

Boiler Tube Temperature Monitoring System

Masibus provides boiler tube temperature monitoring system which prevents expensive damages and unscheduled outages.

In a power plant, boilers play a significant role in improving the efficiency of energy generation and optimal usage of fuel used to generate energy. In boilers, transmission of heat takes place through the tube wall to convert water into high-pressure steam, this leads to high temperature corrosion on the fireside as well as on the waterside. On fireside, there can be attack by fly ash as well as salt deposit, on waterside, the reaction between water and pipe material is accelerated due to high temperatures. There is a tendency of salt deposition on the inner surface of the tube. The formation of oxide layer and deposits may decrease the heat transfer from fireside to waterside leading to an increase in tube wall temperature and its failure. Additionally, the low-grade coal has high slagging and fouling potential, which can also cause overheating of boiler tubes and puncturing of the same, leading to steam leaks.

Power plants experience varying demands that directly affect boiler tubes and the need for continuous monitoring is recognized as a high priority.

To ensure efficiency, optimized fuel consumption, reliability and availability of boiler unit, it is essential to monitor metal tube temperatures of various sections of the boiler i.e.

- Super heater tubes
- Reheater tubes
- Furnace walls
- Boiler generating tubes

Tube temperatures are normally measured using thermocouples, which are welded to the wall. Continuous monitoring of boiler tube temperature helps to identify common fault reasons such as:

- Leakages, breaks, blockage etc. and help determine the safety in pressurized boiler parts.
- Identifying residual deposits by understanding temperature differentials in different sections.

Timely identification of problem areas help wade off forced outages and critical damages by taking preventive measures by means of replacement or repairs. In addition, boiler throughput can be maintained by elimination of leaks and scaling deposits with scheduled cleaning during planned outages, which increase efficiency and longevity of the boiler tubes.

Solution:

MASIBUS has designed and implemented a unique boiler tube temperature monitoring system for preventing such expensive damages and unscheduled outages using the masibus make data logger to acquire real time tube temperature data from boiler unit and/or various sections of boiler, approx. 600 to 700 K type thermocouples signals used per boiler. Data logging system monitors temperature continuously and gives alarm notifications to the boiler operators for taking necessary corrective actions.

Features:

- Isolated universal input allowing mix of analog input types including RTD, T/C, mA, V
- Real time monitoring of final superheater & reheater metal tube temperature
- Connectivity with DCS system through modbus RTU/Modbus TCP/IP/OPC protocol
- Provides a graphical user interface for temperature monitoring
- Zone wise temperature profile analysis
- Process analysis trend
- Alarm facility with SMS alert
- Reporting facility with auto-email
- Hardware diagnostic facility

Benefits:

- Easy and seamless integration with existing automation system – lower cost of ownership
- Quick detection of inefficient heat transfer due to deposit and scale build up by means of temperature differences – higher productivity
- Quick trouble shooting and maintenance – less downtime
- Avoiding unscheduled outages – Increased availability
- Optimized fuel consumption – lower cost of operation
- Reduced secondary damage
- Increased personal safety
- Increased availability and tube life
- Increased operating profits

Why Masibus

With proven track record of masibus boiler tube temperature monitoring solution to provide reliable, scalable, easy to maintain, and hook-up with existing automation system. It addresses the specific application challenges of the process with the lowest cost of ownership and highest ROI to the users.

TYPICAL SYSTEM ARCHITECTURE

