

Scope of Supply

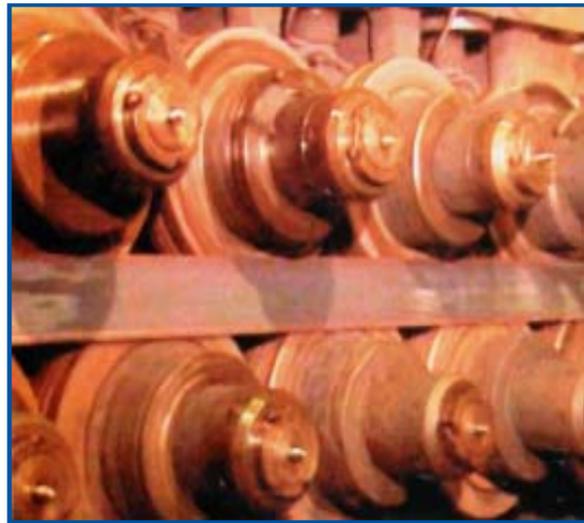
Ingeteam Power Technology, S.A., Industrial Systems Division is responsible for the complete turnkey electrical and automation project:

- Project management
- Basic and detail engineering
- Supply of:
 - AC MCC and VVVF MCC (Motor Control Centers)
 - AC main and auxiliary motors - MOTOCON AC*
 - Peripheral devices
 - Main control desks
 - Basic automation for general purposes
 - DH and R/I/O communication networks
- Training
- Electrical Installation
- Commissioning

(* MOTOCON AC is equipment designed and manufactured by Ingeteam Power Technology, S.A, Industry Division - Steel Solutions



Auxiliary Cabinet



Straightening Rolls

After-Sales Services

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

Ingeteam

Light Section Straightener Machine

ARCELORMITTAL Bergara (Spain)



Process Description

In early 2002, the company ArcelorMittal Bergara commissioned Ingeteam Power Technology, S.A, Industrial Power Division to provide the turnkey supply of the electrical and automation equipment for a Profile Straightener Machine.

This machine with an up-to-date design and a higher straightening capacity will replace the existing ones in the profiles rolling mill.

The straightener machine is composed of 10 horizontal rolls. The 5 upper rolls are driven by electrical motors to give the necessary driven and the 5 lower rolls with non-driven rolls. The machine has as well two sets of inputs/outputs vertical rolls. The upper and lower rolls have electrical drives for axial adjustments. The lower rolls have also vertical adjustments in height.

Lower horizontal rolls

- ◆ Nominal diameter: 650 mm.
- ◆ 50 mm individual axial regulation controlled by a 2,2 kW motor-reductor.
- ◆ Edges mounted upon radial and axial bearings.
- ◆ Individual vertical regulation by means of 3 kW motor-reductor and continuous-crown sets and spindles.
- ◆ Regulation level between edges of upper and lower rolls:

Max.: 700 mm
Min.: 480 mm

Upper horizontal rolls

- ◆ Nominal diameter: 650 mm
- ◆ 50 mm individual axial regulation controlled by a 2,2 kW motor-reductor.
- ◆ Edges mounted upon radial and axial bearings.
- ◆ Individual monitoring by motors of 110 kW, 0..1000...1900 rpm and epicyclic reductor.
- ◆ Input and output vertical rolls, driven by 4 kW motor-reductors
- ◆ Vertical regulation (opening/closure) independent for each roll, by means of wheels and spindles of electrical drive
- ◆ The machine is placed upon a metallic bedplate with wheels and with the purpose of being introduced or moved from the production line.



AC Frequency converters.

Technical Features

Electrical Characteristics

- ✓ Thyristors drives by means of:

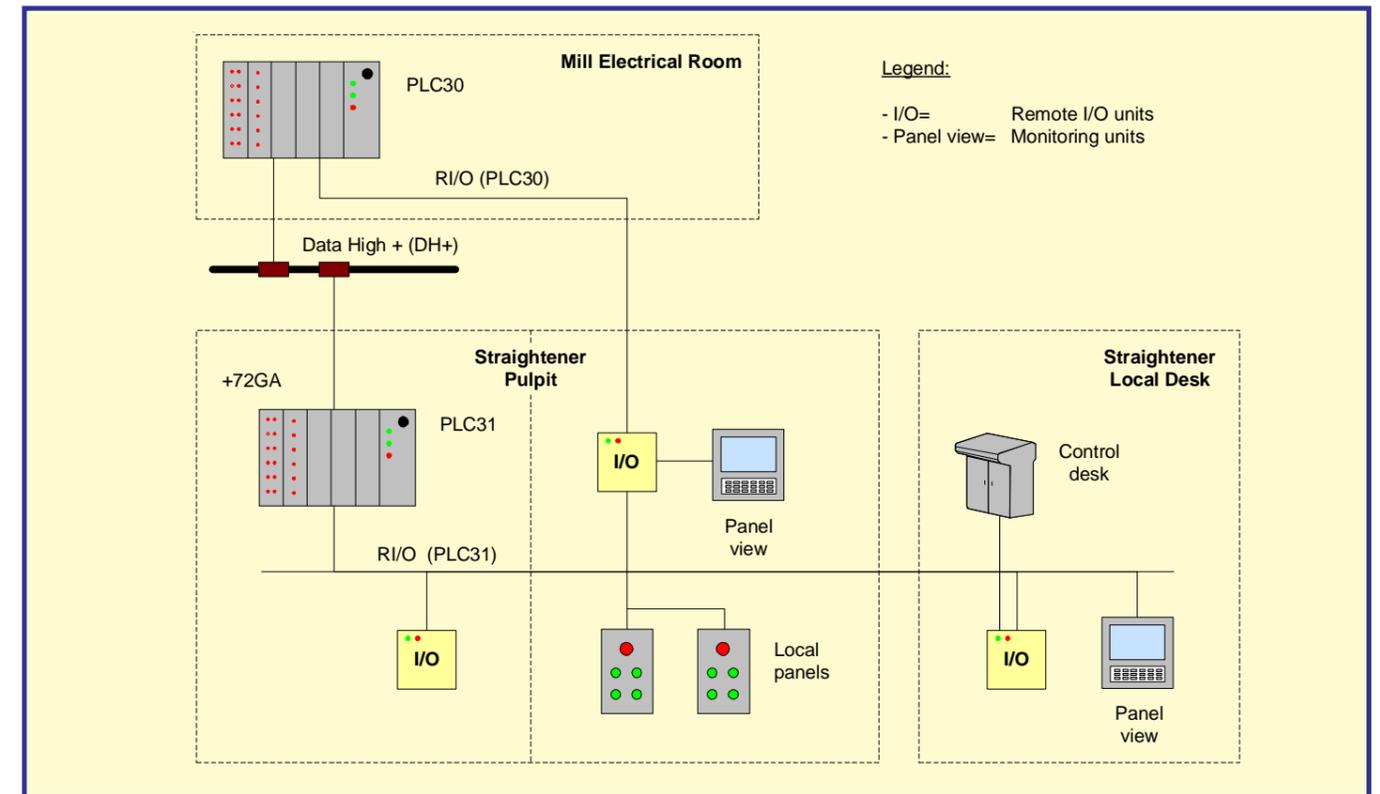
5x A.C. motors (squirrel cage):
 * 110 kW
 * 0-1000-1900 rpm
 * 380 V, 50 HZ, 3-phase
 * 197 A
 * S1
 * IP54
 * IM 1001

- ✓ Control position of horizontal and axial adjustments by PLC and position transducers based on absolute encoders.
- ✓ Continuous monitoring with screens, PanelView type (2 units).
- ✓ Communication by standard bus, DataHigh type and R/I/O for input/output adquisition units.

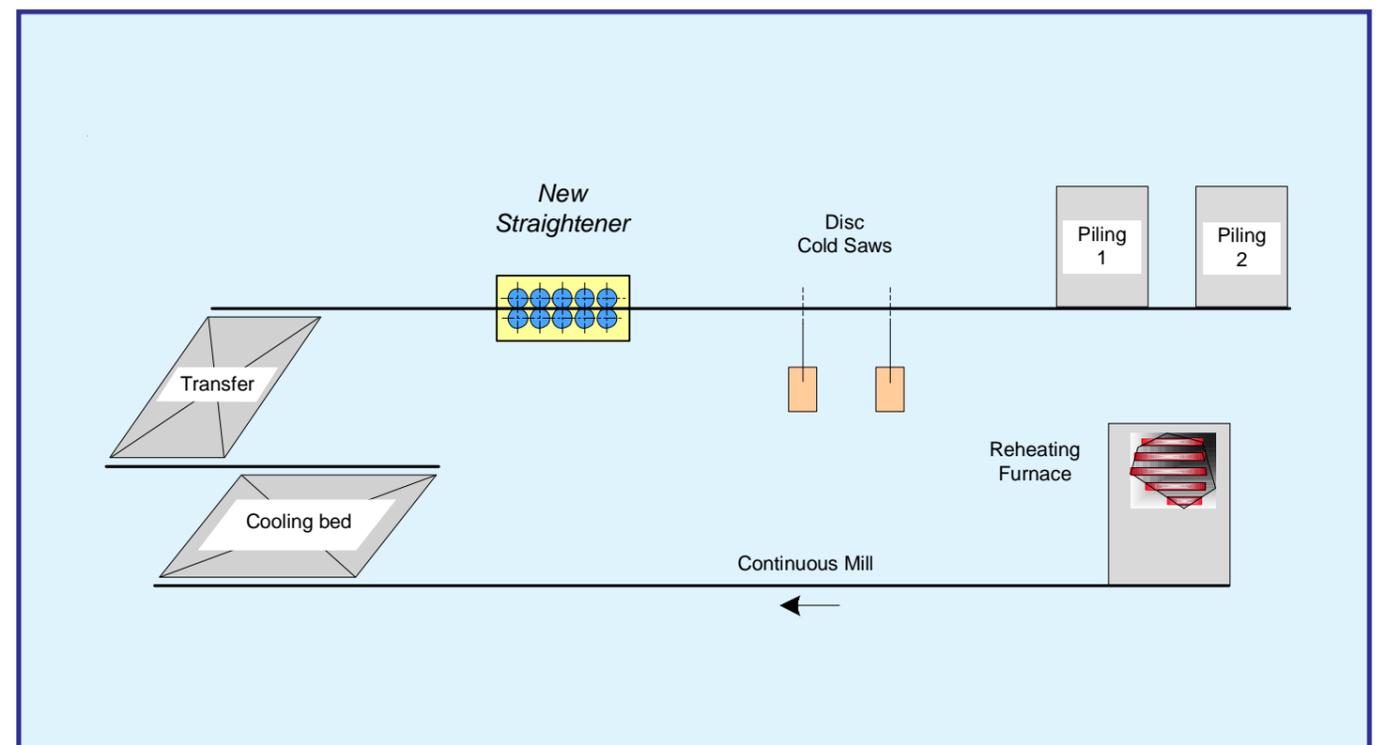
Straightener Machine Characteristics

- ✓ Straightening capacity: resistant module 130 cm³
- ✓ Profiles range: IPN, IPE-260
HEB 160
Angle 150
UPN 260
- ✓ Max. straightening speed: 8,30 m/seg.

Control Diagram



Mill Lay-out



The MOTOCON AC is a high performance frequency converters equipment with intermediate voltage circuit. The supply consists of a variable voltage and frequency three-phase output that permit to vary with great precision the three-phase asynchronous motors speed and torque. The control system is entirely digital with the consequent reliability increase.

Main features:

Type: MOTOCON AC
 Power: for 5,5 to 110 kW
 Voltage: 380 Vac
 Rectifier: Diode type
 Inverter: IGBTs