

Absorption Plus (Hg)TM Injection to Control Mercury Emissions from Wet FGD Systems

Babcock & Wilcox (B&W) has actively researched, developed and commercialized mercury mitigation solutions since the early 1990s.

The form, or speciation, of mercury present in flue gas is a key factor in developing integrated emissions control strategies. Recognizing that elemental mercury is only sparingly soluble, B&W developed the Absorption Plus (Hg)TM system, a patented technology to precipitate mercury from the liquid phase and to increase the total mercury captured and retained in a wet flue gas desulfurization (FGD) system.

The chemistry behind the technology

Since oxidized mercury is several orders of magnitude more soluble than elemental mercury, wet FGD absorbers easily remove mercury which enters in the oxidized form. However, there is a small portion of elemental mercury that remains within the liquid phase, which is significant when compared to the allowable mercury limits under the Mercury and Air Toxics Standards (MATS). Since the vapor pressure of elemental mercury is much higher than its oxidized form, by precipitating the aqueous mercury, the liquid can be sub-saturated with respect to elemental mercury, avoiding what is commonly referred to as *mercury re-emission*. In our practical field experience, an initial loading dose of the Absorption Plus (Hg) chemical is required to sub-saturate the entire water system, after which a maintenance dose can be injected.

Absorption PLUS (Hg)TM

Controlling mercury emissions from power plants with wet FGD systems

- Achieves elemental mercury sub-saturation
- Precipitates aqueous mercury from solution
- Does not affect SO₂ removal
- Does not affect gypsum purity

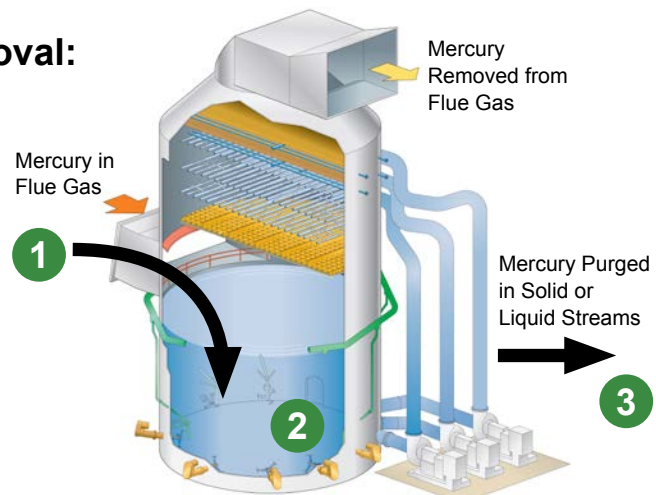
B&W's Absorption Plus (Hg) technology utilizes trace amounts of a proprietary additive injected directly into the wet FGD absorber. This provides an optimal environment in which to react with the aqueous mercury and form an insoluble chemical species that is subsequently precipitated and removed from the scrubber.

System design provides efficient and reliable operation

The Absorption Plus (Hg) system supplies the additive solution to each absorber module. The solution is typically injected into the absorber recirculating (AR) pump piping through an existing connection supplied for this service. The system is typically tied into the AR pumps that feed the upper spray level(s). At least

Cost-Effective Mercury Removal: A 3-Step Process

- 1 Mass transfer of mercury from gas to liquid
- 2 Elemental mercury sub-saturation of the circulating liquid
- 3 Addressing water treatment requirements of FGD liquid



(Continued on reverse side)

