

Scope of Supply

Ingeteam Power Technology, S.A. Industrial Systems Division 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

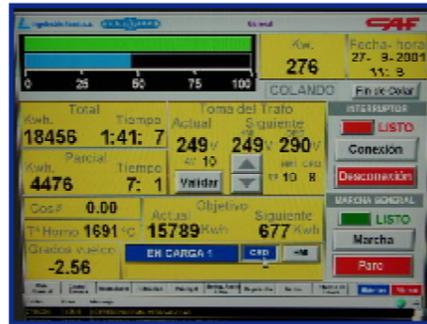
- Electrical installation
- Commissioning



Main Control Desk



Melting Furnace



Main Parameters Display

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



Auxiliary drives and Electrodes Control Equipment

Ingeteam

Arc Furnace Control CAF- Beasain (Spain)



The Equipment

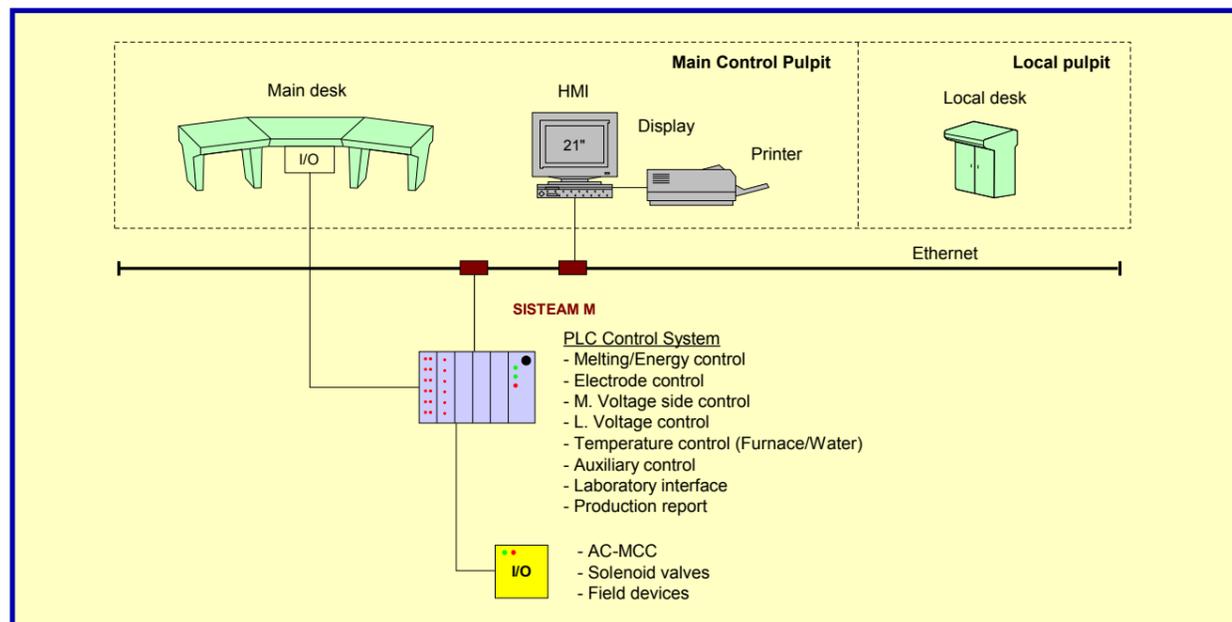
In early 2001, as part of its steel plant modernisation plan, CAF (Beasain) has commissioned Ingeteam Power Technology, S.A. Industrial Systems Division to design, supply and install the state-of-the-art electrical equipment to replace the electric furnace's melting control equipment.

CAF has subcontracted Sarralle to carry out the mechanical modifications to the design and engineering, and to supply the hydraulics equipment for the electrode control and furnace movement drives. The complete reform coordination will be carried out by Sarralle.

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

Automation Control Diagram



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

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



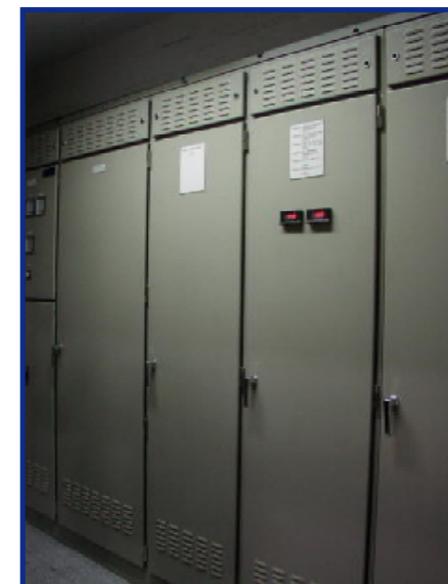
Main Control Desk



Local Desk



Molds Area



Auxiliary Drivers

Power Single Line Diagram

