

COMMISSIONING EXPERIENCES ON THE SCR RETROFIT AT PENNSYLVANIA POWER AND LIGHT'S 775 MW MONTOUR STATION UNIT 2

The commissioning of the SCR System retrofitted to PPL's Montour Unit 2 presented many challenges. The plant changes included a new SCR System, new ID Fans, new Electrostatic Precipitators, and a major control system re-configuration. This paper presents the SCR System commissioning with detailed descriptions of the Ammonia Storage and Supply System configuration and start-up, the SCR System flue gas path, reactor, and catalyst start-up.

The system configuration is a high dust SCR arranged between the economizer and the air heater and physically located immediately behind the boiler rear wall above the original equipment electrostatic precipitators.

The Project is unique in several respects, including: (1) direct injection of anhydrous ammonia, eliminating the need for ammonia vaporizer systems, (2) full 100% load by-pass systems with a catalyst storage system for non-OTAG season operating periods, (3) catalyst life extension system utilizing limestone addition to the coal, and (4) patented flue gas mixing and distribution system upstream of the catalyst.

The successful execution of this contract was as a technical alliance between BBP and PPL for the design and procurement of the SCR System. Many components of the system were configured for this project in a 'first-of-a-kind' manner.

The successful construction and start-up of the SCR System in a manner that avoided, from initial start-up to the end of the first OTAG season, any forced outages to make repairs or adjustments. This statement includes not only the SCR System, but all other systems as well. It is a most significant accomplishment on the part of the PPL Design, Construction, and Commissioning Team that the new ESP's, the new ID Fans, the new control system, etc. were all put into service so successfully. This accomplishment has the very high value of both reliable power generation and full environmental compliance.

The catalyst was protected from Arsenic poisoning and premature deactivation by a limestone addition system while maintaining the boiler operation free of slagging, fouling, or other operability concerns. Initially a temporary limestone addition system was utilized with a permanent system going into service with the second OTAG season in May 2001.

Performance at the required levels has been achieved including 90% NO_x reduction from an inlet of 0.45 lbs/10⁶ BTU. This results in an outlet NO_x concentration of about 16 PPM_{dv}. The SCR System pressure drop was less than projected for the initial catalyst fill, and the ammonia slip as monitored by the ammonia in the ash, shows no signs of exceeding the design value or increasing with time.

Of particular interest will be the ammonia system considerations for permitting and commissioning. The direct injection system eliminated the sometimes complicated commissioning of the vaporizers and vapor control valves. Also, the flue gas mixing and distribution system commissioning and a performance comparison with the flow modeling test results will be presented.

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