Hawthorn Unit 5

Project Case History

An explosion during a maintenance outage on February 17, 1999, destroyed the original Hawthorn Unit 5 boiler. In August 1999, B&W was released to design, supply, erect and commission a complete replacement boiler on an accelerated schedule. The new boiler began generating electricity in June 2001, only 22 months from project commencement.

Plant Owner

Kansas City Power & Light

Plant Name

Hawthorn Unit 5

Location

Kansas City, Missouri

Owner's Consulting Engineer

Burns & McDonnell

B&W Scope

- Complete boiler island from coal-conveying system to stack, including:
  - » structural steel
  - » dry FGD
  - » fabric filter
  - » ash systems
  - » electrical, including motor control centers, switchgear, and wiring
  - » auxiliary piping systems
  - » critical piping to the turbines

Pollution control equipment on Hawthorn Unit 5 includes an SCR system for NO_x reduction, dry FGD for SO_2 control, and a pulse jet fabric filter for particulate control.

Kansas City Power & Light

Kansas City, Missouri

The Hawthorn Unit 5 rebuild project achieved commercial operation in only 22 months.

- Construction by Babcock & Wilcox Construction Co., Inc. (BWCC), a B&W subsidiary
- Architectural services for the boiler island
- Startup and commissioning services

Boiler Specifications

- Type: Pulverized coal-fired radiant drum boiler (RB Carolina-Type)
- Design fuel: Low sulfur Powder River Basin coal
- Capacity: 550 MW net
- Steam flow: 4,000,000 lb/h (504 kg/s)
- Superheater outlet pressure: 2600 psig (17.9 MPa)
- SH/RH outlet temperature: 1005/1005 F (541/541 C)

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Environmental Equipment

- DRB-4Z® low NO_x burners and overfire air
- Selective catalytic reduction (SCR) NO_x removal system
- Dry flue gas desulfurization (FGD) system
- Pulse jet fabric filter (PJFF)

Other Equipment Supplied by B&W

- B&W Roll Wheel® pulverizers, Series 89
- Boiler cleaning system (sootblowers and waterwall blowers) by Diamond Power International, Inc. (DPII), a B&W subsidiary

Contract Order

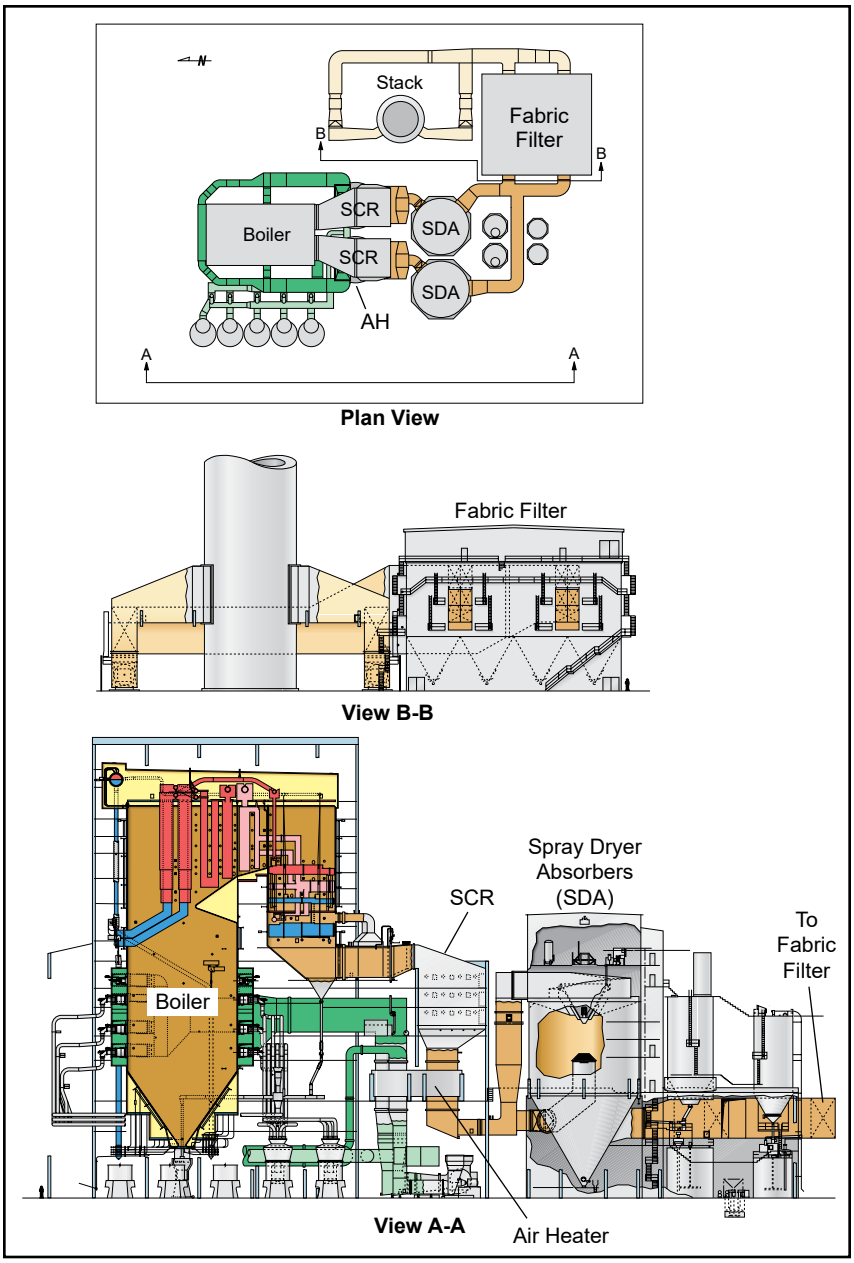
1999

Commercial Operation

2001

Project Facts

- Rebuilt unit's capacity uprated from 476 MW to 550 MW
- PJFF was built on the foundation of one of the original electrostatic precipitators (ESP) and adapted the existing hoppers and support steel.
- Even with a compressed schedule and the constraints of rebuilding within an existing site, the project achieved every major milestone.



Sectional side and plan views of Hawthorn Unit 5.

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