Arc Furnace Control

CAF- Beasain (Spain)

Scope of Supply

Bascotecnia Steel is responsible for the complete turnkey electrical project:

- Project management
- Basic and detailed engineering
- Supply of electrical equipment, drives and control:

  AC Motor control centre
  Metering panel
  Electrode and auxiliary drive control system - SISTEAM M
  Melting control system
  Operation and display system - SISTEAM OPERATOR
  Control desk
  Sensors

- Electrical erection
- Commissioning

Main Control Desk

Main Parameters Display

Melting Furnace

Auxiliary drives and Electrodes Control Equipment

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

The Equiment

The main functions of the furnace control equipment are as follows:

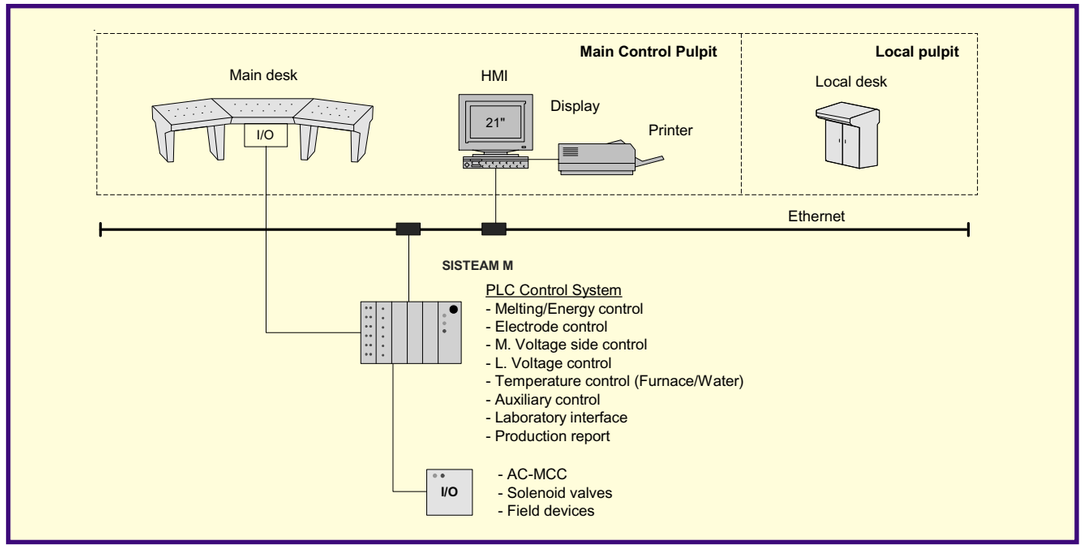
- Control of the transformer's high voltage primary side, electrical protection and metering
- Low voltage auxiliary control
- Energy consumption control
- Temperature control at roof and water cooling
- Electrode control
- Melting process supervision and control, including the following:

  * Number of the next heat
  * Melt profile
  * Preparation or parameterising of process set points
  * Real-time process tracking
  * Reception and recording of analyses
  * Display and recording of events
  * Detection and reporting of stoppages
  * Preparation and printing of heat reports

Technical Features

Electric Arc Furnace type:	**Taphole**
Typical consumption:	370 kW/h/Tn
Furnace body diameter:	4.37 m
Capacity:	40 Tn
Electrode circular diameter:	1.05 m
Electrode diameter:	400 mm
Electrode-wall distance:	1.5 m
Number of castings / day:	6 (nocturnal hours)
Melting time:	50 minutes
Heating time:	20 minutes
Idle time:	20 minutes
Number of scrap buckets:	3
Electrical Features:	
- Power supply:	AC., three-phase, 50 Hz
- Transformer power:	36 Mva (TRPHF type)
- Primary voltage:	30 Kv
- Secondary voltage:	177-430 V (13 steps)
- Short-circuit voltage:	5.41% Vac to 430 Vac 6.83% Vac to 389 Vac
- Connection:	star-delta

Automation Control Diagram



The modifications were carried out during the summer of 2001, coinciding with the annual stoppage programmed. The start-up, which was fully satisfactory, took place at the beginning of September 2001.

The most outstanding features include:

- Better electrode control, using PLC control and fast hydraulic actuators
- Complete parameter control and detailed tracking of melting processes
- Automatic casting reports
- Increased operational functionality of the furnace
- Better rates of energy consumption, electrode consumption and refractory wear

Main Control Desk

Local Desk

Molds Area

Auxiliary Drivers

Power Single Line Diagram