

# AG Processing CFB Boiler

Plant Case History

## AG Processing Inc.

Hastings, Nebraska

### Plant Owner

AG Processing Inc.

### Location

Hastings, Nebraska

### B&W Scope

Coal-fired internal recirculation circulating fluidized-bed (IR-CFB) boiler from outlet of coal bunkers to outlet of tubular air heater including:

- FD fan and motor
- Tubular air heater
- Steam coil air heater
- Multi-cyclone dust collector
- Ash recycle/reinjection system
- Limestone injection system
- Coal feeding system
- Start-up burners
- Refractory lined lower furnace with erosion protection at the Reduced Diameter Zone (RDZ) transition
- Segmented U-beam primary particle collectors with water-cooled support system
- Bed drain screw coolers
- Bed drain solids conditioning equipment including a screener and crusher
- Diamond Power sootblower boiler cleaning system

- Attenuator and spray water control station
- Flues and ducts
- Ammonia forwarding, control and injection system
- Instrumentation
- Technical advisory services during startup and commissioning

### Boiler Specifications

- Boiler type: Internal recirculation CFB design
- Design fuel: Powder River Basin coal
- Startup fuel: Natural gas
- Steam flow: 311,000 lb/h (37.8 kg/s)
- Steam pressure: 150 psig (1034 kPa)
- Steam temperature: 440F (227C)

### Environmental Equipment

- Selective non-catalytic reduction (SNCR) NO<sub>x</sub> emissions control system

### Contract Order

2006

### Commercial Operation

2009

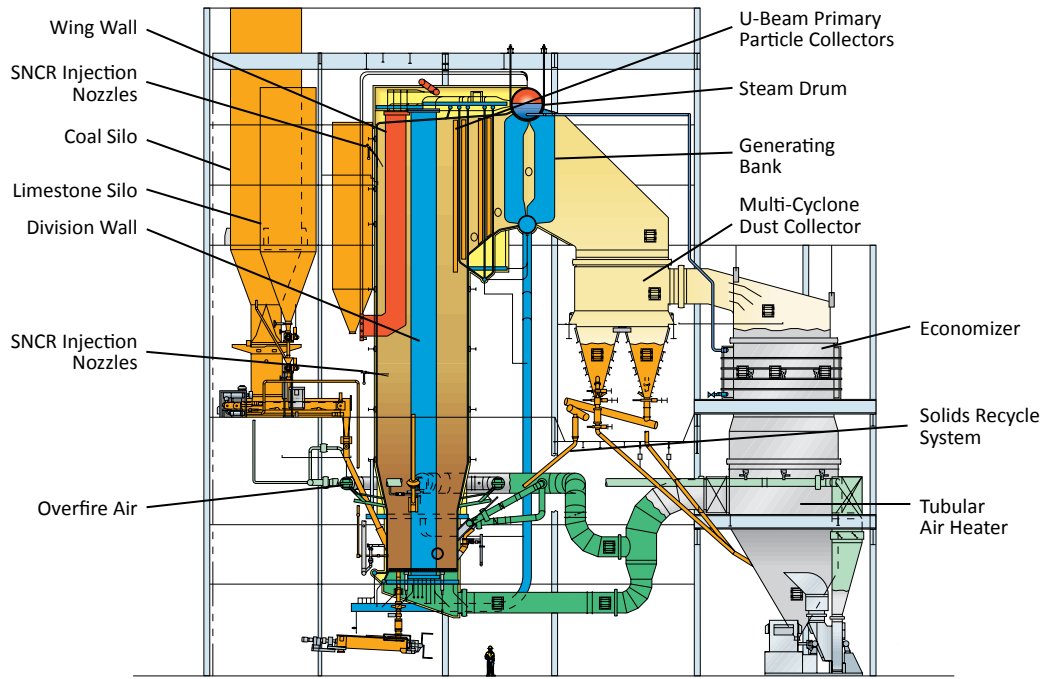
### Project/Boiler Facts

- Low pressure and temperature steam from the boiler is supplied primarily for soy bean processing.
- The addition of limestone to the circulating bed reduces SO<sub>2</sub> emissions from the boiler.
- Low furnace temperatures, staged combustion and SNCR system limit NO<sub>x</sub> emissions.



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- Unique two-stage solids collection system using U-beams and multi-cyclone dust collector (MDC) provides superior collection efficiency. The recycling of solids collected by the MDC improves combustion efficiency and limestone utilization.
- The U-beam and MDC solids collection system requires significantly less maintenance than hot cyclones.
- A patented RDZ design with silicon carbide tiles at the top edge of the furnace refractory is used to minimize tube erosion at the interface.



Sectional sideview of the AG Processing CFB boiler.

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