

Scope of Supply

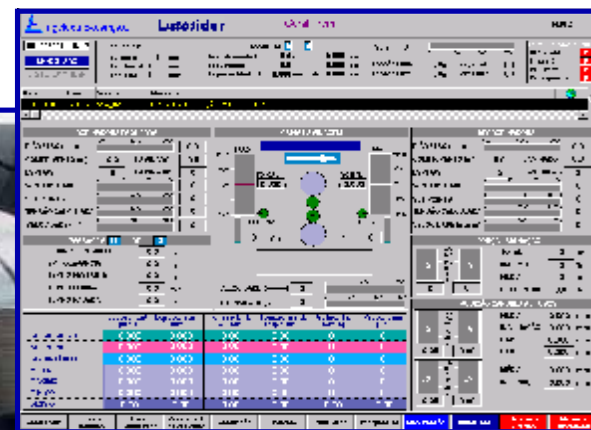
Ingeteam Power Technology, S.A. Industrial System Division is responsible for the complete "Turnkey" electrical project:

- Project management
- Basic and detail engineering
- Supply of electrical equipment, drives and process control systems:
 - Low voltage distribution centre
 - Main DC drives - MOTOCON DC*
 - Auxiliary equipment - MOTOCON DC*
 - AC motor control centre
 - Field sensors
 - Integrated control equipment - SISTEAM OCS*
 - Supervision and control equipment - OPERATOR OCS*
- Installation supervision.
- Commissioning.

(*) MOTOCON DC, SISTEAM OCS and OPERATOR OCS is equipment designed and manufactured by Ingeteam Technology.

Lusosider supplied the following measuring equipment:

- Strip thickness gauges



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

Ingeteam

4 High Reversing Cold Rolling Mill

LUSOSIDER - Paio Pires (Portugal)



Process Description

Lusosider, the Portuguese steel producer, shared by USINOR and CORUS, carried out the electrical modifications of two of the three existing cold rolling mills at its plant in Paio Pires (Portugal).

Lusosider commissioned Ingeteam Power Technology, S.A. Industrial Systems Division to design and install the state-of-the-art electrical and automation equipment.

The aims of these modifications are the following: to increase the production of cold rolled coils, to improve the coils' quality, to replace obsolete equipment and to centralize the different units of production by the installation of latest generation visualization and control systems.

The modifications carried out by **Ingeteam Power Technology, S.A.** include:

Quarto Mill Nr. 1

- Speed master control
- Automatic thickness control AGC
- Hydraulic gap control HGC
- Operation and visualization systems and data logger
- Fault system

Quarto Mill Nr. 2

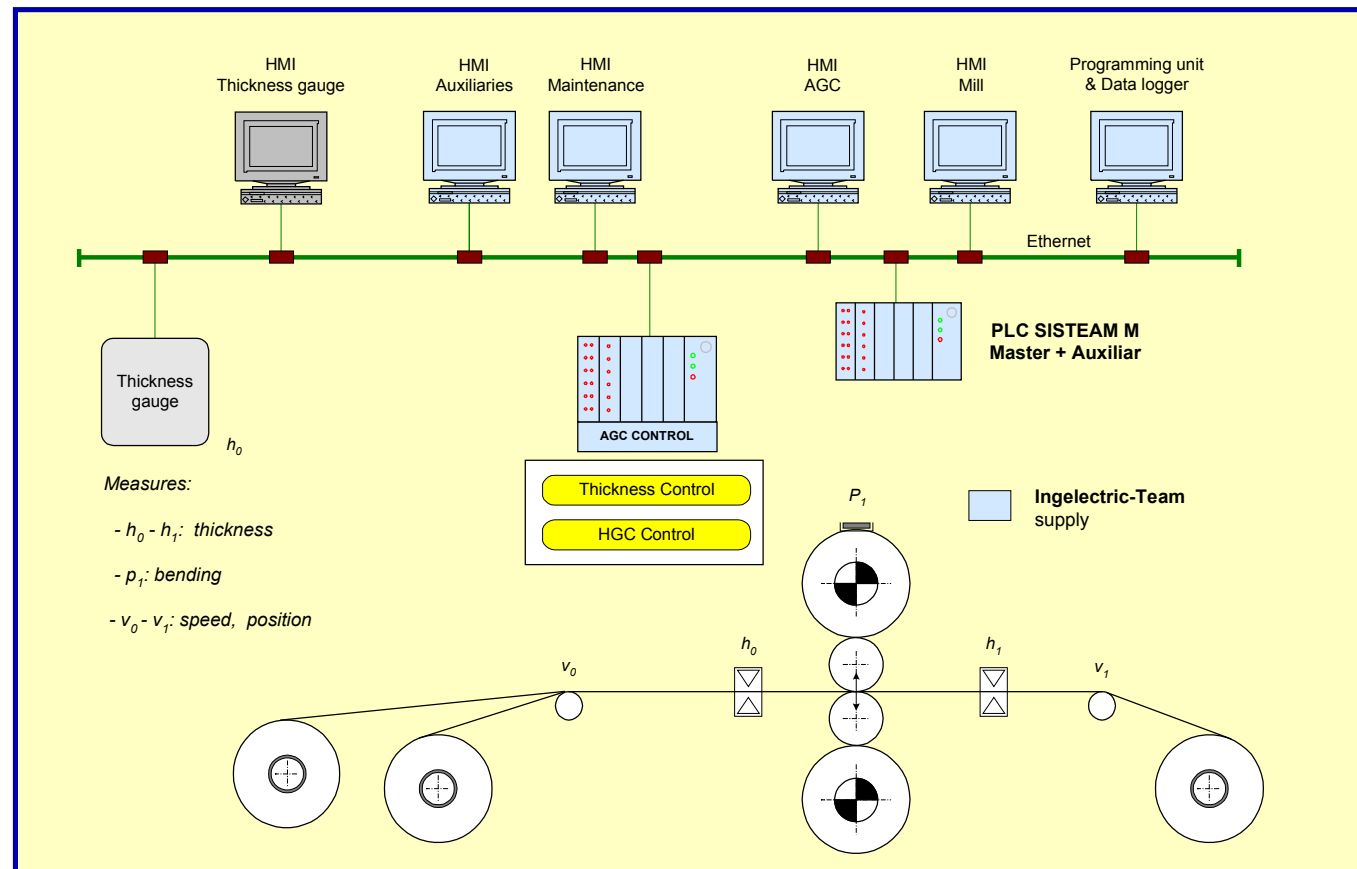
- Speed master control
- Automatic thickness control AGC
- Hydraulic gap control HGC
- Mill drives control
- Supply of thyristor converters for DC motors
- Supply of starters for AC motors
- Supply of programmable logic controllers (PLCs)
- Supply of operation and visualization systems (HMIs) and data logger
- Fault system

Technical Features

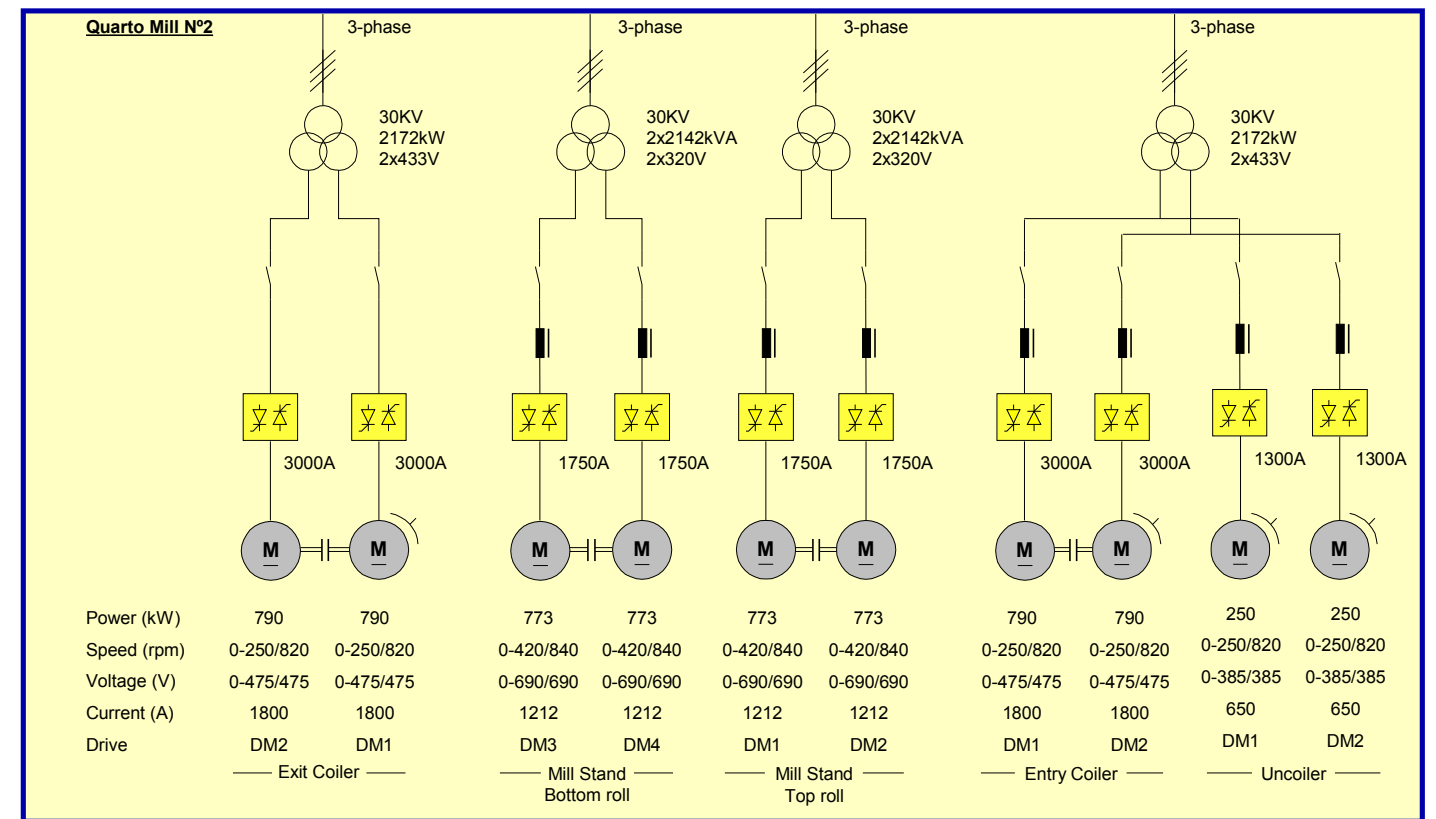
MILL NR. 1 AND 2 SPECIFICATIONS

- Type:	4 High Reversing Cold Mill	
	Mill Nr. 1	Mill Nr. 2
- Working roll: diameter/width (mm)	420 Ø X 1220	455 Ø X 1730
- Back-up roll: diameter/width (mm)	1345 Ø X 1220	1420 Ø X 1730
- Bearing type:	Morgoil	
- Total roll force:	2300 Ton	
- Rolled material:	Carbon steel	
- Material width: minimum (mm)	600	600
maximum (mm)	1060	1575
- Material thickness: minimum (mm)	0.15	0.25
maximum (mm)	3.00	3.00
- Maximum speed (m/min):	1000	700
- Gearbox ratio:		
Uncoiler	2.67/1	1.80/1
Coiler	1.2/1	1.7/1
Mill stand	1.18/1	1.69/1

Automation Control Diagram



Power Distribution



	Uncoiler	Entry/Exit Coilers	Mill Stand (Top-Bottom Roll)
Pn (KW)	2 x 250	2 x 790	4 x 773
rpm	250/820	250/820	420/840
Un (V)	385	475	690
In (A) Motor	650	1800	1212
In (A) Converter	2 x 1300	2 x 3000	4 x 1750

HGC AND AGC SPECIFICATIONS

	Mill Nr. 1	Mill Nr. 2
- Hydraulic cylinder: diameter (mm)	Ø 780	Ø 780
stroke max. (mm)	85	85
- System pressure (bar):	240	280
- Capsule pressure (bar):	210	245
- Maximum force (Tn):	1000	1150
- Maximum speed (mm/s):	4.5	4.5
- Servovalve type: (2 per capsule)	Moog E760574 65 lt/min to 70 bar	
- Position transducer:	Sony Magnescale lineal, 100 mm	
- Pressure transducer:	Schaewitz 791 0-5V → 0-5000 psi	
- Deflector roll diameter (mm):	200	250
- X-ray gauge:	Eberline, 0.15 – 5 mm 10 ms response	



DC Motor Control Center