

Scope of Supply

Ingeteam Power Technology, S.A, Industrial Systems Division carried out the complete turn-key project:

- Total installed power 4.150 kVA
- Project coordination.
- Basic and detail engineering.
- Supply of Electrical Equipment, drives and process control system:

Low Voltage Distribution Boards.

Main Drive Motors -reused-

Main Drive converters based on DC technique MOTOCON DC. (*)

AC Motor Control Center (MCC)

Peripheral devices.

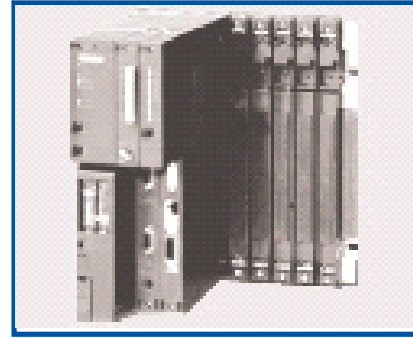
Process Control PLC systems (SIMATIC S7-400F).

Operation and Monitoring systems (HMIs) (type ifix) -Customer Supply-.

Technological Control Systems (HGC).

- Electrical Installation.
- On site commissioning and optimisation.

(*) MOTOCON DC, is equipment designed and manufactured by Ingeteam Power Technology, S.A.



PLC Simatic S7-400F



Entry Coiler

After Sales Services

- Hot-line service.
- Spare part availability in 24 hours.
- Direct dial to our engineers.
- Remote communication from our headquarters to plant automation system by means of IngeRAS.



Control Desk

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Electrical Revamping SKP Mill - Stainless Steel

Ugine & ALZ - Arcelor Group (Genk - Belgium)



Ingeteam

Industry

Project Description

Ugine & Alz, a company belonging to ArcelorMittal, awarded Ingeteam Power Technology, S.A, Industrial Systems Division in the spring of 2005, the electrical revamping of the Skin Pass Mill for stainless steel in its plant of Genk (Belgium).

The 2-High Temper Mill, which was originally built by Schloemann in 1969, is designed for processing Austenitic and Ferritic stainless steel.

Due to an aging and obsolete electrical and automation equipment, the company decided to realize the revamping, which also included completely new hydraulics by Rexroth, with the goal of:

- Assuring zero electrical breakdowns.
- Automating the mill with updated systems.
- Providing a Supervision and Monitoring interface to the operators.
- Implementing the current practises of machine safety.

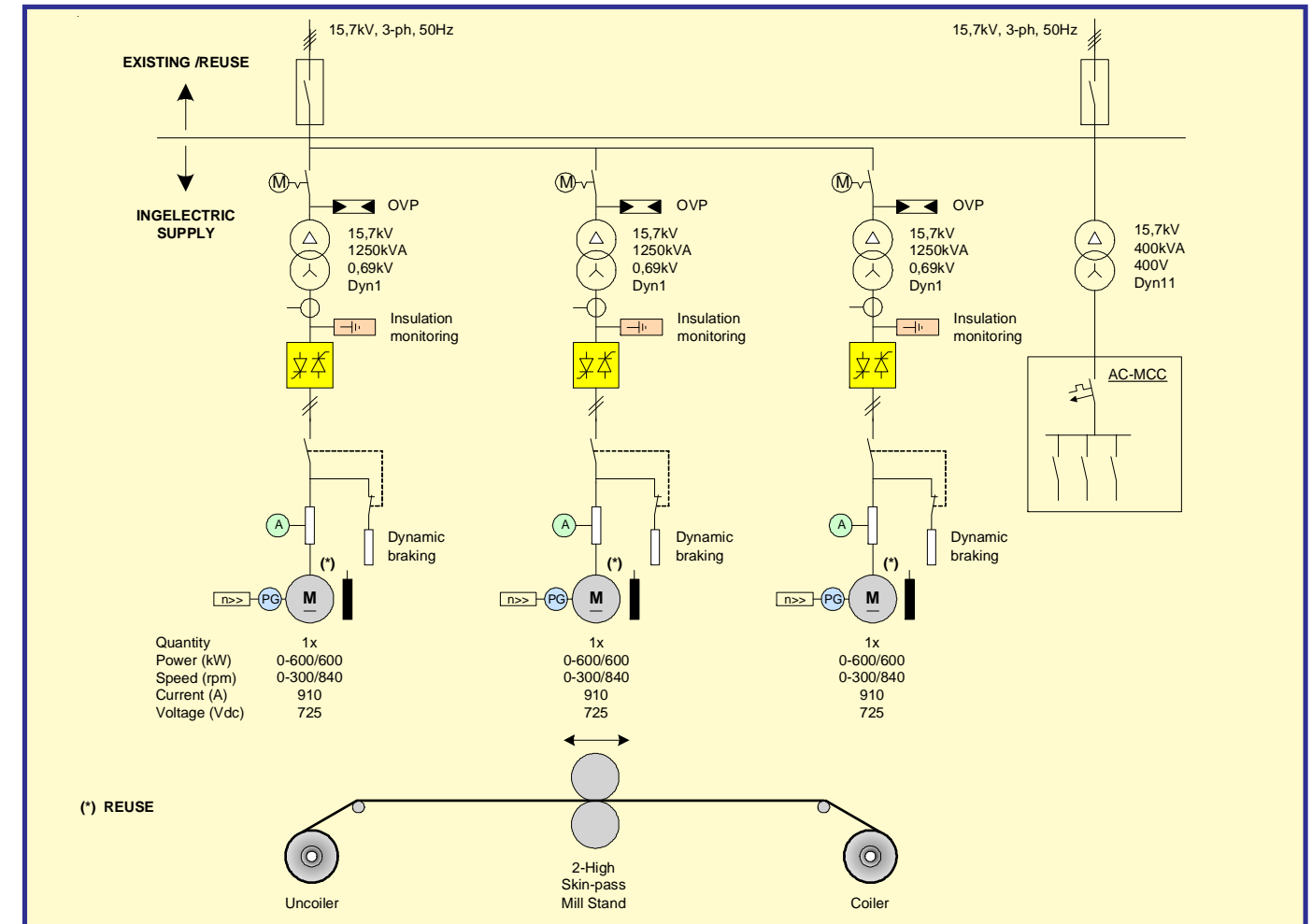
The mill features a 2-High Mill Stand with $\phi 800$ mm work roll, providing a roll force of 10.000 kN. Two reversing reels provide the means for uncoiling/coiling operation of coils up to 20 Ton.

Additionally, the mill is also equipped with entry and exit coil conveyors and coil cars, paper coilers, guiding tables, belt wrapper and media systems.

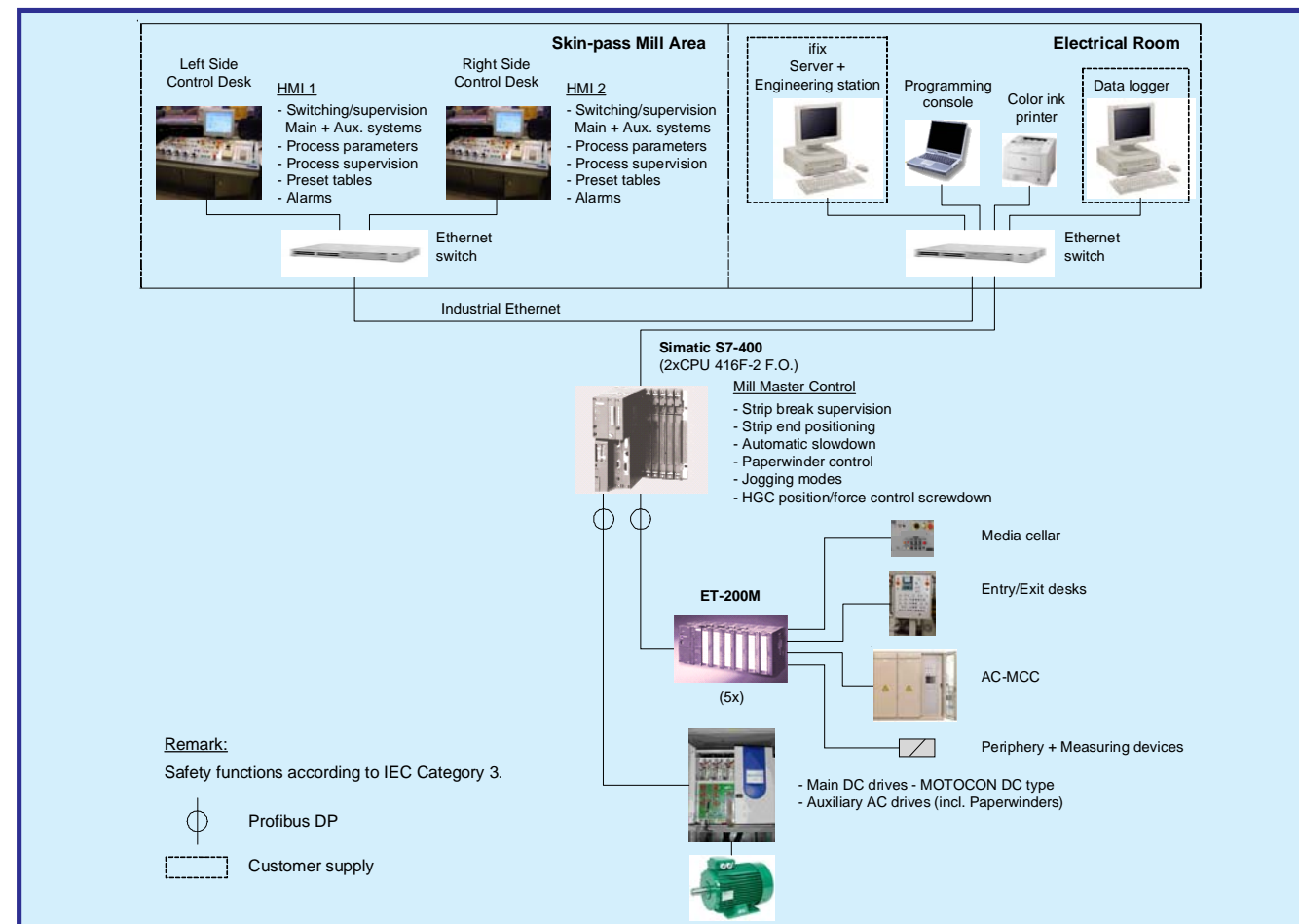
Main Technical Characteristics

- Mill type: 2-High Temper rolling (reversing) Mill (Schloemann) 1969
- Material to be rolled: Austenitic and ferritic stainless steel (AISI 300 & 400 series) - cold rolled
- Strip . width max: 1560 mm (original 1350 mm)
. width min: 450 mm
- Strip thickness: 0,30 - 5,00 mm
- Rolling speed: 300 m/min
- Strip tension: 12-120 kN (106kN with diam. 1870 mm)
- Rolling force: 10.000 kN
- Elongation . Austenitic: 0,2 - 0,8 %
. Ferritic: 0,8 - 2,1 % (in 3 to 5 passes)
- Coil . inside diameter: 610 mm
. outside diam max: 1870 mm (originally 1650 mm)
- Coil weight max.: 20 Ton (originally 15 ton)
- Work roll diameter . max: 800 mm
. min: 730 mm
- Work roll barrel length: 1620 mm (originally 1500 mm)
- Year production: 120.000 Metric Ton

Main Drive Equipment Diagram



Control Diagram



Main Drives Based on Thyristor Rectifiers

The existing DC motors are driven by modular MOTOCON DC TPS (Thyristor power supply) units.

These TPS converters, which are completely designed and manufactured by Ingeteam Power Technology S.A., feature a fully digital control in conjunction with 3-phase thyristor converters, regenerative type, with current ratings ranging from 1000A to 3400A, for 400 Vdc to 690 Vac input voltage. Main characteristics are as follows:

- Type: MOTOCON DC
- Power rating: up to 2.8 MW
- Voltage: 400 to 690 Vca
- Rectifier type: Thyristors (antiparallel bridges)



DC-Motor Control Center

Basic Automation

The control system in charge of the automation of the Skin Pass Mill is based on Simatic S7-400 controllers.

In order to conform with the current European Directive of Machine Safety, the installation was designed to comply with IEC Safety Category 3. Specific failsafe CPU 416F-2 was implemented communicating via Profisafe with safe I/O remote units for safety-related circuits.