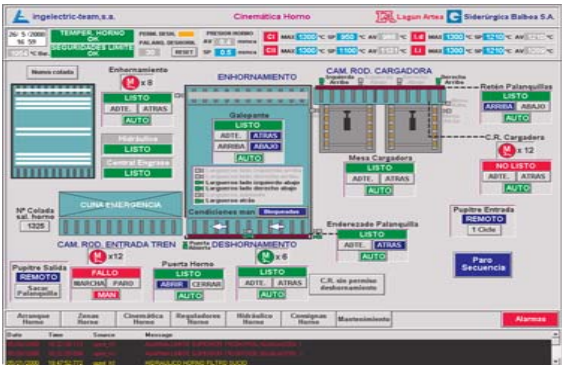


Scope of Supply

Ingeteam Power Technology, S.A., Industrial Systems Division is responsible for the electrical project:

- Project management
- Basic and detailed engineering
- Supply:
 - AC MCC and VVVF Siemens Microdrive.
 - Auxiliary control system, Siemens PCS7.
 - Furnace regulation system, Siemens PCS7.
 - Operation and visualization system, Siemens PCS7.
 - Central control pulpit and auxiliary panels.
- Installation Supervision with Final Client.
- Commissioning.



Kinematic of Furnace



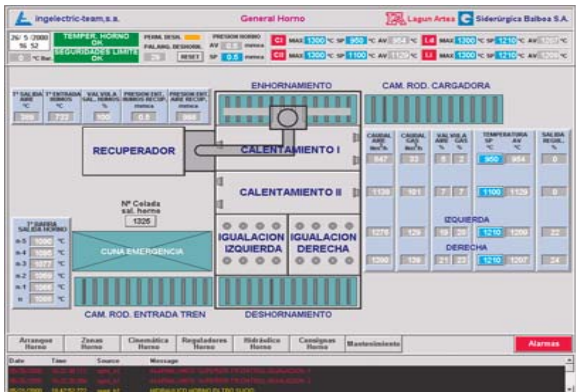
Furnace Regulation Equipment



Furnace Main Pulpit

After-Sales Services

- Hotline
- Spare parts in 24 hours
- Direct line with our technical staff
- Remote communication from our offices to the factory automation network

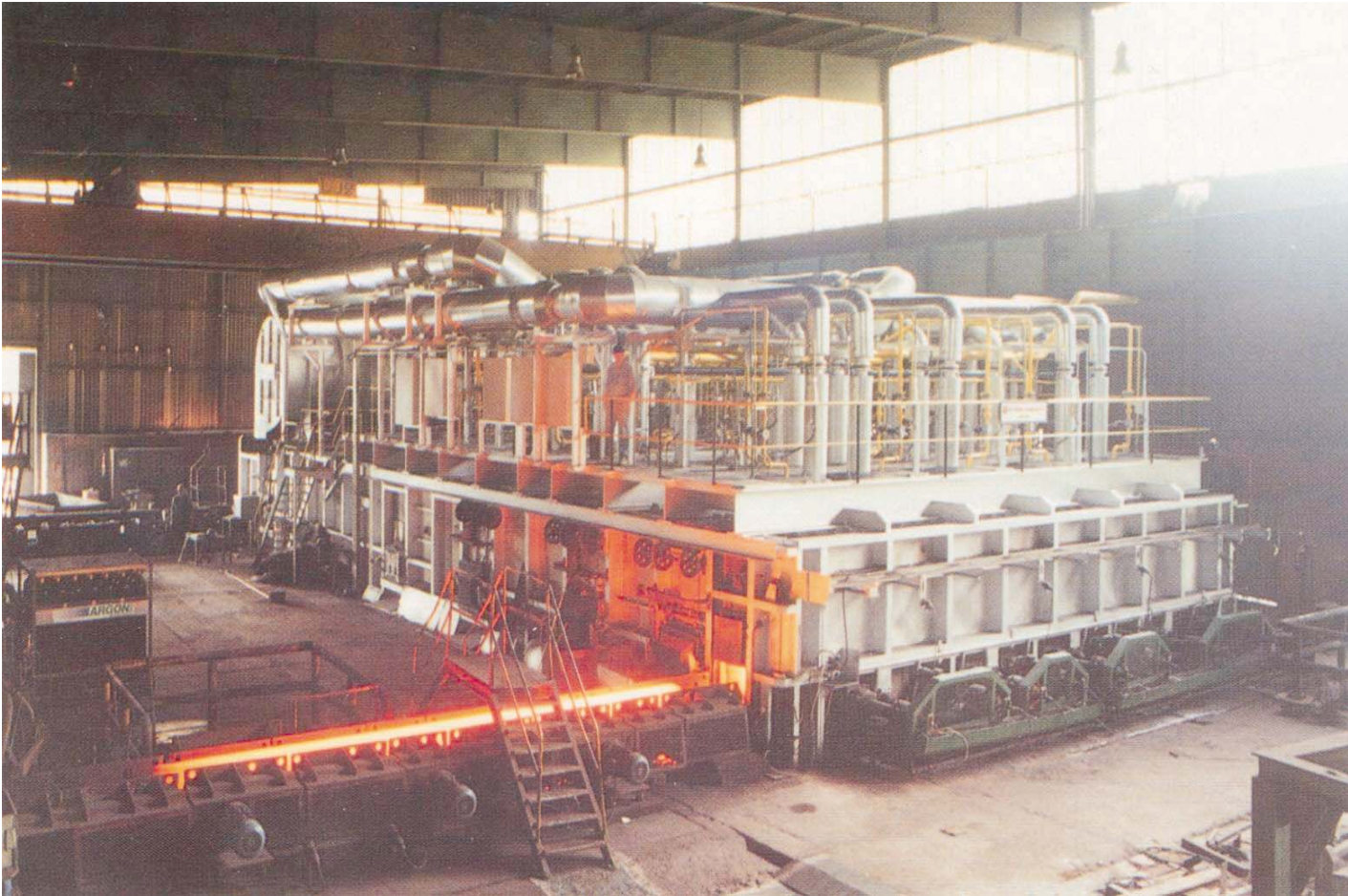


Furnace General Overview

Ingeteam

180 Tm/h Refractory Beam Reheating Furnace

ARCELORMITTAL AZPEITIA (SPAIN)



The Equipment

- During the second half of 2002 year, ArcelorMittal Azpeitia awarded Ingeteam Power Technology S.A, Industrial Systems Division, an order for the Electrical and Automation Equipment of a new 180 Tons Reheating Furnace. The company belongs to ArcelorMittal, the main contractor for the furnace was Fives Stein (formerly Stein Hornos).

- The automation of furnace was carried out by means of two PLC units. One operates as regulation system for open and closed loop control. The major functions are the heating zones temperature, combustion air pressure and temperature, furnace pressure and recuperator protection control. The other PLC takes charge of sequential and material handling functions such as material loading-unloading to/from furnace, walking beam handling, material transport to mill, material tracking, as well as the hydraulic and lubrication systems control.

Besides, the auxiliary equipments such as main hydraulic and lubrication systems are controlled by the same PLC. The automation also includes HMI systems in the main pulpit allowing us monitorize and having an influence on main electrical and productive parameters.

- The range of automation selected for this application has been Siemens PCS7 with links Profibus DP/PA and Siemens PDM software. It allows us to digitalize completely regulation so much for transmitters as actuators.

- Siemens PCS7 is a distributed control system, so it provides an overall view totally integrated and homogeneous starting from a common data basis, which allow us to reduce the engineering time, and makes easy the maintenance works.

Technical Features

- Dimensional characteristics of raw product are as follows:

- Billet, square section.130 x 130 mm
- Max length 12000 mm
- Row charging

- Furnace is conceived as a refractory beam and composed by up to four different heating zones distributed as follows:

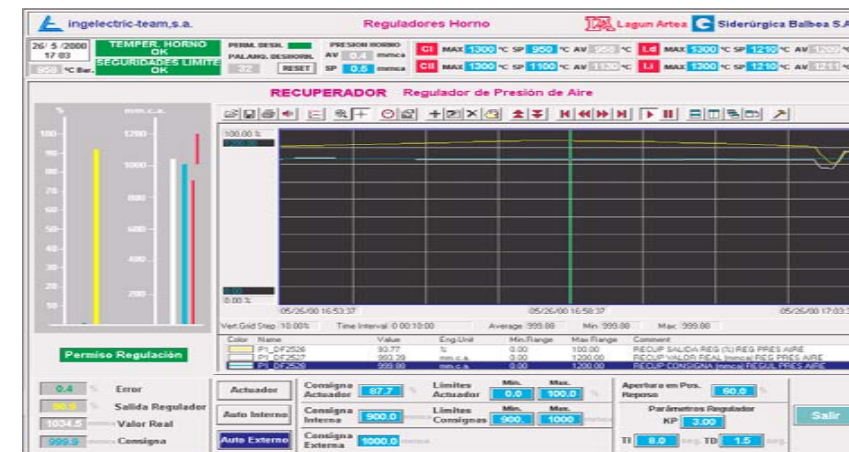
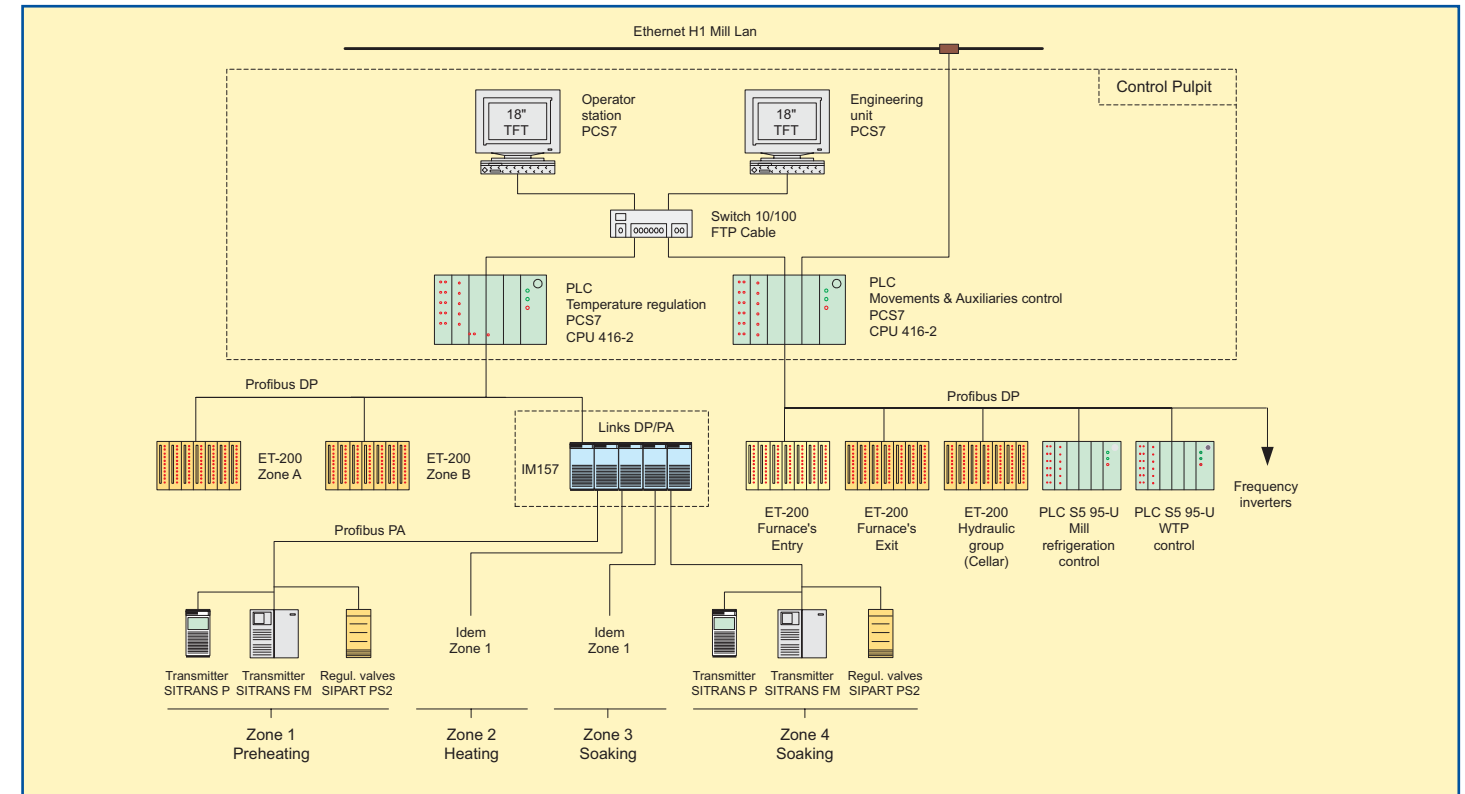
- Upper preheating (Zone 1)
- Left heating (Zone 2)
- Left soaking (Zone 3)
- Right soaking (Zone 4)

- Furnace regulation loops comprise next controls:

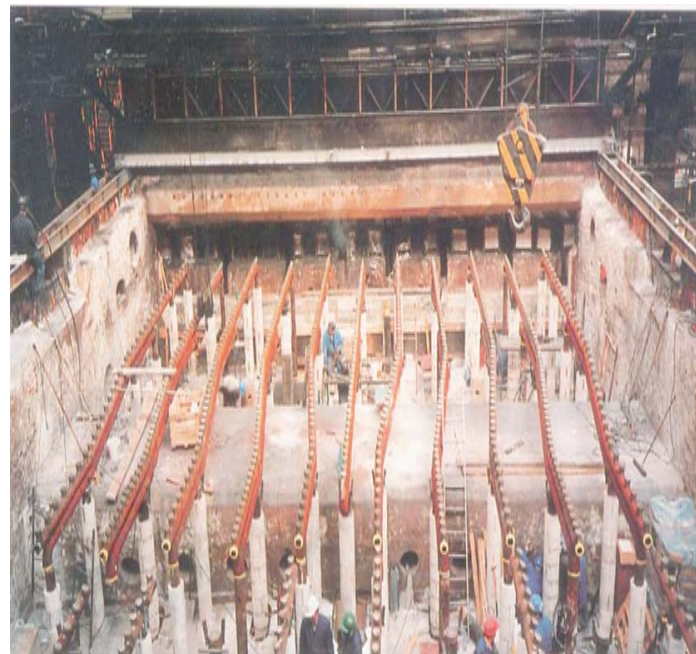
- Zone 1: temperature loop, air&gas flow loop (crossing regulation)
- Zone 2: Ditto
- Zone 3: Ditto
- Zona 4: Ditto
- Common loops:

- * General conditions for heating
- * Burners control
- * Furnace pressure regulation
- * Air dilution regulation
- * Air scaping regulation
- * Combustion air regulation

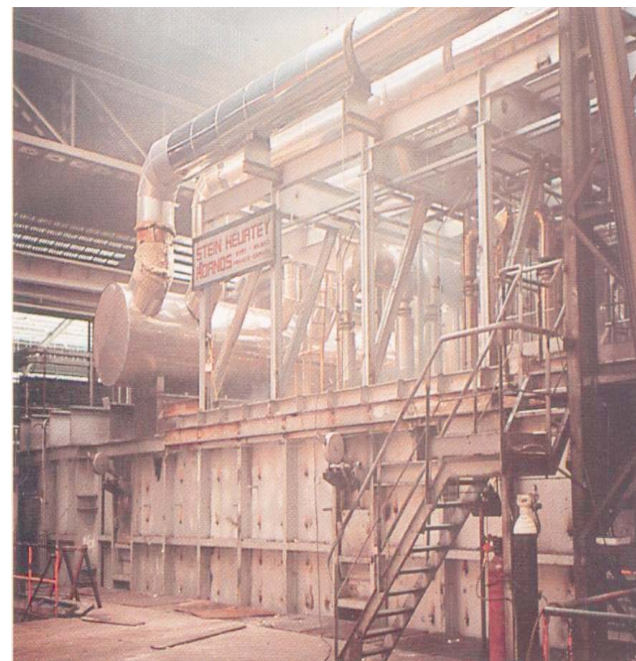
Control Diagram



Mask representing parameters, real values and trending of variables for each regulation loop



Refractory beams
Inner view



Side view

Regulation loops for heating zone

