



Maturing 2nd Generation Technologies

SRI International's Mixed Salt Process

DOE/FE/NETL has sponsored highly successful second-generation technologies that will dramatically reduce CO₂ capture costs. SRI International's Mixed Salt Process is one of those technologies.



Integrated CO₂ absorber-regenerator system at SRI

BACKGROUND

CHALLENGE:

- 1st generation amine-based solvents have high regeneration energy requirements, low CO₂ desorption pressures, high degradation losses, and a large process equipment footprint, all contributing to elevated costs

SRI INTERNATIONAL'S SOLUTION:

- Employ a mixture of potassium and ammonium salts
- Utilize advanced heat integration methods
- Enable CO₂ regeneration pressures of 10-20 bar through process development



Lab/Bench-Scale Development

Initiated 2013

- Self-funded proof of concept and small bench-scale (0.01 tonne/day) testing completed prior to DOE award in 2012/2013
- Individual component testing at 0.18 tonne/day confirmed prior results
- Integrated testing and development completed at 0.25 to 1 tonne/day scale validated increases in CO₂ capture efficiency, CO₂ loading capacity, and CO₂ regeneration pressure

SIGNIFICANT RESULTS

Techno-economic analyses indicate:

- ✓ **Reduced Capital Costs**
High-pressure regeneration results in reduced compression requirements
- ✓ **Reduced Operating Costs**
Lower regeneration energy and solvent degradation



Large Pilot-Scale Testing

Initiated 2018

- Conversion of the existing chilled ammonia test facility at Technology Center Mongstad (TCM) into a test facility for the mixed salt process
- Alterations to the facility and baseline testing to continue through 2020
- Dynamic and steady-state testing of the mixed salt process at 10 MWe scale planned for 2020/2021
- Confirm capability of the mixed-salt technology to capture CO₂ for ≤\$30/tonne



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