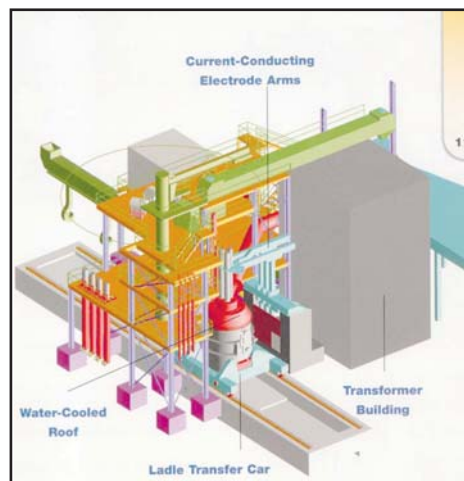


Scope of Supply

Power Technology,S.A. Industrial Systems Division out the project including:

- Management and coordination
- Detail and basic engineering
- Supply of electrical equipment and control:
 - ✓ AC MCC
 - ✓ Measurement panels
 - ✓ Auxiliaries and electrode control system, Sisteam M
 - ✓ Refining control system
 - ✓ Operation and visualization system, Sisteam OPERATOR MT
 - ✓ Central control desk
- Electrical Installation
- Commissioning



Auxiliary drives and electrode Control Equipment

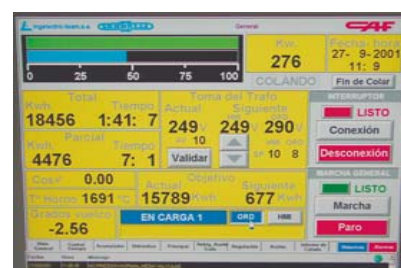
After-Sales Service

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

Ingeteam

40 Tn Ladle Furnace

CAF BEASAIN (SPAIN)



Main parameter display

www.ingeteam.com
industry@ingeteam.com

Ingeteam

Ingeteam
industry

Description

- During the 2nd half of year 2002, CAF company located in Beasain (Spain) was awarded a turn-key order of a 40 Tons Ladle Furnace to the main contractor Sarralle Equipos Siderúrgicos. Ingeteam Power Technology, S.A. Industrial Systems Division, as main electrical supplier, carries out the refining furnace control of the mentioned project.
- In addition to this control, Ingelectric provides also the upgrading control of the vacuum station as well as the additives dosing control. CAF is a leading company within the field of Railway Machine manufacturing.
- The Steel Plant has been upgraded in two different stages. The first one concerned the modernization of Electrical Arc Furnace, which was carried out by Ingelectric two years ago. The second stage refers to the mentioned Ladle Furnace supply and its associated auxiliary plants.
- With the new control concept, Ingelectric provides a state-of-the-art technology for the whole control and monitoring of the Steel Melting Shop.
- In general, the complete control and regulation functions for the furnace are carried out being mentioned the following major items:
 - Power primary network control
 - Transformer control
 - Electrodes control
 - Refining profile setup
 - Energy consumption control
 - Hydraulic movements control
 - Additives dosing control
 - Vacuum station control
 - Interlocking and emergency strategy
 - Other auxiliary control
 - Final refining report
 - Interface to Melting Shop Control

Technical Features

- Ladle Furnace:**
 - Typical consumption: 30 kW/h/Tn
 - Ladle outer diameter: 2,36 m
 - Capacity: 40 Tn
 - Steel type: Carbon and alloys
 - Electrode diameter: 305 mm
 - Number of heat/day: 6 (at night hours)
 - Ladle melting type: 30 minutes
 - Vacuum time: 20 minutes
 - Electrical features:
 - Incoming feeding: a.c. III 50 Hz
 - Transformer power: 8 MVA
 - Primary voltage: 30 kV
 - Secondary voltage: 243-159V (6 benches)
 - Shortcircuit voltage: 8,5%
 - Connection: star-delta (closed inside)
 - Cooling: OFWF

Advantages

- Ladle Furnace is foreseen to work together with the existing Melting Shop Furnace and Vacuum Station. This implies some advantages mentioned below focused to the Mill.
 - Reduction of cycling time in melting shop. More functional operation
 - Productivity increase
 - Reduction of refractory in melting shop
 - Reduction of electrode consumption
 - Improvement of the power compensation due to the long arc mode of operation by synthetic slags
 - Improvement of steel quantity

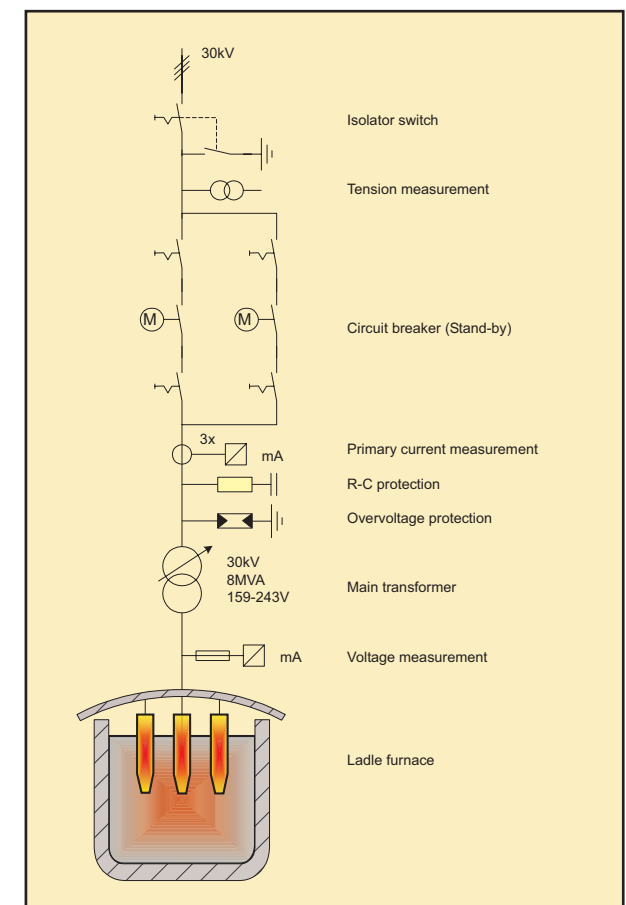


Main control desk

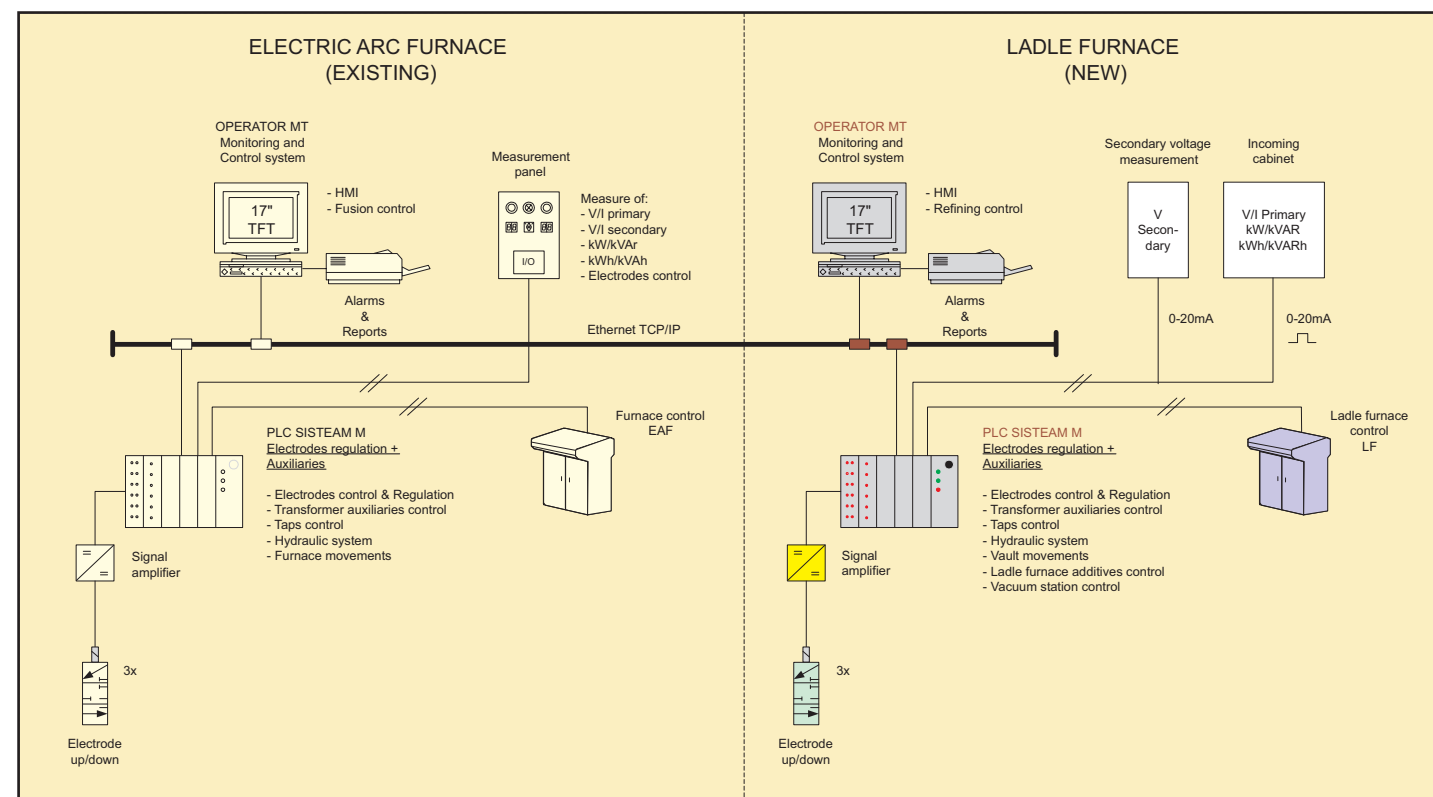


Control desk

Power Single Line Diagram



Control Diagram



Auxiliary Drives



Ingot area