Carbon Capture Solutions

Comprehensive Services

Companies developing systems to recover carbon dioxide from power plants seek cost-effective solutions that can be deployed rapidly. SRI International is developing and scaling up next-generation carbon capture concepts, taking them from the laboratory to pilot scale. SRI brings value to clients in many ways, including

- *Experience with diverse carbon capture approaches: SRI is developing post-combustion technologies that can be used to retrofit today's power plants, pre-combustion approaches that can be integrated into next-generation plant designs, and other concepts, such as capture from air.*

SRI designed this reactor, which uses a proprietary carbon sorbent to remove CO_2 from flue gas.

- *Extensive scale-up experience: Companies use SRI services to bring their ideas out of the laboratory and into the field quickly and cost-effectively.*
- *Multidisciplinary skill sets: SRI scientists bring expertise in materials science, catalysis, and contaminant removal to solve problems related to carbon capture.*
- *A portfolio of analysis techniques: SRI uses many spectroscopic and chromatographic techniques to analyze gas and liquid streams. Materials are characterized by X-ray diffraction, calorimetry, scanning or transmission electron microscopy, and BET analysis.*
- *Process modeling and cost estimation: SRI uses modeling to explore interactions within complex systems. Results help clients understand the impact of design choices on capital and operating costs and the environment. Considerations include traditional process economics and the potential impact of carbon credits.*
- *Project management: SRI has decades of experience in successfully managing complex projects with multiple teams and interdisciplinary competencies.*

Recent Projects

SRI is examining several approaches to carbon capture and gas clean-up, including

- *Absorption: Chemical absorption and physical adsorption using conventional and novel sorbents in liquid and solid forms*
- *Desorption: Stream stripping, temperature- and pressure-swing techniques*
- *Other separation methods, including diffusion and permeation techniques*
- *Sorbent regeneration: High-temperature regeneration coupled with high-pressure CO_2 that is ready for sequestration*

Recent projects include

- *CO_2 capture from integrated gasification combined cycle (IGCC) gas streams using the ammonium carbonate-ammonium bicarbonate (AC-ABC) process*
- *Development of a system to use novel carbon sorbents for CO_2 capture*
- *Fabrication and scale-up of polybenzimidazole-based membrane system for pre-combustion capture of carbon dioxide*
- *Scale-up of a system to capture CO_2 from air*

SRI is scaling up technology with a commercial client to recover CO_2 from air.

New Concepts

SRI is developing approaches to further reduce the cost of carbon capture and exploring options to develop value-added uses for CO_2. Developments include:

- *Novel nanoporous materials*
- *Novel applications of conventional and unconventional sorbents*
- *Methods to avoid equilibrium limitations*
- *SRI's Short Path Rapid Cycle Swing Adsorption (SHERPA™) technique*
- *Electrochemically modulated absorption*
- *Chemicals and fuels from CO_2*

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About SRI International

Silicon Valley-based SRI International, a nonprofit research and development organization, performs sponsored R&D for governments, businesses, and foundations. SRI brings its innovations to the marketplace through technology licensing, new products, and spin-off ventures. SRI is known for world-changing innovations in computing, health and pharmaceuticals, chemistry and materials, sensing, energy, education, national defense, and more.

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Photo, Pg. 1, upper right: SRI built this pilot facility to demonstrate using ammonium carbonate to remove CO_2 from a power plant's exhaust gas. The approach was ultimately demonstrated in the world's first integrated project to capture and store carbon dioxide from a coal-fired power plant.

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