Breakthrough CO₂ Capture Technology

The CANSOLV CO₂ Capture™ (patent-pending) system is a groundbreaking low cost solution for selective CO₂ absorption from flue gas or other oxygen-containing gases. Derived from the successful CANSOLV® SO₂ gas scrubbing system, the process uses a high performance amine absorbent to achieve excellent process economics and versatility.

Unlike conventional amine based processes, the CANSOLV CO₂ Capture™ system can be used in oxidizing environments such as conventional boiler and power plant flue gases, cement or lime kiln gases or oxygen rich reaction off-gases. The CANSOLV CO₂ Capture™ system can be used also in the presence of limited amounts of oxidized sulfur. With high sulfur containing flue gases, the process can be integrated cost effectively with a CANSOLV® SO₂ scrubbing system.

Independent laboratories confirmed that the CANSOLV CO₂ product is high in purity on a dry basis. Thus, it is now possible to produce high purity CO₂ from flue gases at a lower cost than bulk supply and without transportation and storage costs.
Process Description:
1. The feed gas is first quenched and saturated in a water spray prescrubber. Residual particulates and strong acids are also removed in the prescrubber.
2. The gas is then contacted with the lean amine solution in a counter-current absorption column where CO₂ is absorbed.
3. The CO₂-rich amine from the absorption column is pumped to the regeneration column via a lean/rich heat exchanger for energy recovery. The rich amine solution is regenerated by steam stripping, producing lean amine and CO₂ which is recovered as a pure, water-saturated product.
4. The lean amine leaves the reboiler and is pumped back to the absorption column via the lean/rich heat exchanger and the lean amine cooler.
5. A slipstream of the lean amine is purified to prevent accumulation of heat stable salts.

The CO₂ by-product can be used directly at the column pressure (5 to 20 psig) or pressurized and dried as needed.

Process Schematic:

![Process Diagram]

Performance Characteristics:

- Ultra low solvent degradation rate
- Low specific heat of regeneration (lower than competitive benchmark solvents)
- Applicable to combustion or industrial gases at any CO₂ concentration
- Low capital and operating costs
- Low maintenance
- Reliable process