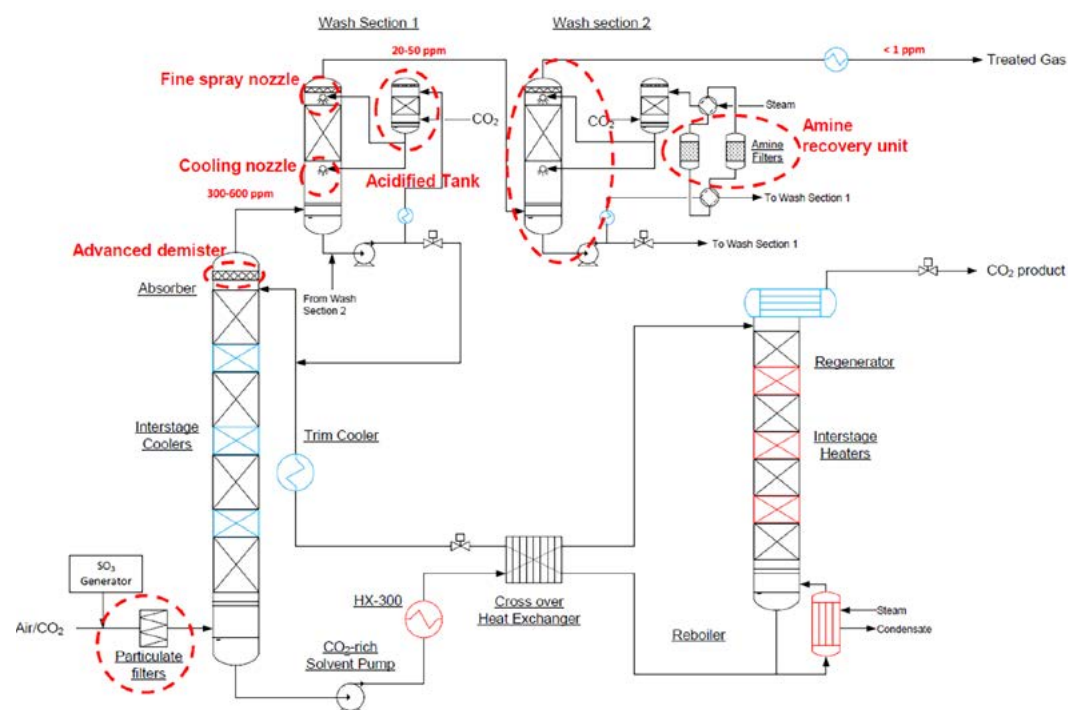


RTI INTERNATIONAL (RTI) DEMONSTRATES LOWER AMINE AEROSOL EMISSIONS IN SOLVENT SYSTEMS

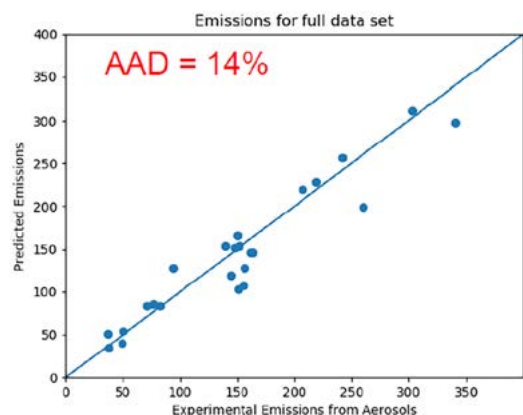
Comprehensive solvent emission mitigation tool set specifically designed for water-lean solvent CO₂ capture systems minimizes amine loss & aerosol formation

INTEGRATED APPROACH FOR EFFECTIVE AMINE EMISSIONS CONTROL

RTI achieved lower amine emissions by incorporating emission control technologies (ECTs) in a solvent-based CO₂ capture system. Following the installation of particulate filters, CO₂-acidified water washes, amine recovery beds, and advanced demisters in their Bench-scale Gas Absorption System, approximately 980 hours of parametric testing was conducted with water-lean solvents and simulated flue gas, resulting in **amine emissions <5 ppm**, a significant reduction compared to baseline testing without ECTs.



EMPIRICAL MODEL FOR PREDICTING AEROSOL-BASED EMISSIONS



RTI developed an empirical process model that predicts aerosol-based emissions based on solvent physical and chemical properties and on critical operating parameters from the absorber and wash section.

A regression model based on data from the parametric testing campaign on RTI's Non-Aqueous Solvent (NAS-5) shows an average absolute deviation of 14%.

ACIDIFIED WATER WASH ENABLES ADEQUATE AMINE SCRUBBING



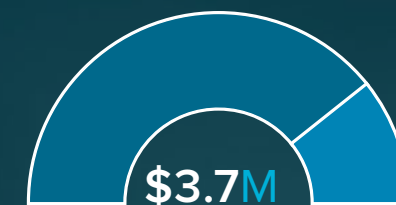
- A CO₂ slipstream acidifies the wash water, increasing amine solubility, leading to more amine captured from the treated-flue gas.
- The CO₂-acidified water wash significantly lowers amine aerosols emissions from ~25 ppm to ~2 ppm – a **~90% decrease** from baseline aerosol emissions with regular water washes.

Mitigating amine losses by treating flue gas emissions addresses both **environmental and operating expense** issues.

Emission control serves as an **enabling technology** for the ongoing development of transformational water-lean solvents for CO₂ capture.

AWARD NUMBER
DE-FE0031660

PROJECT BUDGET



- DOE\$2,900,000
- PERFORMER.....\$789,000

CONTACTS

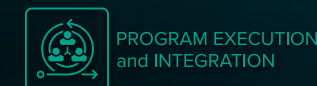
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