

Comanche Station Units 1, 2 and 3 Dry Flue Gas Desulfurization Systems

Project Case History

Xcel Energy
Pueblo, Colorado

Babcock & Wilcox's (B&W) dry flue gas desulfurization (FGD) systems feature a combination of design components to provide a level of reliability and sulfur dioxide (SO₂) removal efficiencies that are among the highest in the industry.

B&W is the exclusive North American licensee of GEA Process Engineering A/S, Denmark, for the GEA Niro spray dryer absorber (SDA) process. The GEA Niro SDA is globally recognized by the power generation industry as the dry FGD technology of choice.

Features of the system include a unique flue gas dispersion system for optimal gas and reagent mixing, a low maintenance rotary atomizer with a slurry capacity that is among the highest in the industry, large SDA chambers, and a complete reagent recycle system. Benefits include high SO₂ removal efficiency, integral mercury emissions reduction, low capital cost, high system availability, and low operation and maintenance costs.

Boiler/Plant Information

- Unit 1: 360 MW gross
Unit 2: 365 MW gross
Unit 3: 830 MW gross
- Boiler type: Pulverized coal-fired
- Design fuel: Powder River Basin (PRB) subbituminous



The unique flue gas dispersion system, coupled with the reliable atomizer, allows optimal gas and reagent mixing for high SO₂ removal efficiencies.

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Project Summary

- Supply and installation of a complete dry flue gas desulfurization system, including reagent preparation and recycle, for Units 1, 2 and 3; pulse jet fabric filter for Unit 3.
- Type: Lime spray dryer absorber (SDA) system
- Startup dates: 2008 (Units 1 and 2) and 2009 (Unit 3)

B&W Scope

- Spray dry absorber systems:
 - Unit 1 – 2 SDAs
 - Unit 2 – 2 SDAs
 - Unit 3 – 3 SDAs
- Recycle ash systems
- Lime rail car unloading systems (common for all units)
- Lime slaking systems (common for all units)
- 2 x 10 compartment pulse jet fabric filter for Unit 3

- Mercury removal system
- Piping, supports, elevators and freeze protection systems
- 2 x 12,500 hp induced draft axial fans for Unit 3
- Structural steel, flues, dampers, and enclosures
- Construction of all B&W-supplied equipment and structural steel, through Babcock & Wilcox Construction Co., Inc. (BWCC), a B&W subsidiary
- Commissioning

Results

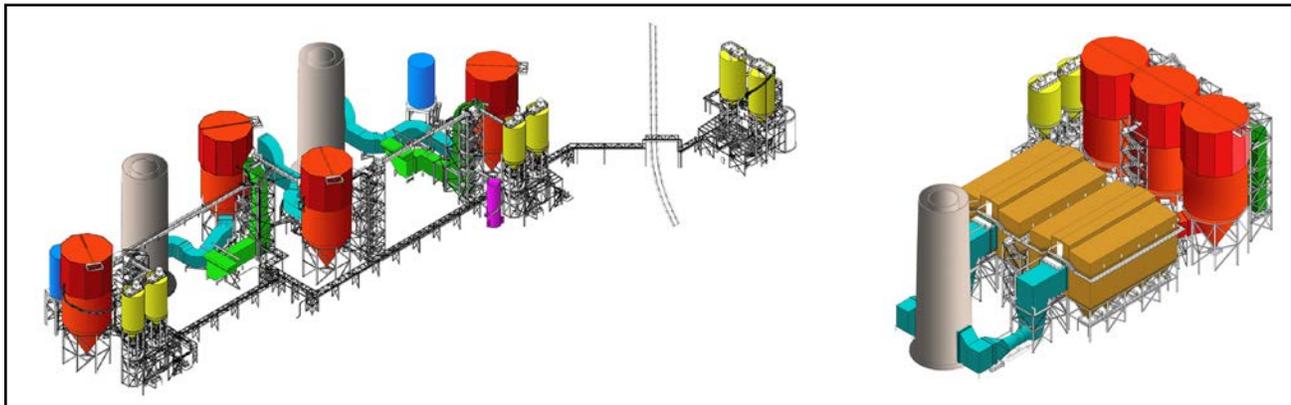
The project met every engineering, fabrication and construction schedule milestone. The commissioned units are currently meeting all performance guarantees.



Unit 3 SDAs and pulse jet fabric filter.



BWCC, a B&W subsidiary, provided construction services for all B&W-supplied air quality control system equipment and structural steel.



3D projections of SDAs on Units 1, 2 and 3.

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