**Scope of Supply**

**Bascotecnia Steel** is responsible for the complete turnkey electrical project:

- Project management
- Basic and detailed engineering
- Supply:
  - 22 kV medium voltage switchgears
  - Power transformers
  - Power compensation equipment at 22 kV
  - Low-voltage distribution centre
  - Main motors – manufactured by **INDAR**
  - Main DC drives – **MOTOCON DC**
  - Auxiliary AC drives – **MOTOCON AC**
  - AC motor control centre
  - Field sensors
  - UPS and voltage distribution
  - Control desks and local panels
  - Integrated control equipment (**SISTEAM M**)  
    - Control and supervision equipment (**OPERATOR MT**)  
- Erection
- Commissioning

(*) **MOTOCON DC, MOTOCON AC, SISTEAM M AND OPERATOR MT** is equipment designed and manufactured by Ingelectric-Team.

**Combined Bar and Wire Rod Mill**

**AG SIDERURGICA BALBOA (Spain)**
The Equipment

Mill type: Continuous Mill with 18 Rolling Stands
- 9 horizontal stands
- 5 vertical stands
- 4 convertible H/V stands
- 1 wire rod unit
- 1 cooling bed
- 1 carrousel

Mechanical supplier: Lagun Artea S.A.

Base material: 140x140x12.000 mm billet

Finished product:
- Roll: 5.5 - 12 mm (max. 65mt/sec)
- Bars: 8 - 50 mm
- Flats: 30 x 4 mm minimum
  130 x 20 mm maximum
- Angles: 30 x 30 mm minimum
  70 x 70 mm maximum
- T profiles: 30 x 30 mm minimum
  70 x 70 mm maximum

Commercial bar length: 6, 9, 12 m.

The installation consists of:
- 1 reheating furnace with a 90 tons/h capacity
- 1 continuous mill 18 stands
- cropping shears
- 1 dividing shear
tempcore
- 66 m. cooling bed
- complete evacuation plant

The wire rod outlet consists of:
- 1 block with 8 stands
- 1 pinch roll and laying head device
- controlled cooling of spirals on roller tables
- tool carrousel

Slitting rolling will be used for diameters 8 and 10 from stand 16 onwards.

The main functions of the mill's automation and electrical equipment include:
- controlling the main substation
- loading the furnace
- regulating and controlling the reheating furnace
- mill's speed/tension/loops
- controlling the crop shear
- controlling the cut-to-length
- controlling the sheet length
- controlling the bar evacuation
- controlling the wire rod evacuation
- controlling the carrousel
- controlling the water treatment plant

The stands are driven by DC motors and are controlled by four-quadrant thyristor equipment. The control equipment, based on PLC systems with high-speed multiprocessors, control the regulation process of the mill.

Some of the most outstanding speed control functions include:
- minimum tension
- regulation of position and of loops between stands
- continuity between stands,
- shear cutting, and cutting optimisation.

The mill also includes comprehensive HMIs (Human Machine Interfaces) in each control cabinet. Redundant operation and display systems are interchangeable.

Technical Features

Automation Control Diagram

Mill Lay-out

Single Line Diagram