

Furnace Monitoring System V4

STARO Process Control in conjunction with Allied Furnace Consultants developed their own in-house furnace monitoring system. The system is designed to improve visualization of process data coming from the furnace controller and also provides predictions of the refractory lining wear, crucible shape, and heat transfer through the furnace shell.

Introduction

The furnace monitoring system is based on Microsoft C# technology with SQL Server as the database backend.

The system uses an algorithm developed by Allied Furnace Consultants, designed specifically for monitoring the condition of the refractory lining in furnaces. The model's interface with plant data, database and graphical engineering was developed and is maintained by STARO Process Control (Pty) Ltd.

The Furnace Monitoring System has been successfully implemented at different large-scale chrome and manganese smelting plants in South Africa.

Architecture

The Furnace Monitoring System is a typical client server application, where the server collects and stores data, while the client connects to the server to obtain real time and historical data which can be displayed and interpreted in different ways.

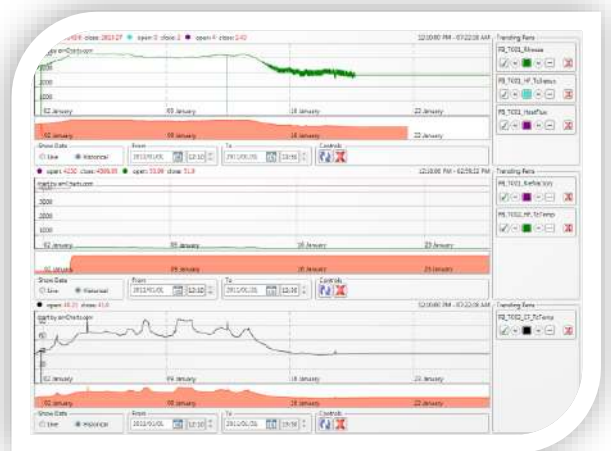
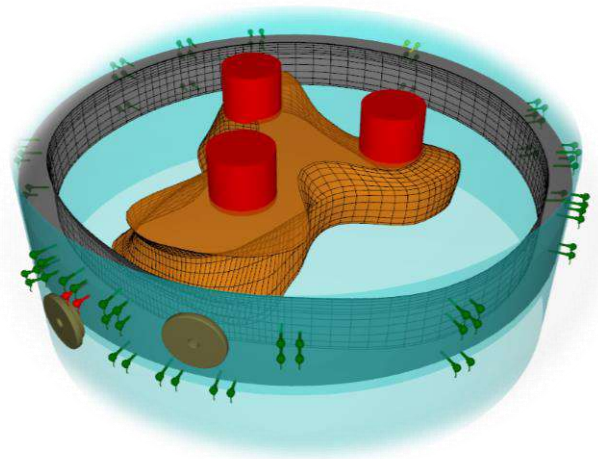
System Components

3D Model – A 3D representation of the furnace showing a computed shape of the crucible, freeze layer, and refractory lining.

Heat flux view – A 2D representation of the furnace showing heat transfer through the shell of the furnace over any given area.

Furnace overview – A summarized view of the furnace displaying current status information; this includes detailed information on all thermocouple pairs, electrodes, and custom data points.

Trending – Live and historical data can be displayed using custom-built graphs. Different trend views can also be saved for later use.



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