

Industry: Steel /// Foundry

Products Used: FX PLCs /// SCADA

The foundryman's friend or the indispensable PLC?

Radyne's engineers recently approached Stratford Industrial Controls to supply a processor for its new Induction Furnace control system, the Meltmaster. They expected the controller to be treated as a luxury by many of its customers; however users in foundries throughout the world find they cannot live without it.



The control system incorporates an industrial PC and monitor, a Mitsubishi 64 I/O FX PLC fitted with an analogue expansion module, and Mitsubishi's Graphical SCADA Software. The FX automates many of the furnace's manual processes and the SCADA displays process data in a clear format that can be easily understood and interpreted by the operators.

By pre-programming the FX with the melting profiles of numerous metals, it can control the operation of three different 6 tonne furnaces. The SCADA software enables the process to be displayed graphically and its "Proportional Fill" function shows each furnace's load clearly in a simple bar graph. The operator does not need to constantly monitor the furnace, but when information is required, it is easily accessible via a simple keypad on the PC. The FX PLC monitors the water cooling circuit temperature via directly connected PT100 sensors, while the SCADA system is programmed to display two alarm screens. Yellow Alert flashes a warning and Red Alert automatically closes down heating circuits and identifies which circuit is at fault.

Using the SCADA software and the integral "Data Comparison" function of the FX, Radyne developed an energy saving programme for its customer Triplex Williams. This system predicts the maximum kWh figure for the charge of metal in the furnace via the FX's advanced mathematics functions. It then compares the calculated figure with the actual kWh's used for a particular metal at a certain temperature. When the kWh's used are less than those calculated, the PLC runs the furnace at full power. However, as soon as the calculated value equals used kWh's, the FX switches to Load Shedding Mode. This reduces power automatically, keeping the metal molten with minimum power and preventing overheating of the furnace charge.

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Radyne

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Radyne was not certain that a PLC would be the best choice for such a harsh environment. The processing speed and capabilities of the FX were convincing and, as Michael Bell of Radyne states, "The reliability of the FX has been excellent. The cost of the FX package was significantly lower than other PLCs with similar capabilities, but it was the training and support offered by the local distributor that swayed the decision."

Application story first released December 1994 by Mitsubishi Electric UK