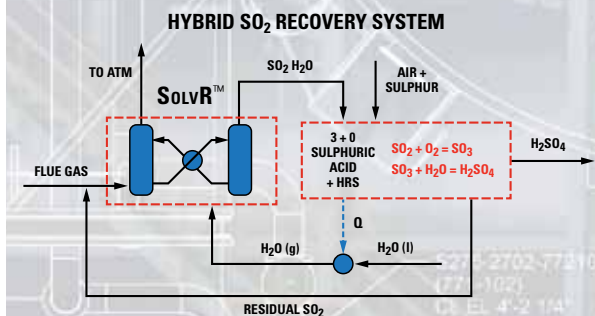
MECS® SolvR™ Technology employs an absorption solvent that is readily available, environmentally friendly and lower in cost than solvents used in other SO<sub>2</sub> absorption processes. The technology can be integrated into new sulphuric acid plant designs to achieve ultra low SO<sub>2</sub> emissions and high energy recovery. The SO<sub>2</sub> recovered can either be liquefied, converted into sulphuric acid or converted into sulphur – all commercial grade products. The resultant cleaned gas has SO<sub>2</sub> levels of 20 ppm or less guaranteed. In addition, the largest operating expense, steam, can be significantly reduced by using SolvR™ energy recovery techniques.

## FEATURES AND BENEFITS

- Guaranteed SO<sub>2</sub> emissions at 20 ppm or less
- Lower operating costs:
  - low cost, readily available solvent
  - energy efficient, low steam usage
  - no hazardous waste disposal costs
- SO<sub>2</sub> product can be recovered as:
  - commercial grade liquid SO<sub>2</sub>
  - merchant quality sulphur
  - concentrated sulphuric acid
- SO<sub>2</sub> absorption process:
  - simple process, reliable operation
  - environmentally safe solvent
  - efficient process due to selective absorption and simple desorption
  - works over a wide range of SO<sub>2</sub> concentrations

## APPLICATIONS

- Integration into new sulphuric acid plant designs (Hybrid plants)
  - Allows for use of single absorption
  - Lower emissions and more or higher heat recovery than can be achieved with double absorption alone
- Single absorption sulphuric acid plant tail gas
- Applications where SO<sub>2</sub> cannot be directly recovered as sulphur or sulphuric acid
- Claus SRU tail gas SO<sub>2</sub> recovery/recycle



PROCESS TECHNOLOGIES

Learn more at [www.mecs.dupont.com](http://www.mecs.dupont.com)

# MECS® SolvR™ TECHNOLOGY FOR REGENERATIVE SO<sub>2</sub> RECOVERY

## NO OBJECTIONABLE WASTE MEANS LOWER COST AND ENVIRONMENTAL COMPATIBILITY

In all regenerative systems, oxygen reacts with the SO<sub>2</sub> dissolved in the solvent to form sulfuric acid. The sulfuric acid in turn reacts with solvent constituents, degrading the performance and requiring occasional regeneration.

With some technologies, the sulfuric acid reacts directly with the solvent, creating an undesirable waste and costly solvent losses. In contrast, MECS® SolvR™ Technology uses an eco-friendly solvent that does not react with the sulfuric acid. Instead, sodium ions in the solvent react with sulfuric acid to form aqueous sodium sulfate (Na<sub>2</sub>SO<sub>4</sub>), which is readily separated from the solvent. The aqueous sodium sulfate can then be discharged to the plant sewer or dried and transported as a solid waste to a municipal landfill.

## HOW IT WORKS

The diagram below illustrates how MECS® SolvR™ Technology employs absorption as the means of removing SO<sub>2</sub> from the hot tail gas feed. For water balance purposes, the tail gas is saturated with water and cooled before entering the bottom of the absorber tower. Lean solvent enters at the top of the absorber tower in a counter current fashion. SO<sub>2</sub> absorbs into the solvent yielding a clean gas to the stack and an SO<sub>2</sub>-rich solvent from the bottom of the absorber tower. The SO<sub>2</sub>-rich solvent stream is then stripped of SO<sub>2</sub> using steam in the stripper tower, then cooled and returned to the absorber as lean solvent. The water saturated SO<sub>2</sub>-rich gas from the stripper tower is routed to the water column for concentrating the SO<sub>2</sub> and purifying the water. The concentrated SO<sub>2</sub> product from the SolvR™ process can then be recovered as liquid SO<sub>2</sub> (condensation process), sulfuric acid (sulfuric acid process) or sulfur (Claus process).

In some cases, the SO<sub>2</sub>-rich feed gas to the SolvR™ plant may need additional conditioning and cooling prior to entering the absorber tower. In these cases, a DynaWave® reverse jet scrubber and gas cooling tower with Brink® mist eliminators can be installed upstream of the SolvR™ plant.



[www.mecs.dupont.com](http://www.mecs.dupont.com)

### North America

#### MECS Headquarters

Chesterfield, Missouri, USA

Tel: +1-314-275 5700

[northamerica@mecsglobal.com](mailto:northamerica@mecsglobal.com)

### Europe/Middle East/Africa

Brussels, Belgium

Tel: +32-2-658 2620

[europe-africa@mecsglobal.com](mailto:europe-africa@mecsglobal.com)

Moscow, Russia

Tel: +7-495-797 2200

[moscow@mecsglobal.com](mailto:moscow@mecsglobal.com)

Dubai, United Arab Emirates

Tel: +971-4-428 5615

[dubai@mecsglobal.com](mailto:dubai@mecsglobal.com)

Johannesburg, South Africa

Tel: +27-11-218 8618

[southafrica@mecsglobal.com](mailto:southafrica@mecsglobal.com)

### Asia Pacific North

Shanghai, China

MECS Chemical Plants

Equipment (Shanghai) Co., Ltd

Tel: +86-21-3862 2888

[shanghai@mecsglobal.com](mailto:shanghai@mecsglobal.com)

### Asia Pacific South

Mumbai, India

MECS India Private Ltd.

Tel: +91-22-6751 5000

[india@mecsglobal.com](mailto:india@mecsglobal.com)

### South America

Barueri, Sao Paulo, Brazil

Tel: +55-11-99657 5878

[brazil@mecsglobal.com](mailto:brazil@mecsglobal.com)

## MECS® SolvR™ TECHNOLOGY

