

Features

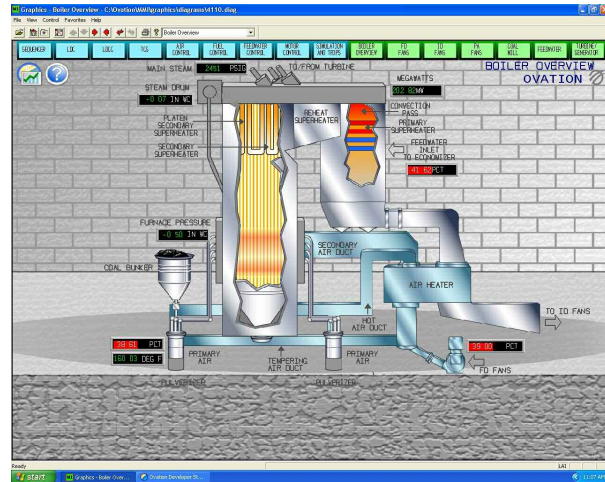
- Critical safety signals are wired as redundant I/O for maximum boiler safety.
- An automatic start sequence ensures correct completion of boiler air purge and satisfies safety permissives before fuel firing, preventing operator error.
- Continued monitoring of boiler conditions actuates a safety shutdown trip if unsafe conditions develop.
- Operator maintains control capabilities from the operator console or burner front digital logic stations.
- First-out indications are provided for identification of the cause of boiler trip

Overview

Since prevention of loss ranks high on the list of priorities for any plant, Emerson Process Management (Emerson) focuses on maintaining unit availability and stresses the importance of protecting our customers' employees and assets.

The majority of accidents that occur in plants are preventable. Often, defective or incomplete monitoring of boiler functions is a primary cause of plant-related injuries. Unsatisfied permissive interlocks, unmonitored boiler conditions, and boiler and burner trips also pose a serious threat towards plant safety. Reducing these hazards one of Emerson's overriding concerns, and we offer products and software that provide the highest level of safety precautions. We make it our business to understand any risks involved in our customers' operations, and we then formulate solutions that reduce the risk of plant hazards, allowing our customers to stay ahead of regulations and realize tremendous cost savings.

Emerson provides a Burner Management System (BMS) solution that enhances the safe startup, operation, and shutdown of the combustion sequence of a boiler. By implementing our BMS solution, customers will be able to automatically place burners and



igniters in service, remove them from service, and monitor flame conditions.

The Solution

Emerson uses innovative burner management designs from leading suppliers like Coen and Forney. Customized BMS logic is then installed into the control system, protecting equipment investments and providing the ability to expand as future needs arise.

We integrate the customer's choice of burner management system into our control technology to form an integrated plant system. Process automation is immediately simplified, because every system we use lends itself to common hardware and software. This eliminates the need for proprietary parts replacement.

We maintain complete independence of the burner management functions from other boiler and auxiliary controls to provide maximum system integrity and assure that the safety functions are performed separately of all other boiler controls per NFPA standards. Using basic elements of a BMS, such as common logic functions and sequential logic functions, our solution monitors overall boiler safety, controls fuel headers, and provides system diagnostics. It also controls individual burner, igniter, and mill functions.

Functions

- Automatic Boiler Purge Prior to Restart
- Flame Detection
- Master Fuel Trip
- First-Out (cause of trip) Annunciation
- Burner/Mill Start-Up and Shutdown Sequences
- Safety Interlocking
- Alarming of Abnormal Conditions

Combustion Safety System

Incomplete combustion produces an inefficient boiler. When the plant fuel (natural gas, oil, coal, wood, garbage, etc.) is burned in the presence of air, the carbon in the fuel combines with the oxygen in the air to form either carbon dioxide (CO₂) or carbon monoxide (CO) gases, depending on the quantity of oxygen present. When more CO is present, less air is available, making combustion incomplete and the boiler less efficient. Conversely, when boilers operate with excess oxygen, monitoring, and controlling the amount of excess oxygen can dramatically influence operating cost and profits.

Combustion safety systems are provided for coal-, oil-, and gas-fired plants. Emerson offers the combustion safety system as part of our BMS solution to further improve plant processes. For example, in coal-fired plants, it improves the fuel train with the purge of raw coal bunkers, an inerting system of steam components, primary air flow monitoring, pulverizer outlet temperature monitoring, flame scanner for coal flame, flame sensor for ignitor flame, and much more. The combustion safety system also improves the following components:

- Raw Coal feeder
- Pulverizer
- Primary air fan
- Primary air heater & tempering air
- Pulverized coal/air transport lines
- Burners
- Igniters

Pulverized coal-tripping interlocks are a key component within the combustion safety system. Emerson's combustion safety system monitors combustion, maintains primary air flow, regulates high- or low-furnace pressure, minimizes instances of flame loss, monitors raw coal feeders, and reduces pulverizer trips.

Project Management Strategy

The success of any control system project depends upon the technical expertise and project management for proper design, integration, and execution of the project. Our technical experts install burner management systems that can handle special and demanding requirements of new or retrofit installations.

- We integrate your existing equipment and operational requirements
- We provide innovative solutions to physical space limitations.
- We perform pre-testing prior to installation, to ensure minimal outage and seamless changeover to new system

Benefits

- Enhanced safety and availability
- Greater operational flexibility
- Significant auxiliary fuel savings
- Continuous safety monitoring
- Consistent start-up and operation
- Full integration of all facets of the firing system
- Improved plant availability
- Reduced maintenance costs
- Prevention of boiler explosion
- NFPA 8502 code compliance
- Expandable solutions