

## Scope of Supply

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

Power installed: 19,000 KVA

- Project management
- Basic and detailed engineering
- Supply:

- 34.5 kV medium voltage switchgears
- Power transformers
- Power compensation equipment at 34.5 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 auxiliary control voltage distribution
- Control desks and local panels
- Integrated control equipment (**SISTEAM M\***)
- Control and supervision equipment (**OPERATOR M\***)

- Supervision of electrical erection
- Commissioning

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



Auxiliary Cabinet



Local Control Panel



DC Motors Mill Stands



Main Control Pulpit

## After-Sales Service

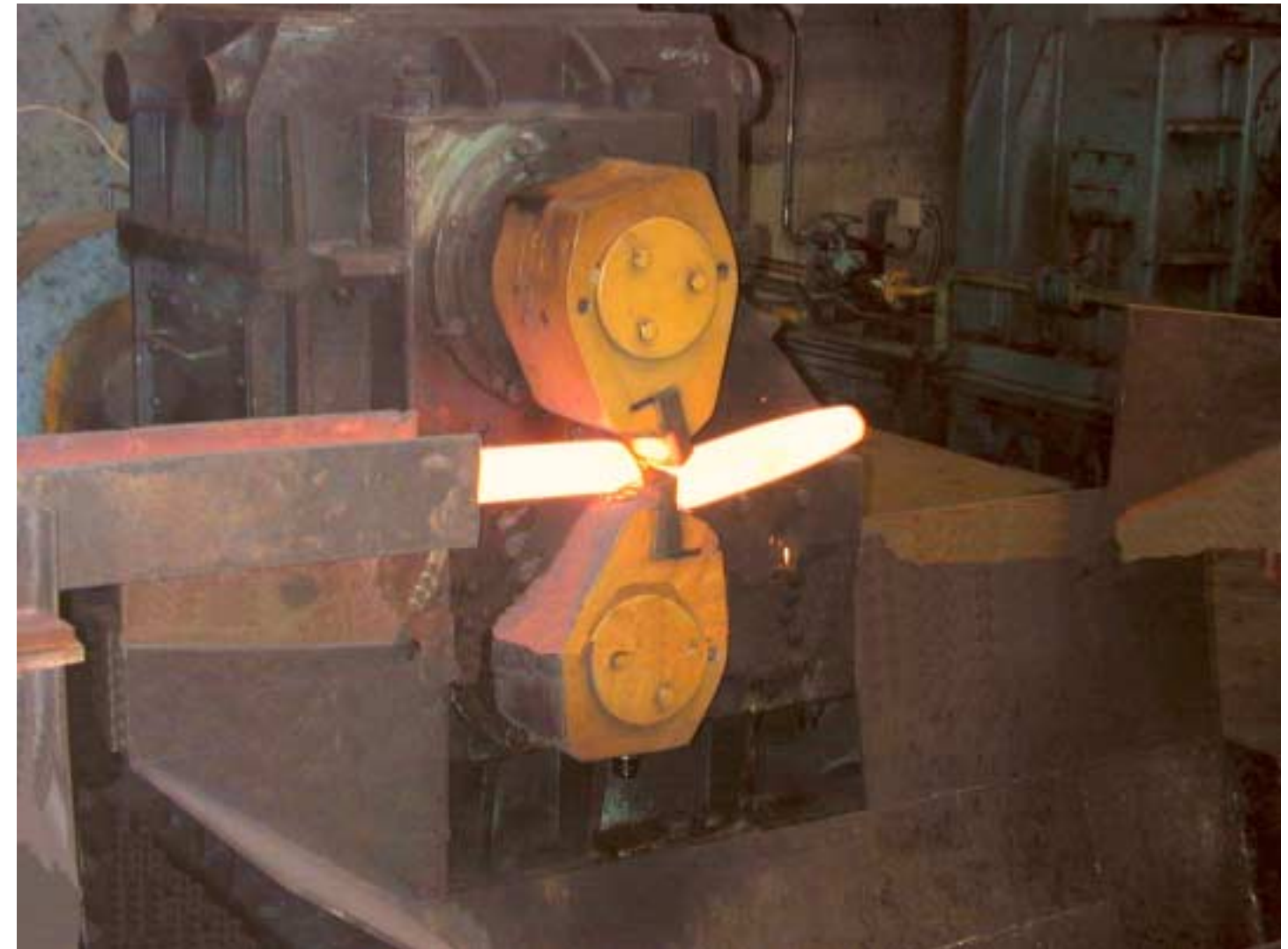
- Hotline
- Spare parts in 24 hours
- Direct line with our technical staff
- Remote communication from our offices to the factory automation network

**Industry Division**



## Bar and Section Mill

### LAMINADORA COSTARRICENSE (Costa Rica)



# The Equipment

The installation is composed of :

- \* 1 80 ton/h reheating furnace,
- \* 1 continuous mill with 18 horizontal, vertical, and convertible stands,
- \* 1 cropping shears,
- \* 1 dividing shear,
- \* tempcore,
- \* 1 66m cooling bed
- \* complete evacuation.

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 and incorporate the following:

- speed/tension loops
- crop shear
- cut-to-length
- bar evacuation
- water treatment plant (AXON)

The stands are driven by DC motors and controlled by four-quadrant thyristor equipment. The control equipment, based on PLC systems with fast multiprocessors, control the cascade regulation of the mill's speed. Some of the most outstanding speed control functions include

- \* minimum tension
- \* regulation of position
- \* loop control between stands
- \* continuity between stands
- \* cutting shear
- \* cutting optimisation

The mill also includes HMIs (Human Machine Interfaces), redundant operation and display systems that are interchangeable. Hence, if one of them fails, another one takes control of the machine. These systems communicate with the PLCs via an industrial Ethernet network.

It is possible to intercommunicate with other level 2 systems that are more technically advanced in terms of controlling and tracking the process, or with systems at a higher level in the plant.

# Technical Features

Mill type: **Continuous Mill with 18 Rolling Stands**

- 9 horizontal stands
- 6 vertical stands
- 3 H/V convertibles stands
- cooling bed

Mechanical supplier: **BASCOTECNIA Group (Lagun Artea S.A.)**

Base material: 150x150x12,000 mm billet

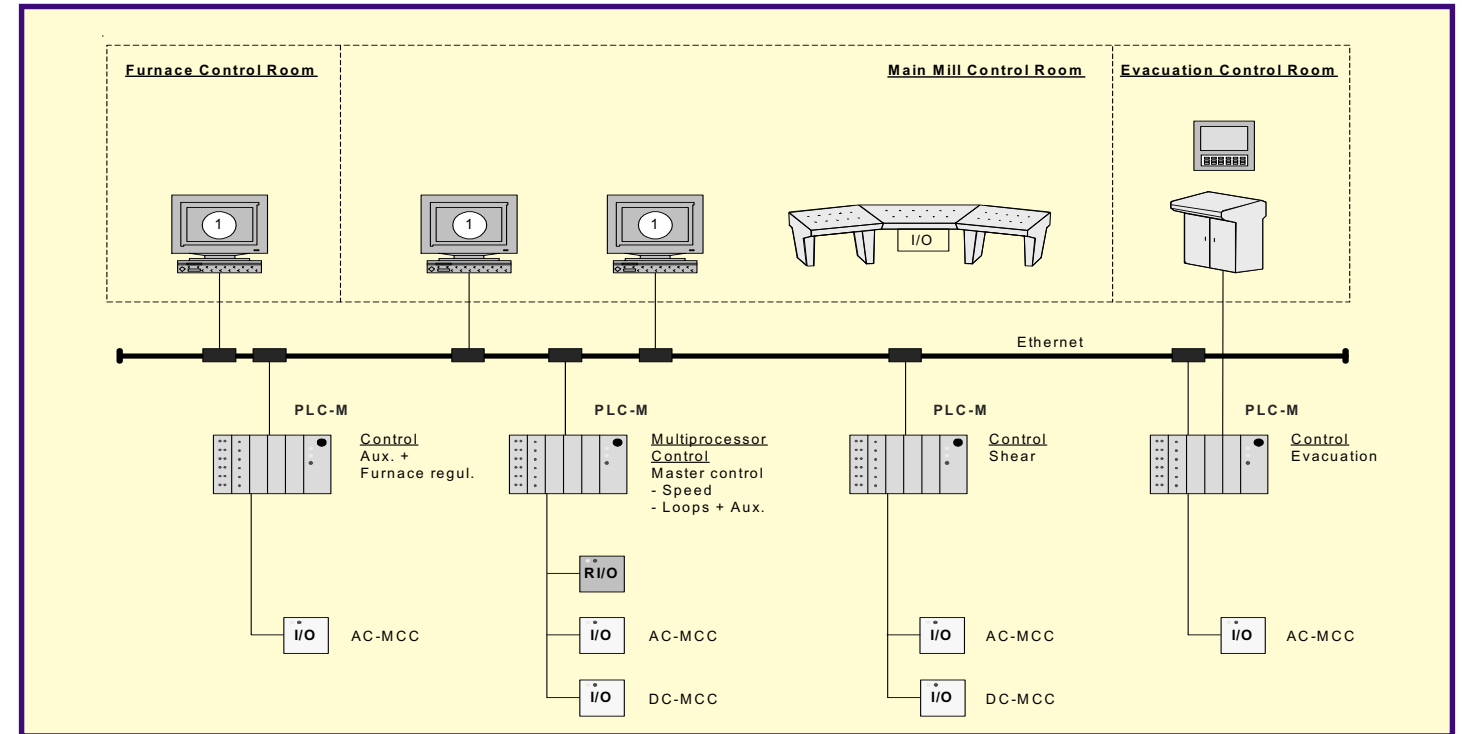
Finished product:

- Bars: 3/8" - 2" mm
- Flats: 40 x 5 mm minimum  
75 x 9 mm maximum
- Angles: 30 x 30 mm minimum  
70 x 70 mm maximum
- U profiles: 30, 40, 50, 60, 80, 100 mm  
3" y 4"
- Square: 14 - 25 mm
- Beam: 80 mm  
4" maximum

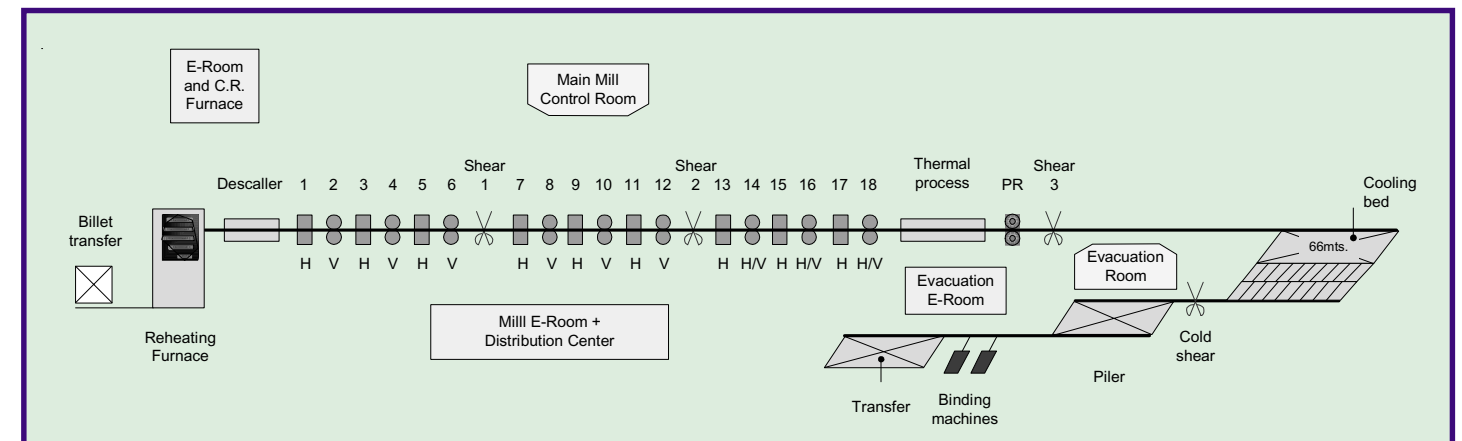
Commercial bar length: 6,9,12 m.



# Automation Control Diagram



# Mill Lay-out



# Single Line Diagram

