

SolveBright™ Post-Combustion CO₂ Scrubbing

Advanced solvent absorption technology for carbon capture

As the world advocates for decarbonization, industry is responding by balancing the often-competing goals of maximizing production and output while minimizing negative effects on the environment. Emerging technologies to support the continuous drive to reduce greenhouse gas (GHG) emissions will form the cornerstone of corporate stewardship.

The **SolveBright™** post-combustion carbon dioxide (CO₂) scrubbing system from Babcock & Wilcox (B&W) facilitates carbon capture for storage or beneficial use utilizing advanced solvent absorption technology.

Technology Development

B&W began initial research of a post-combustion carbon capture process in 2005 and progressed from bench-scale testing in the laboratory to a pilot facility capable of capturing 7 tons/day of CO₂.

This eventually led to the development of the SolveBright regenerable solvent absorption technology (RSAT) scrubbing process. The advanced solvent of the SolveBright process demonstrated superior performance to that of competing solvents at the National Carbon Capture Center.

B&W and SOLVEBRIGHT™ ADVANTAGES

With more than 50 years of experience with flue gas treatment systems, we understand the challenges of integrating post-combustion capture technologies into a plant

15+ years developing post-combustion carbon capture solutions, and we understand the process and the equipment

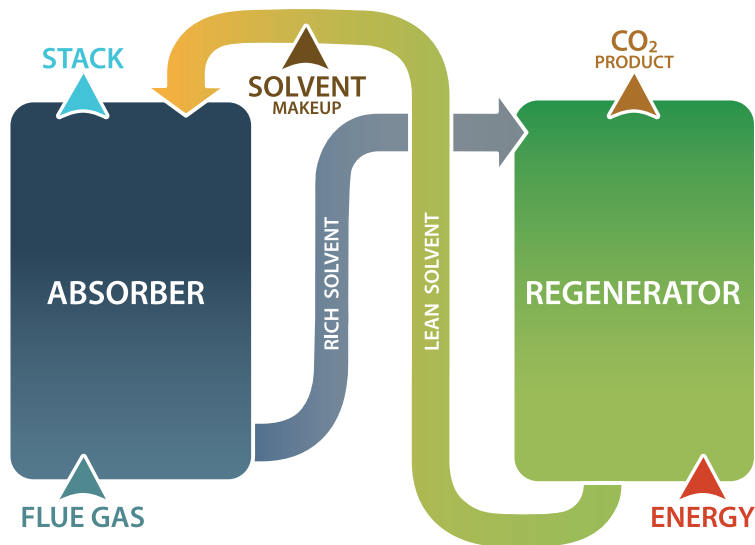
B&W has a well-developed and rigorously tested solvent as well as experience with a wide range of solvents

Experience across a wide range of industries with varying fuels

Reference plant design is ready for commercial demonstration

Global presence will be advantageous in supporting a wide range of customers regardless of location

Experienced with thermal management associated with combined heat and power systems



Process

B&W's SolveBright scrubbing system is a post-combustion carbon capture technology and works by absorbing CO₂ directly from flue gas in an absorber using a regenerable solvent. The CO₂-laden solvent is sent to a solvent regenerator where it is heated, and the CO₂ is released as a concentrated stream for compression and transport to a CO₂ storage facility or for beneficial use. The solvent is then recycled to the absorber for additional CO₂ capture.

Relative to 30% MEA solutions, our selected solvent demonstrates:

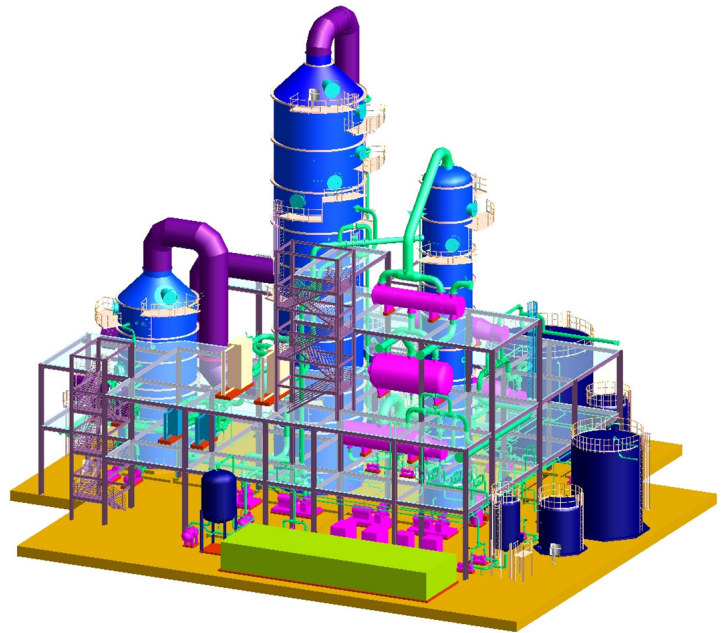
- Superior resistance to oxidative degradation
- Superior resistance to thermal degradation
- Elevated pressure operation
- Reduced volatility
- Increased mass transfer rate
- Reduced regeneration energy

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Technology Status

Having completed pilot scale testing, B&W is ready to demonstrate the technology at commercial scale (25 to 75 MW_e). A reference plant design at 75 MW is completed based on 90% CO₂ capture from a flue gas stream containing 1500 metric tons of CO₂ per day.

The reference plant design consists of a full package of engineering documentation, including piping and instrumentation drawings, a three-dimensional plant layout, equipment lists, schematics, preliminary mechanical design and fabrication drawings for major process vessels, foundation and structural steel designs, procurement packages including equipment specifications for all major equipment, construction estimates, engineering man-hour estimates, process flow diagrams, and a complete material and energy balance for the plant.



SolveBright is an integral part of B&W's suite of ClimateBright™ decarbonization technologies. We continue to innovate and collaborate with universities, industry peers and governments to amplify our efforts to reduce greenhouse gas emissions.

babcock-decarbonization.com

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Established in 1867, Babcock & Wilcox is a global leader in renewable, environmental and thermal technologies and services for power and industrial applications.

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