

Leading Regenerable SO₂ Control Technology

Flue gas SO₂ removal has long been dominated by alkali reagent type processes which ultimately convert SO₂ to calcium or sodium sulfate. The aqueous and solid waste from these processes contributes to dissolved solids in plant effluent and landfill tonnage. The CANSOLV® SO₂ scrubbing system avoids both these issues by selectively absorbing SO₂ and regenerating a pure by-product without consuming reagent and creating waste.

This patented technology uses an aqueous amine solution to achieve high efficiency selective absorption of sulfur dioxide from a variety of gas streams. The scrubbing byproduct is pure water-saturated SO₂ gas recovered by steam stripping, using low quality waste heat. The CANSOLV® SO₂ scrubbing system and absorbent have excellent health, safety and environmental properties. The regenerable absorbent eliminates the high cost of consumable absorbents, while its high capacity and selectivity reduce capital costs. Effluents from the process are minimal.

CANSOLV® SO₂ Scrubbing System Applications:

- Industrial and Utility Boiler FGD
- Fluid Cokers
- Catalytic Cracking Units
- Acid Plant Feed and Tail Gas
- Claus SRU Tail Gas
- Metal Smelting and Refining Off-gases
- Chemical Manufacturing Plants
- Pulp Mill Blowpit and Boiler Gases

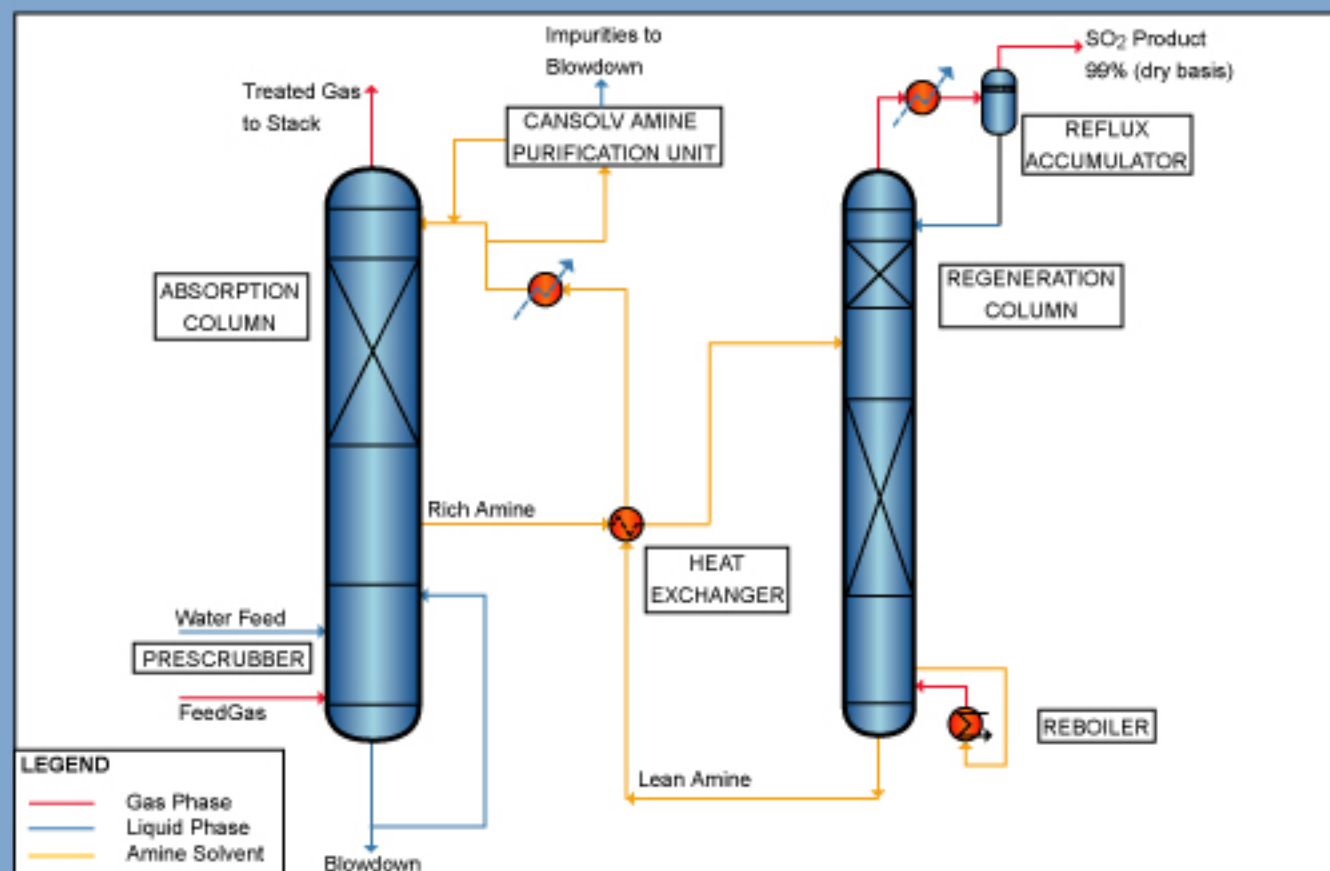
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State of the Art
Gas Absorption Solutions

Process Description :

1. The feed gas is first quenched and saturated in a water prescrubber. The prescrubber design is selected based on total solids and SO_3 content in the gas. Both open spray and venturis have been used.
2. The gas is then contacted with the lean amine solution in a counter-current absorption column where SO_2 is absorbed. The treated gas exits the absorber with an SO_2 content as low as 10 ppmv, depending on design parameters.
3. The SO_2 -rich amine from the absorption column is pumped to the regeneration column via a lean/rich heat amine exchanger for energy recovery.
4. The lean amine solution is regenerated by steam stripping and the SO_2 is recovered as a pure, water-saturated product.
5. The lean amine leaves the stripper reboiler and is pumped back to the absorption column via the lean/rich amine heat exchanger and the lean amine cooler.
6. A slipstream of the amine is purified to prevent accumulation of heat stable salts (HSS).
7. The by-product SO_2 can be converted to various sulfur products such as liquid SO_2 , sulfuric acid or sulfur.

Process Schematic :



Performance Characteristics :

- Low cost sensitivity to SO_2 content of feed gas
- SO_2 removal to <10 ppmv, when required
- A robust, easily operable process
- Use standard equipment and engineering
- Low maintenance and no solids handling
- Energy requirement significantly lower than other regenerable SO_2 recovery processes
- No absorbent purge required – heat stable salts removed in a dedicated unit
- Quantity of heat stable salt needing to be removed is much lower than competing processes
- Minimal amine degradation losses
- Non-volatile and low toxicity solvent
- Small footprint simplifies retrofit in tight sites

"It can be misleading to compare the CANSOLV® SO_2 absorption technology with an end-of-pipe environmental treatment process. It is in fact a win-win engineered solution that allows process plants to both reduce emissions and save capital. We expect to save millions on acid plant refits by making use of this technology."

Lucy Rosato, CEO, Noranda Income Fund

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