



# Burner Management Systems

## Background

Recovery boilers, power boilers, lime kilns, and incinerators all incorporate burner management systems to safely control fuel to the single or multiple burner systems found on the equipment. The complexity of these systems can range from basic relay-based systems with push button controls to complex PLC/DCS controlled systems with elaborate operator interface capability. These systems normally require integration into the mill's standard control system architecture which may be either DCS based or PLC/HMI based and also require detailed engineering to provide for installation and wiring of the equipment and completion of standard mill drawings in order to provide for a fully documented installation. In Ontario, field approval from the Technical Standards and Safety Association (TSSA) Fuels Safety division is required to install any new gas burning appliance or equipment. This approval involves submission of all design documentation including system logic and wiring drawings, valve train drawings, operating manuals, and device information and specifications for review by TSSA's engineering staff. Prior to start-up of the equipment TSSA must provide field approval of the installation.

## Design Approach

The first phase of the project involves development of a burner management system specification to allow the system hardware and software to be procured. This specification will include process specific information and mill standard equipment listings to be used in the design of the system. A general overview of the desired equipment arrangement and existing mill control system architecture is provided.

The second phase of the project involves the review of preliminary logic and equipment layout drawings. Cabinet fabrication drawings may then be completed and assembly initiated. At this stage of development, installation drawings and a detailed scope of work are completed. Bills of material are developed to allow procurement of remaining hardware.

Development of the required operator interface system graphics and configuration is also completed and implemented. If control is PLC-based, a gateway to a DCS or HMI system is required.

## Scope of Supply

KMH is able to supply comprehensive detailed design packages that include the following:

- PLC hardware specifications
- Field device specifications
- PLC wiring and cabinet drawings
- PLC I/O card drawings
- PLC programming
- DCS control and graphics configuration
- DCS/PLC gateway documents
- Detailed logic drawings
- Cable and tray layout drawings
- Detailed bills of material
- Cable and termination schedules
- Commissioning and startup services.

## Summary

KMH has successfully implemented BMS system projects following aggressive project and shut down schedules including new PLC/DCS installations, existing PLC system upgrades, and the complete commissioning of the PLC logic, DCS control configuration and graphic display interface prior to start-up.

