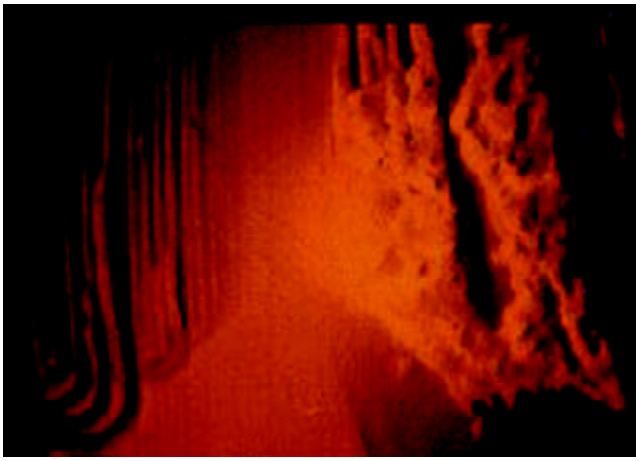
SmartGauge™

Advanced Convection Pass Fouling Detection System

CLYDE BERGEMANN

A SmartClean™ Solution

SmartGauges Measure and Locate Super-Heater Deposit Build–Up and Enhance Intelligent Convection Pass Sootblowing

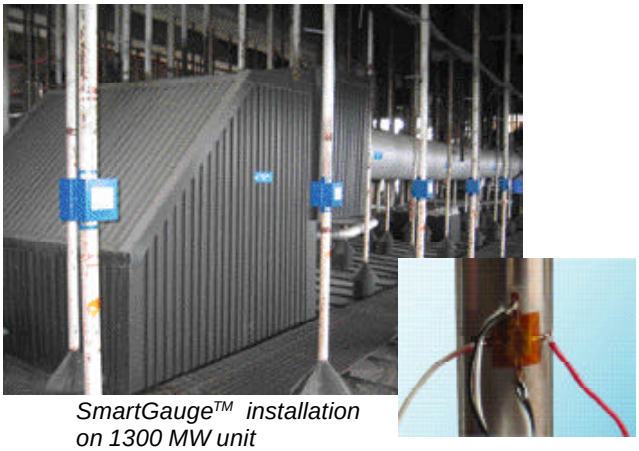


The Problem

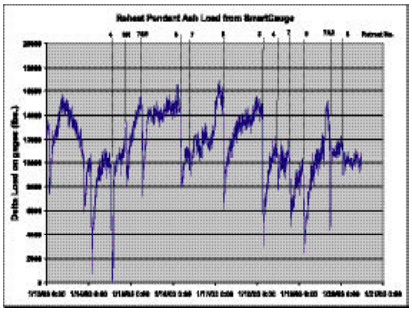
Coal fired boilers tend to form the most tenacious deposits in the super and re-heater area, the hottest part of the convection pass. These deposits are difficult to remove if the cleaning action is delayed and are prone to develop into clinkers that threaten boiler integrity and reliability. Boiler operators, however, currently do not have a reliable tool to monitor and pinpoint the build-up to take timely, corrective actions.

The Solution

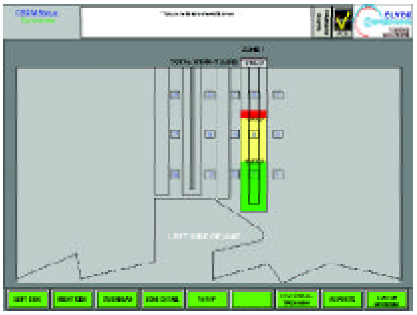
A network of specialized strain gauges is mounted to the hanger rods supporting the pendants. Through the use of patented technology, Clyde Bergemann is able to determine the exact quantity and location of deposits. This is achieved so accurately that individual sootblower operations can be selectively initiated and monitored as part of an intelligent sootblowing system.



SmartGauge™ installation on 1300 MW unit



Historical Trends Screen



Operator Interface Screens

Core Benefits
Reliability and Performance

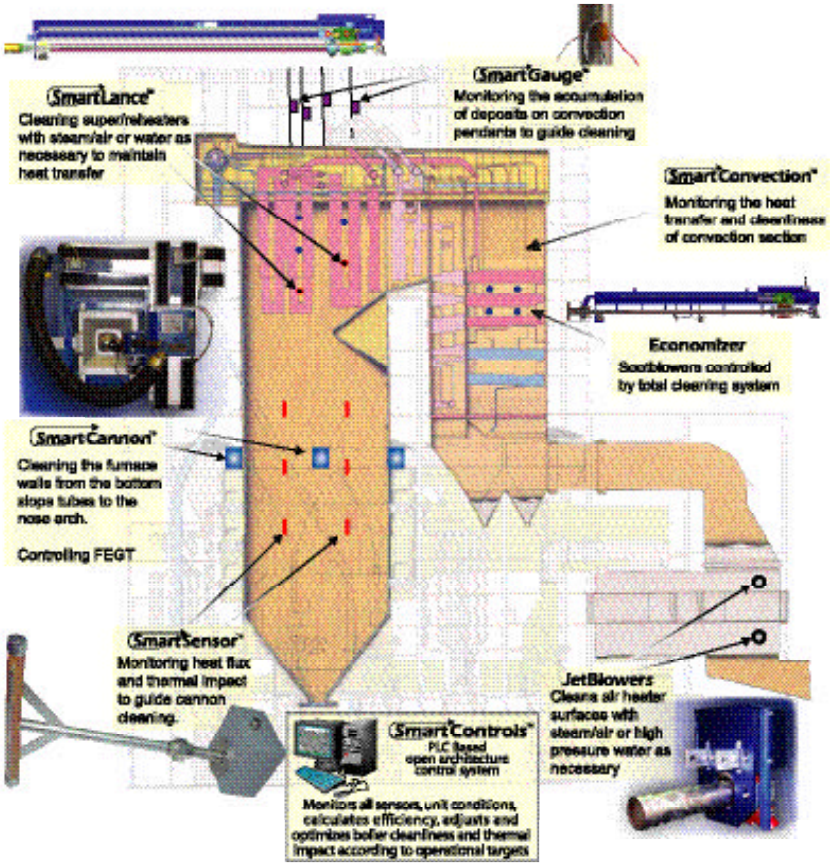
- Identification, targeting and elimination of large clinkers and outages due to clinker falls
- Reduce steam usage by up to 40%
- Increase heat transfer up to 20%
- Determine which sootblowers work - and which don't
- Use information to drive intelligent sootblowing

Complimentary Function of Thermal Model with SmartGauge System

Thermal Model (global monitoring) e.g. Clyde Bergemann SmartConvection™, Alstom Optimax	*Clyde Bergemann SmartGauge™ System*
Calculates heat transfer for each section of the convection pass	Determines actual physical accumulation in superheater / reheater
Tells operator which broad section of the convection pass should be cleaned	Tells operator ***which individual sootblower*** to operate within the convection pass. Permissives, or an acceptable thermal model, are used to determine "no / no-blow" criteria.
Resolution cannot be improved above section by section level.	System resolution can be improved by adding more sensors in problem areas.
No ability to detect large asymmetric deposits (clinkers).	System detects clinkers and alarms operator, triggering sootblower automatically if in closed-loop mode
Various levels of integration ability with DCS and other controls	High integration ability with DCS and most late generation sootblower control systems.

System Specification Options

- Temperature-compensated strain gauges
- Gauge Installation
- Data logger and amplification equipment
- Stand alone PC based, advisory operator interface
- Integration with plant DCS and data logging system
- Integration with existing sootblower controls
- Easy to use, Point and click software interface
- Integration with Smart Clean intelligent sootblowing



SmartClean™ System Integration

Clyde Bergemann has developed solutions for almost any boiler related problem. These include specialized FEGT monitors sensors, sootblowers, water cannons, control systems and intelligent algorithms for interpreting and optimizing boiler performance.

The SmartGauge™ is one of the component pieces used to achieve maximum boiler performance in specific cases requiring a reduction in clinker falls,or superheater or reheater performance enhancement.

SYSTEMS AND SOLUTIONS DIVISION

Clyde Bergemann, Inc.
4015 Presidential Parkway, Atlanta, GA, 30340, USA
Phone: 770-557-3600 Fax: 770-557-3641
Contact: Systems and Solutions Division