ABB ADVANCED DIGITAL SERVICES

ABB Ability™ Performance Optimization for industrial boilers - Fingerprint

Did you know?

ABB Ability™ Performance Optimization for industrial boilers can result in as much as $250,000 in savings through:

- Reduced boiler trips
- Fuel conserved from reduced air/fuel ratio
- Extended boiler operational range

Boiler inefficiencies can cause or result in:

- Significant penalties and fines from emissions violations
- Excessive fuel usage equals wasted money
- Problematic operation of fans and positioners
- Poor steam drum level control leads to boiler trips and lost production
- Slow response to demand changes
- Control logic problems

ABB Ability™ Performance Optimization for industrial boilers follows a three-step methodology—Diagnose, Implement and Sustain—to audit, modify and maintain improved boiler efficiency. ABB's approach is an industry proven assessment that provides a unique performance benchmark and efficiency improvement recommendations.

Instrumentation data survey

Basic instrumentation is checked for optimal operation and control, and configured signal conditioning options are examined and verified.

- Fuel flow
- Burner pressure
- Feed water flow
- Drum pressure
- Steam temperature
- Draft pressure
- Emissions O_2, CO, NO_x SO_2, opacity,
- Combustibles
- Fan amps
- Air flow
- Windbox ΔP
- Drum level
- Steam flow
- Attemperator flow
- Exhaust gas temperature
- Blowdown

Diagnose

The diagnostic service compares current boiler performance to expected capacity and industry standards and derives a basis for evaluating improvement opportunities. Instrumentation, control system and combustion control data are surveyed to determine efficiency improvement opportunities, such as combustion control changes to reduce fuel usage, identify steps to reduce unplanned outages (trips) and extend range of boiler operation.

Boiler controls and combustion performance survey

Closed loop control of fuel and air flow, draft, steam temperature, and drum level are examined under steady load conditions, and during load ramps. Disturbance rejection, setpoint tracking, actuator mechanical issues and loop interaction are evaluated. Logic for combustion controls and other boiler controls is evaluated and compared to ABB standards (Figure 1).

Cross limiting is examined for its effect on load rate of change. Proper use of scaling in the cross limits is verified. The integration of O2 trim with cross limiting system is checked. Efficiency is accurately evaluated using the losses method.

Where maximizing steam generation capability is desirable, process control system logic is examined to identify potential constraints.

Improvement plan
A report with findings, recommendations, and an improvement plan is presented to designated personnel. The improvement plan provides documented remediation for moving towards optimal performance by resolving identified issues. In addition, the estimated financial benefits are provided.

Boiler Improvement recommendations may include:
- Actuator maintenance
- Instrumentation repair or replacement
- Boiler control changes
- Control loop tuning
- Physical and capital improvements
- Changes to standard operating procedures

Implement
The improvement plan may be implemented all at one time, or scheduled to be completed incrementally; beginning with improvements that provide the greatest financial return.

ABB is available to implement the remediation, work with site engineers or personnel to achieve the desired boiler optimization level. Implementation ensures that changes are made and maintained with steady progress toward the performance goal.

Delivery scope
- Data collection/testing
- Analysis and Report Generation
- Report and Implementation Review Meeting

Additional scope options
- Multiple fuels
- Pulverizers
- Scrubbers
- Sootblowing

What sets ABB's solution apart
ABB Ability™ Performance Optimization for industrial boilers diagnosis and additional implementation and sustaining services are highly specialized. Our extensive experience in this field has led to the development of efficient procedures to assess boiler performance and identify operational issues. This service, which is not restricted to ABB control systems, utilizes industry proven diagnostic techniques.

Past success in identifying substantial savings opportunities with this service highlights the effectiveness of the optimization process, engineering expertise, and the ability of qualified engineers to provide the highest value.

References
http://new.abb.com/process-automation/process-automation-service/advanced-services/boiler-services/boiler-fingerprint

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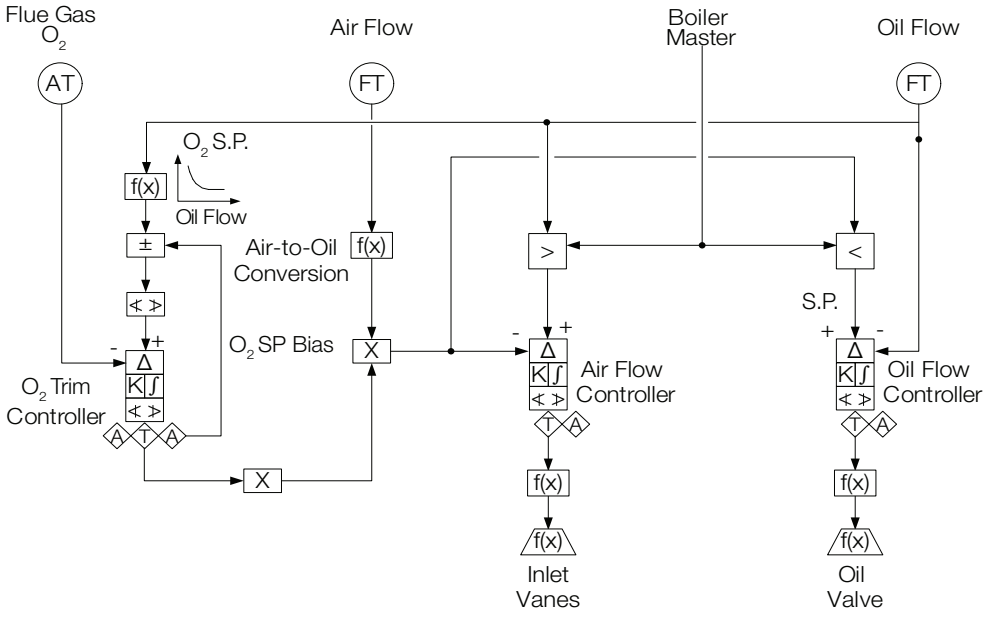

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