Flue Gas Pre-Treatment for Post-Combustion Carbon Capture

Proven technologies from the industry leader

Solvent-based post-combustion carbon capture technologies often require reductions in various pollutants found in the incoming flue gas. Proper treatment of the flue gas is vital for carbon capture. Selecting the proper flue gas pre-treatment enables optimum operational effectiveness and economics. Even if your plant is currently meeting all required emissions levels, further reduction may be necessary to meet the requirements of the selected solvent-based scrubbing technology.

As innovators and experts in providing a wide range of emissions control solutions, Babcock & Wilcox (B&W) can be your trusted partner to integrate the necessary environmental technologies into your carbon capture system. We can supply additional emissions control equipment or modify one or more of your existing flue gas cleaning system(s).

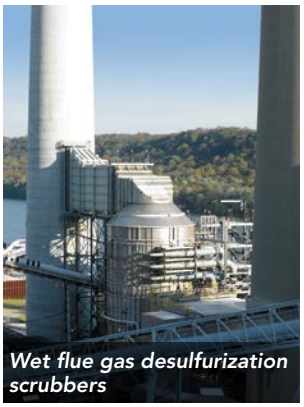
So regardless of whether you choose our SolveBright™ scrubbing process or another post-combustion technology for your carbon capture project, turn to B&W for optimal flue gas pre-treatment solutions.

Proven emissions control technologies

Higher concentrations of a wide range of inlet pollutants lead to higher solvent make-up rates and higher operating costs. Since solvent is typically much more expensive than other reagents, removal of the pollutants upstream of the CO_2 absorber usually reduces overall costs.

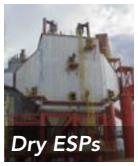
We understand the capital and operating costs of both the upstream pre-treatment system and the CO_2 scrubbing system. Additionally, we have experience with analyzing and treating flue gas characteristics from nearly every fuel, for any size system, to help meet regulations in any part of the world.

B&W has expertise in analyzing flue gas characteristics, then engineering and integrating the most effective emissions control system to handle the entire flue gas train.


Wet flue gas desulfurization scrubbers


Spray dryer absorbers


Low NOx burners


Dry ESPs

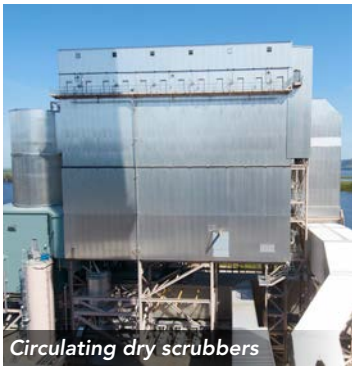

Wet electrostatic precipitators


Activated carbon injection


Direct contact coolers


Wet gas scrubbers


Selective catalytic reduction systems


Circulating dry scrubbers


Dry sorbent injection


Fabric filter baghouses

continued ▶

Pre-treatment for optimal CO_2 scrubbing

Acid gases can degrade the solvents used in a post-combustion carbon capture system. Therefore, it's imperative that the levels of sulfur dioxide (SO_2), sulfur trioxide (SO_3), hydrogen chloride (HCl), and hydrogen fluoride (HF) within the flue gas be reduced prior to entering the CO_2 absorber.

SO_3 is a particular concern as it can form aerosols which absorb the solvent and pass through the CO_2 scrubber leading to high concentrations of solvent exiting the system. This could result in solvent emissions being higher than regulated values while also adding to operating costs as the solvent make-up rate will increase.

Other pollutants can also pose problems. Nitrogen oxides (NO_X), specifically NO_2, are also detrimental for the solvent and can lead to hazardous degradation products in the process. CO_2 scrubbing operation may also improve when particulate matter is removed from the flue gas prior to the scrubbing process.

B&W offers a variety of solutions for the removal of acid gases, acid mists, NO_X, particulates, mercury, and moisture in the flue gas.

Applications and technology expertise

All our emissions control technologies can be provided on new equipment installations or as upgrades to existing systems. In addition to the extensive emissions control technologies we've developed in-house, B&W's offerings include technologies acquired through the strategic acquisition of and/or licenses from well-known industry brands.

We offer complete construction capabilities as well as aftermarket parts and field services.

Babcock & Wilcox
1200 E Market Street, Suite 650
Akron, Ohio, U.S.A. 44305
Phone: +1 330.753.4511

www.babcock.com

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