**Scope of Supply**

**Ingeteam Industry** is responsible for the complete “Turnkey” electrical project:

- Project management
- Basic and detail engineering
- Supply of electrical equipment, drives and automation:
  - Low voltage distribution center
  - Auxiliary control voltage distribution
  - Emergency power UPS
  - Main DC drives – MOTOCON DC*
  - AC motor control center
  - Field sensors
  - Control desks and local panels
  - Integrated control equipment (SISTEAM M) *
  - Control and supervision equipment (OPERATOR MT)*
  - Intercommunication and PA system
  - Fire detection and passive protections

- Electrical erection
- Supervision of electrical erection
- Commissioning

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

**Cold Rolling Mill**

**VALENCIANA DEL ALUMINIO BAUX S.L.**

**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
VAI Cosim, the Spanish subsidiary of the VATECH group (Voest Alpine), has commissioned Ingelectric Team (currently Ingeteam Industry) during the second half of 1999, to design, supply and install the state-of-the-art Electrical and Automation Equipment for an aluminium Cold Rolling Mill. The end user is Valenciana del Aluminio, BAUX in Segorbe (Castellon), Spain.

The aim of the mill is to process the coils obtained in the Hot Rolling Mill, also automated by Ingeteam Industry. It consists of a QUARTO mill stand (two working rolls and two back-up rolls), coiler and uncoiler.

The main drives feature DC motors reconditioned from another installation, driven by new digitally-controlled thyristor rectifiers (MOTOCON DC).

The mill automation was carried out by PLC control systems: 1 single PLC acts as master control system in addition to control the auxiliary drives, spraying systems, lubrication and hydraulics.

The master control system executes the thickness control functions, manual bending and tilting, torque and speed setpoint generation for mill stands and coilers.

Valenciana del Aluminio BAUX, s.l. supplies the thickness gauges.

The automation also includes HMIs (Human Machine Interfaces) in the control pulpit, as shown in the drawing, which make easy to the user the mill adjustment, control and tracking. This system is based on PC and incorporates the operation and monitoring software.

### Technical Features

<table>
<thead>
<tr>
<th>Minimum Thickness</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Entry</td>
<td>1.3 mm</td>
</tr>
<tr>
<td>1st Mill Pass</td>
<td>0.7 mm</td>
</tr>
<tr>
<td>2nd Mill Pass</td>
<td>0.4 mm</td>
</tr>
<tr>
<td>3rd Mill Pass</td>
<td>0.25 mm</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Production Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Coils Diameter</td>
<td>From 508 to 1,800 mm</td>
</tr>
<tr>
<td>Coiler Speed</td>
<td>up to 580 m/min</td>
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<tr>
<td>Annual Production</td>
<td>45,000 Ton</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Other data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mill’s Force</td>
<td>1,000 Ton</td>
</tr>
<tr>
<td>Cylinders’ Spraying</td>
<td>1,600 l/min</td>
</tr>
</tbody>
</table>

### Mill Lay-Out

The MOTOCON DC rectifiers feature two formats:

* A compact execution ranging from 30 A. to 1,500 A.
* A cabinet execution from 1,750 A. to 6,800 A. with physically independent control and power units.