Electrical and automation systems from SMS Siemag based on latest references for hot and cold rolling mills

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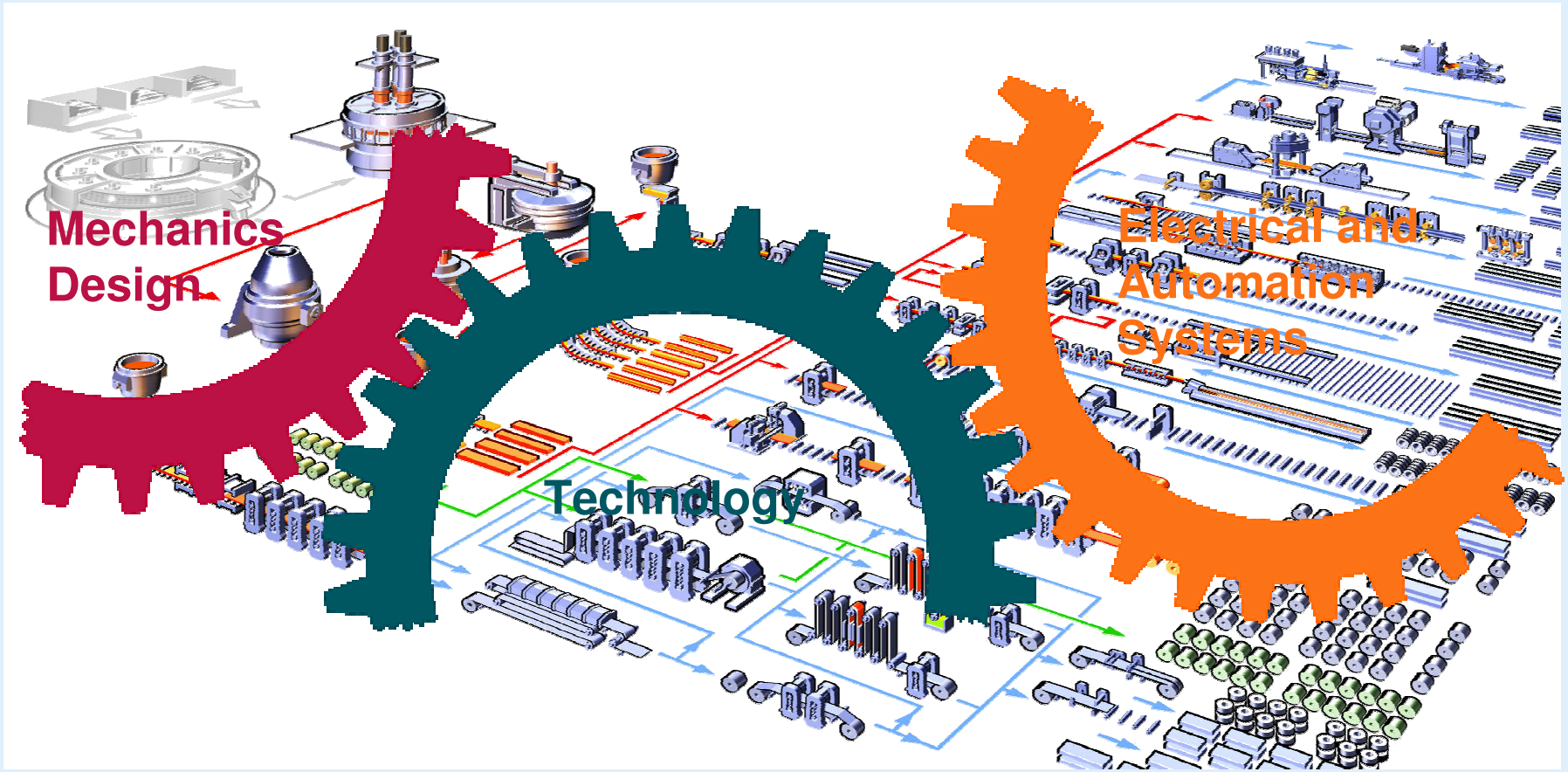
SMS Siemag AG

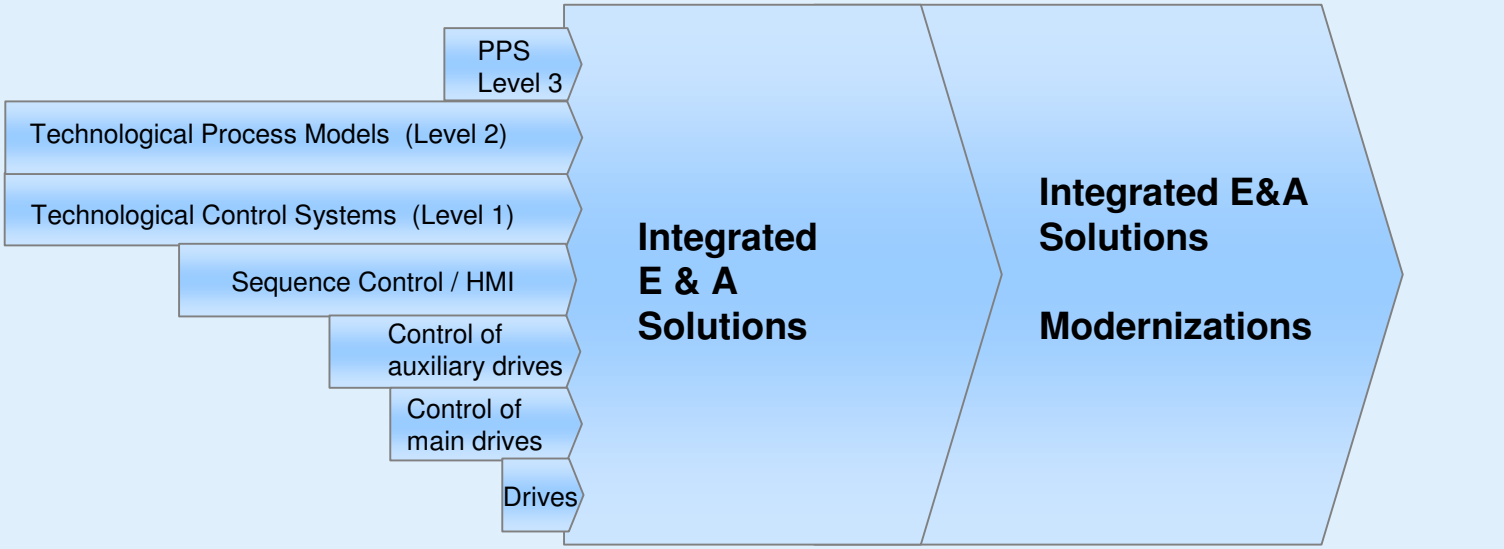
Electrical and Automation Systems

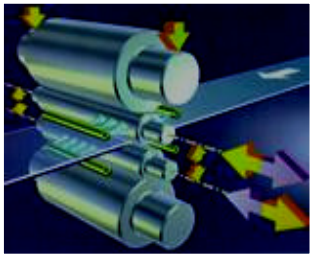
E&A from SMS Siemag means..
Harmonized mechanical and electrical system including the process know-how of SMS Siemag



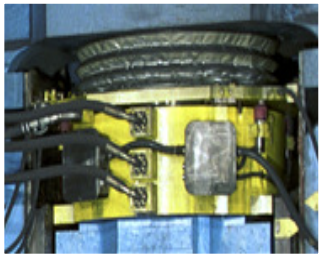
Electrical and Automation Systems

Development into a supplier for integrated E & A Systems





CVC-Technology



Hydraulic adjustment

Integrated
E & A-Solutions

Integrated E & A- Solutions
Modernizations

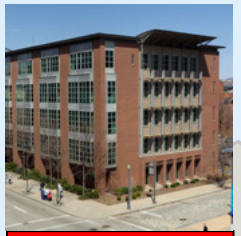
Electrical and Automation Systems

Location / E&A employees



Germany

Düsseldorf	Mülheim	Hilchenbach
350 employees	90 employees	250 employees



USA

Pittsburgh, PA

30 employees

China

Peking

200 employees

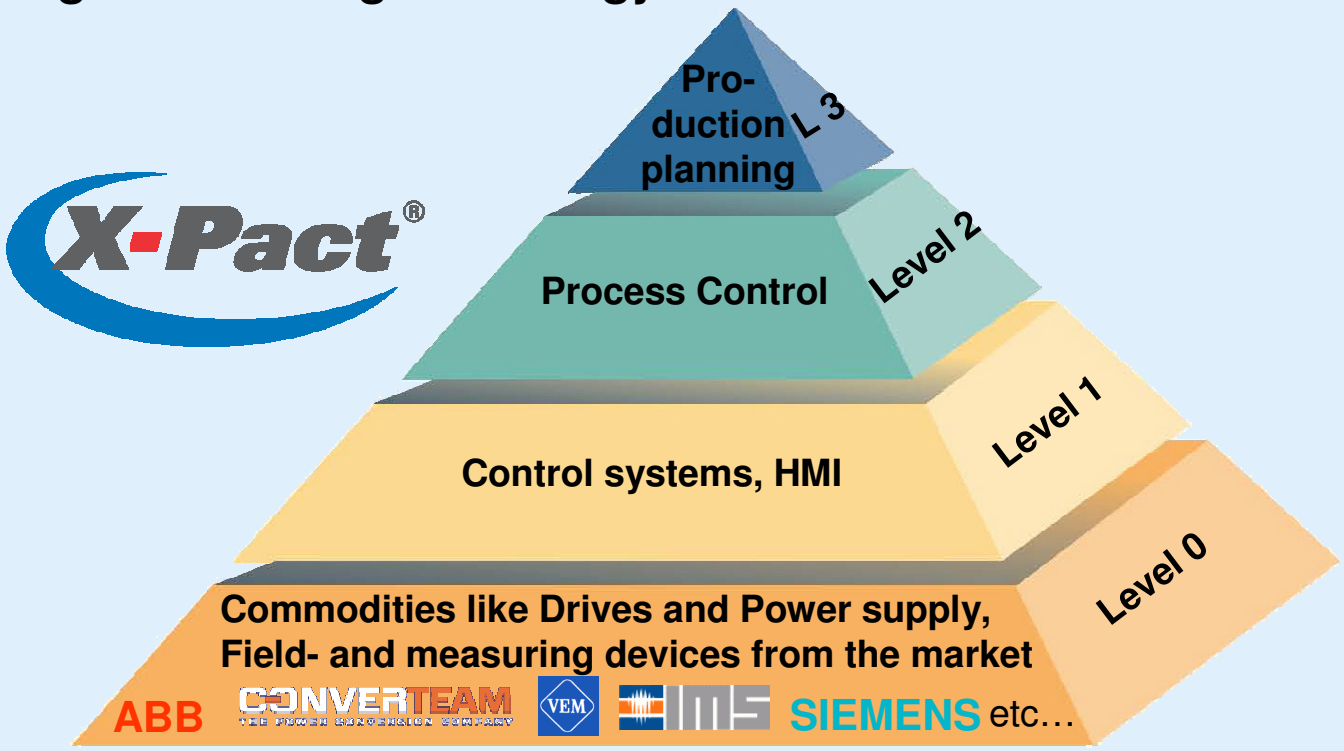
India

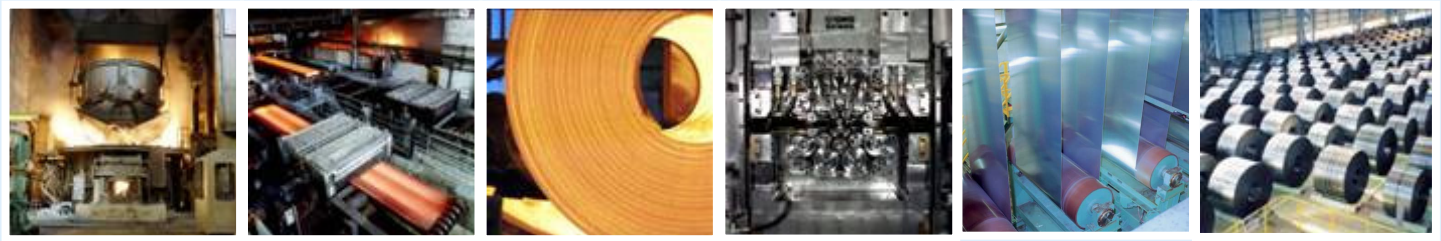
Delhi, Kolkata

100 employees

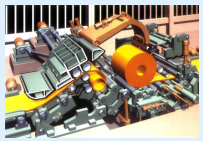
World wide more than 1.000 E&A employees

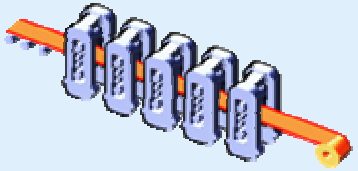
Electrical and automation systems from SMS Siemag implementing SMS Siemag technology





Technological Controls and Process Models work closely with each other





PCFC
(Profile, Contour & Flatness Control)

PSC
(Pass Schedule Calculation)

Automation Level 2

Recrystallisation model

Camber free rolling

MDB
(Material Data-Base)

CSC
(Cooling Model & Control)

Observer based thickness control

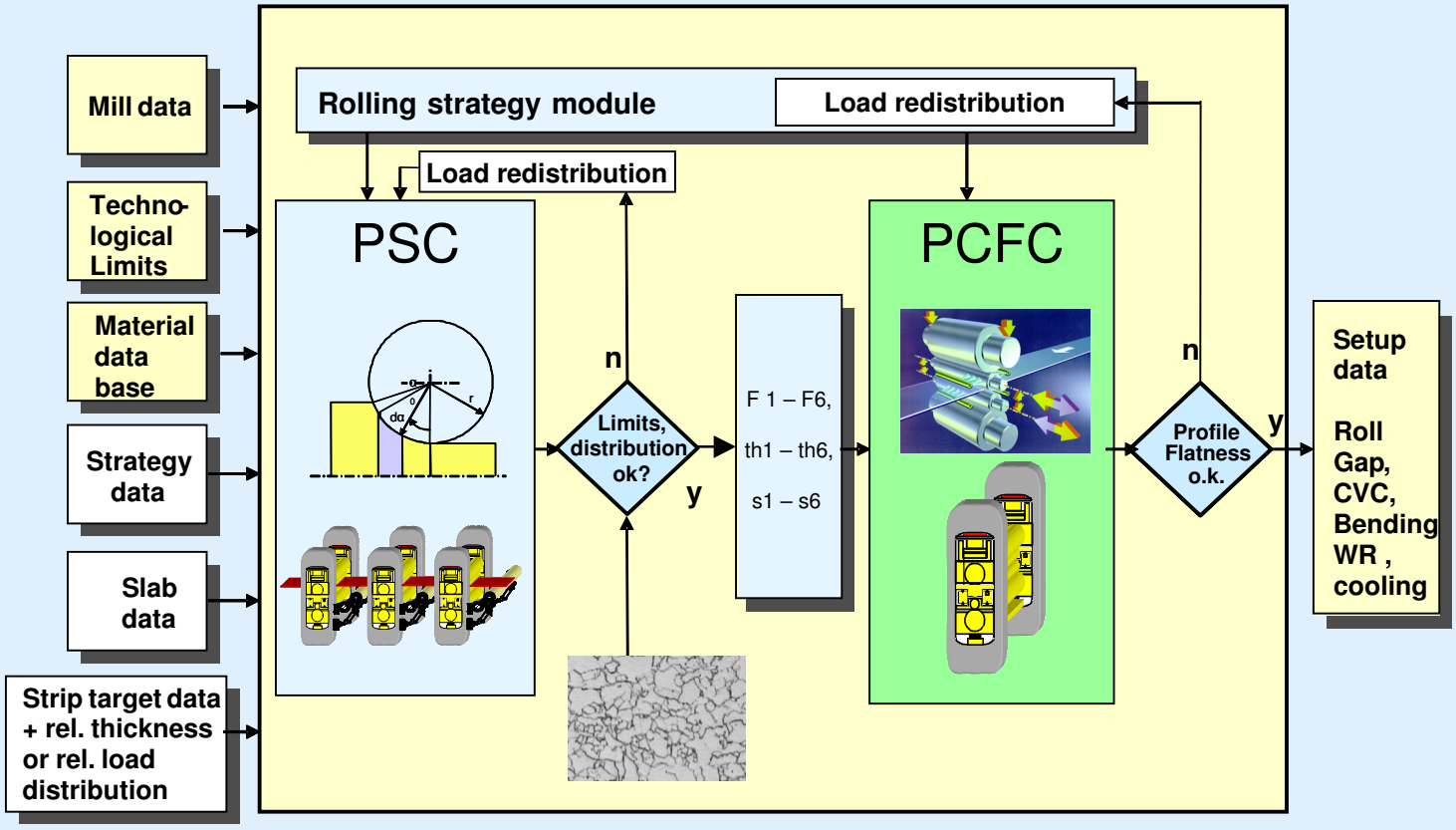
Width control

Levelling control

Coiler control

Level 1 Automation

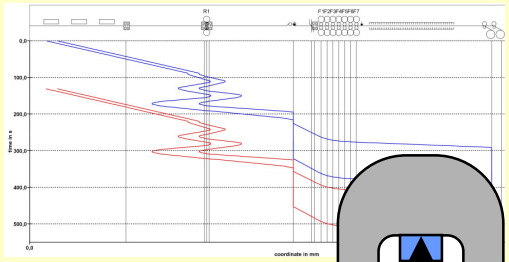
The process models are also working together (eg. PSC & PSFC)



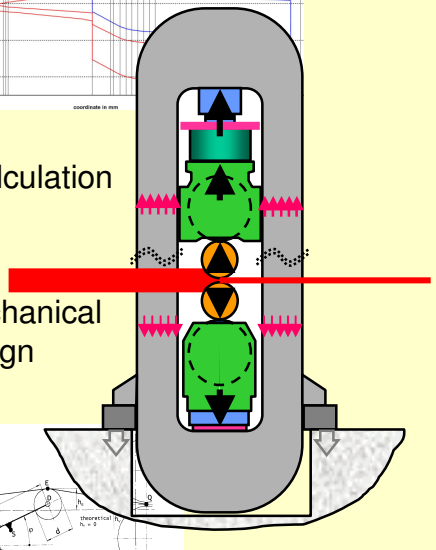
PSC: Pass Schedule Calculation , PCFC: Profile, Contour and Flatness Control

Electrical and Automation Systems

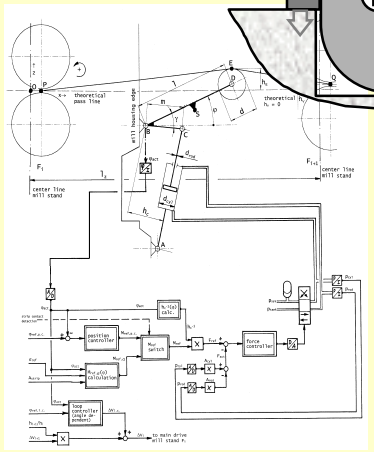
Not just process models : Technological Process Models



Plant layout,
Production calculation

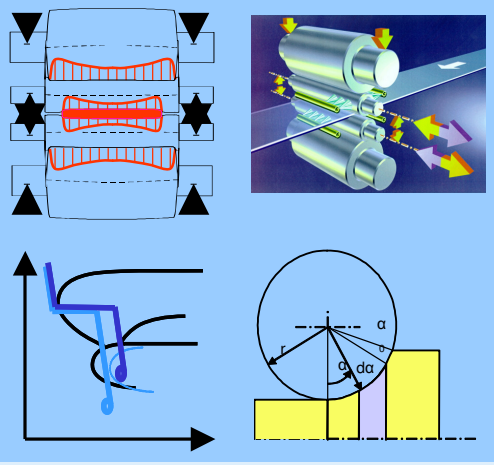


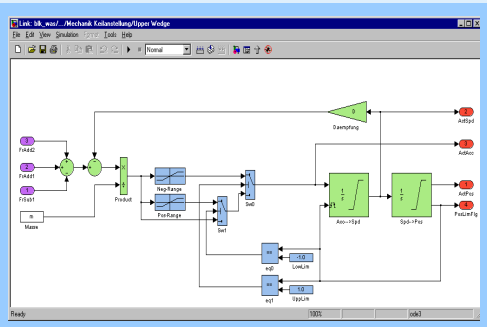
Mechanical
design



Dynamical
design

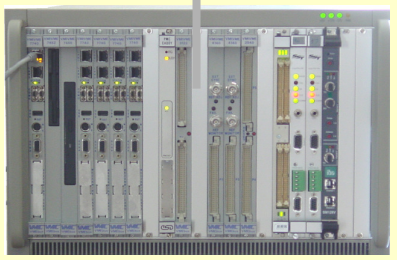
Rolling process
technology





Rolling control
technology

L2 automation

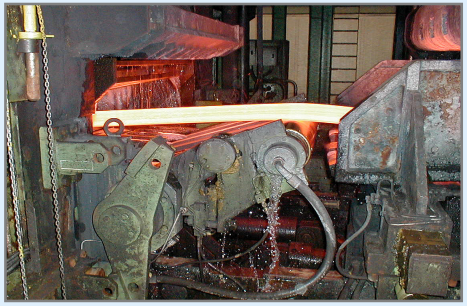


L1 automation

Highlights of SMS SIEMAG rolling mill technology

Camber and wedge free rolling in roughing mill

Automatic leveling and tail out monitor in finishing mill



Roll gap conditioning

Profile, Contour and Flatness Control

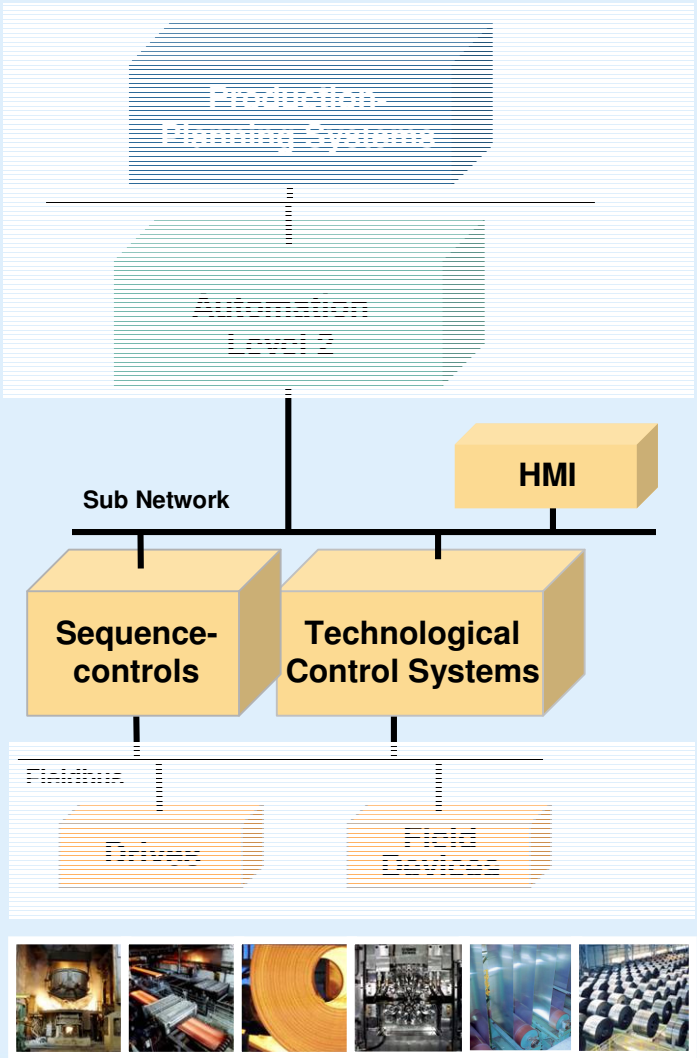
Cooling Section Control

Edge masking control

- Improved rolling mill stability
- Excellent product performance
- Increased lifetime of rolls
- Flexible rolling schedules
- Improved cold strip flatness

Electrical and Automation Systems

Automation Level 1

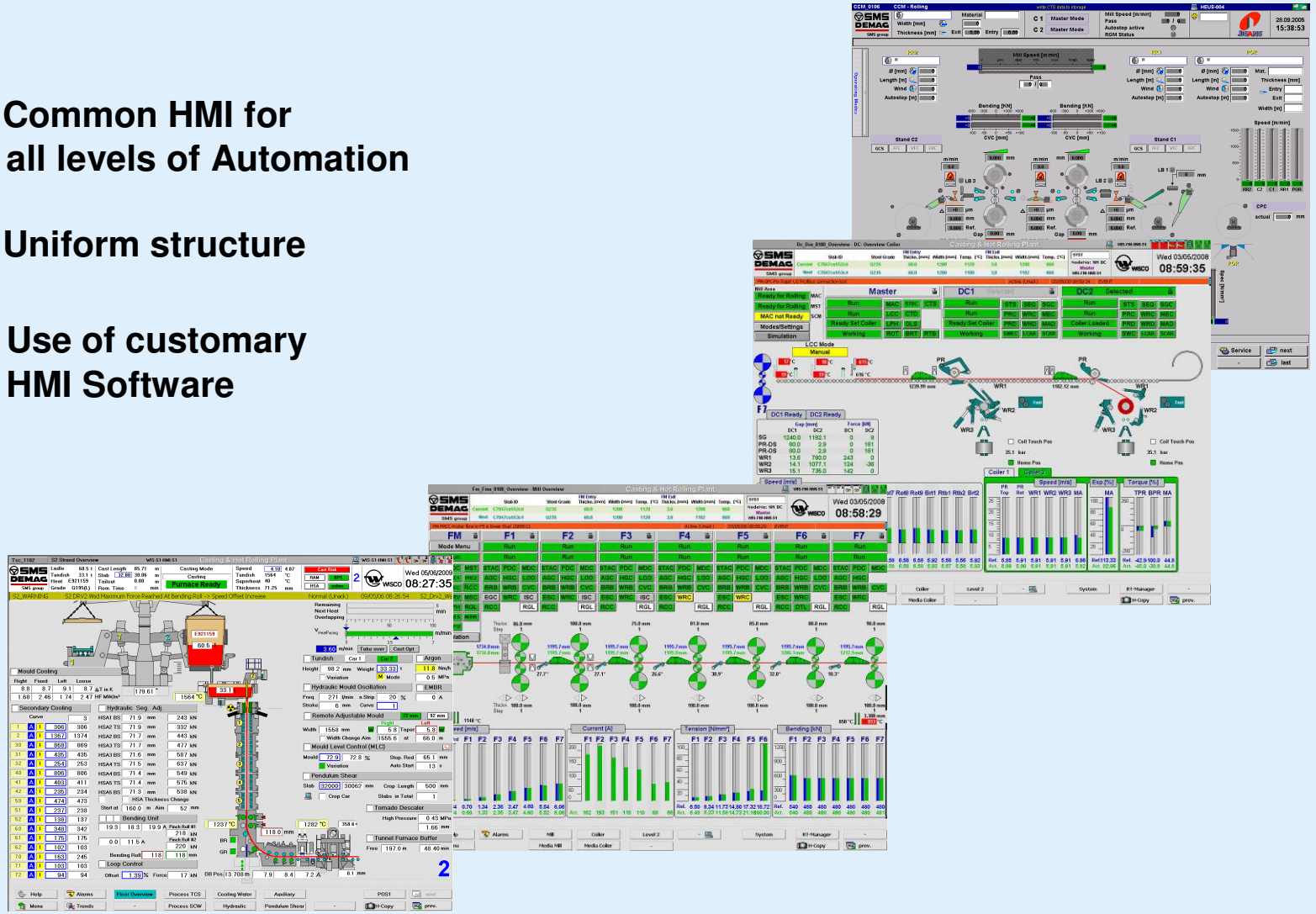


The Level 1 system interfaces directly with the plant field instruments and devices.
Main tasks of the Level 1 system:

- Ensure safe operation of the process and the plant equipment using PLC and Safety PLC Systems
- Ensure product quality supported by fast closed loop Technological Control Systems
- Control and monitor the process supervised by the operator using the HMI System

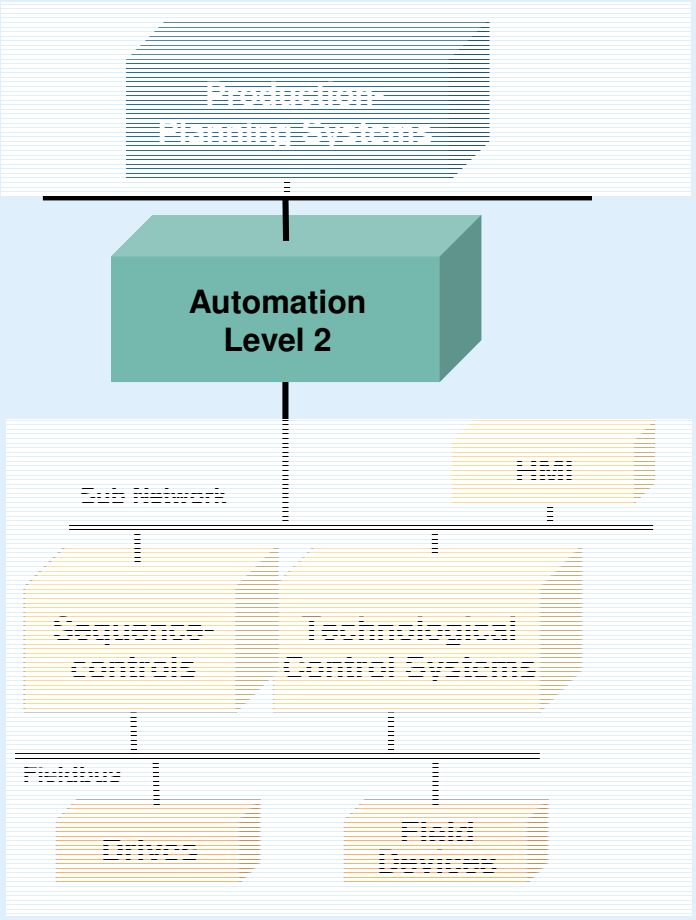
HMI

- Common HMI for all levels of Automation
- Uniform structure
- Use of customary HMI Software



Electrical and Automation Systems

Automation Level 2



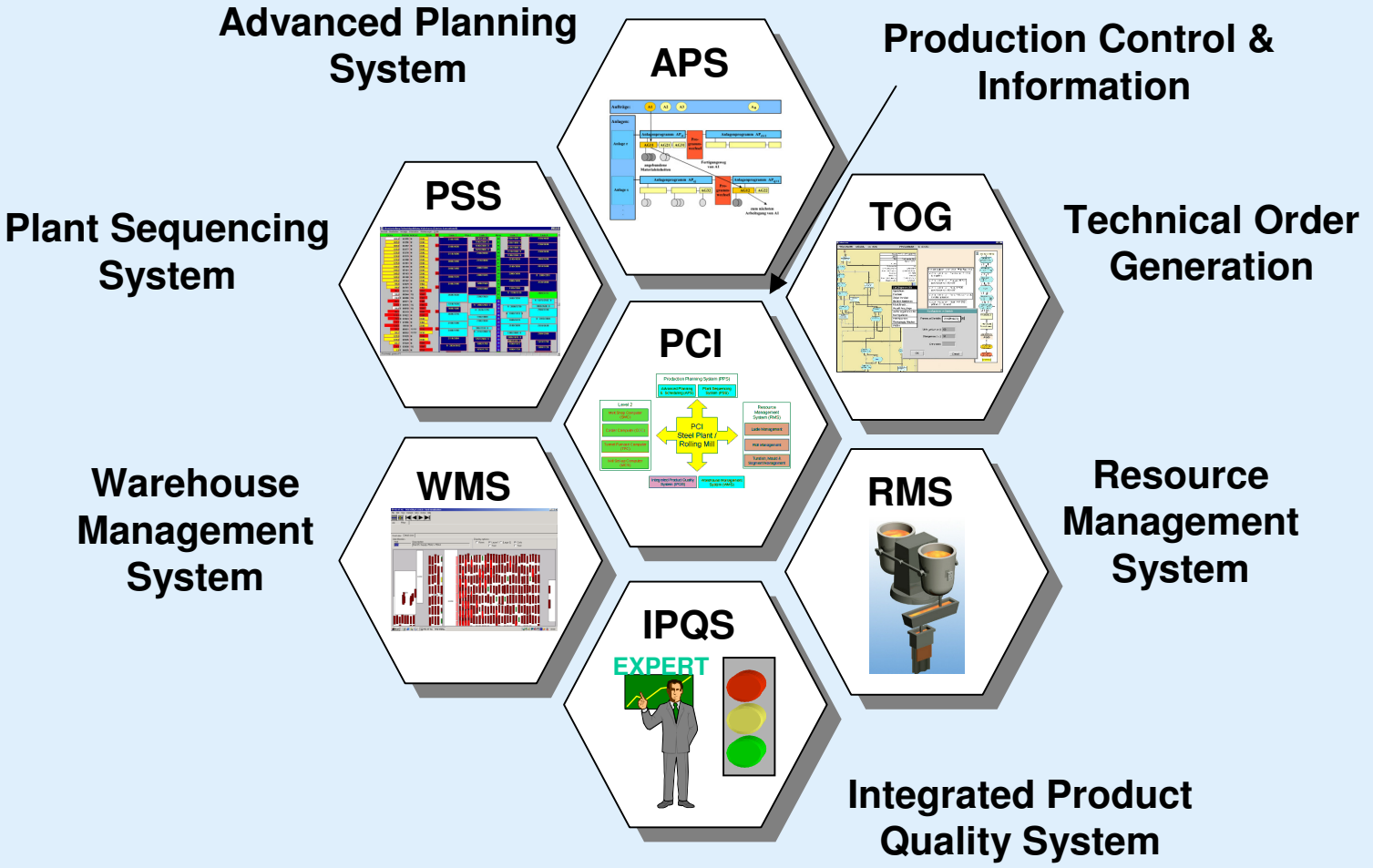
The Level 2 system interfaces directly with the Level 1 Automation System and the Level 3 Production Planning System

Main tasks of the Level 2 system:

- Improvement of product quality by accurate modeling of the process
- Improvement of plant productivity by high level automation
- Improvement of plant flexibility by capability to develop and produce new products
- Improvement of plant availability by generating stable process conditions

Electrical and Automation Systems

Automation Level 3



Your expectations

1. Fault-free equipment
2. Short commissioning time
3. Reliable, quick start-up
4. Secure take-over
   - Reliable plant
   - Well-trained staff

▶ **High customer profit**

Plug & Work: An important step towards zero tolerance for errors

Automation and operation equipment ...

… to be supplied on site

Pre-optimization of the complete automation system in our test field.
Training of customers operation and maintenance personnel close to reality.

Training of operators under realistic conditions

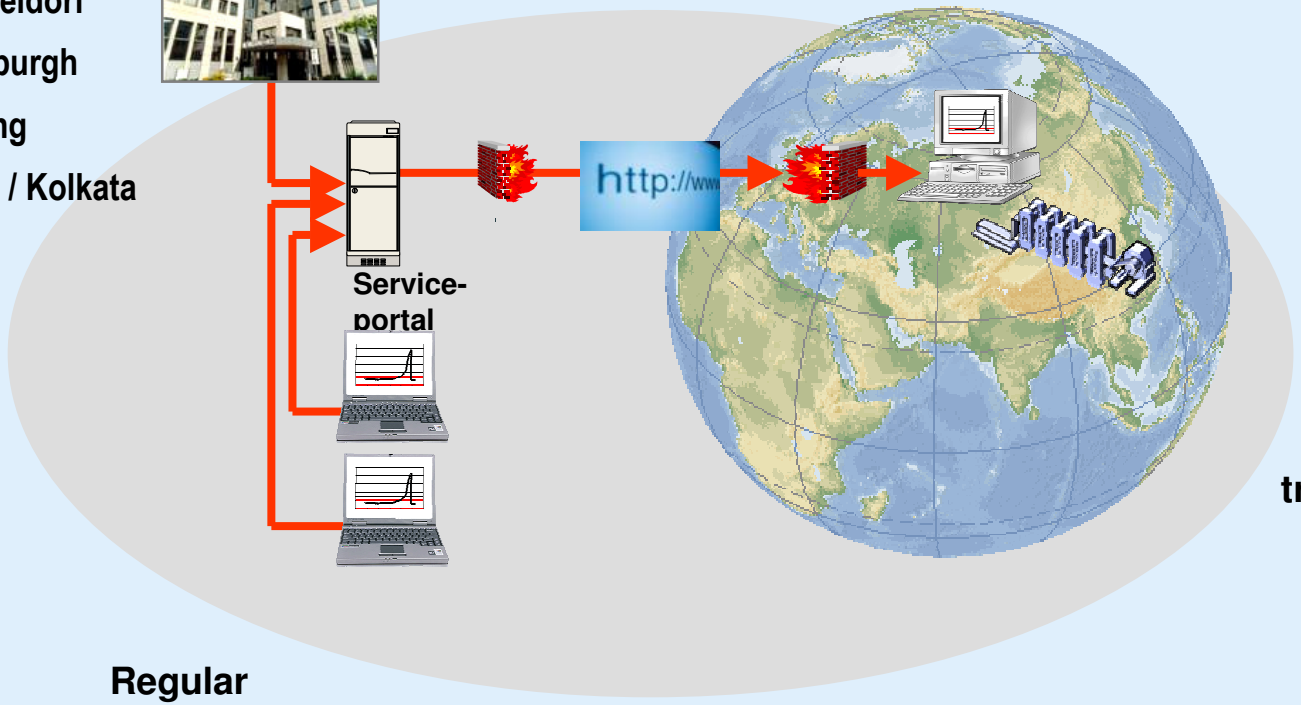
- Original control pulpits
- Original automation system
- Complete processes in real time
- Virtual mill operation
- Realistic simulation of maintenance procedures and cases
- Testing of operating concept

24/7 hotline with remote inspections & diagnosis

SMS SIEMAG experts in:

- Düsseldorf
- Pittsburgh
- Beijing
- Delhi / Kolkata

Service entry point hotline 24 h / 365 days

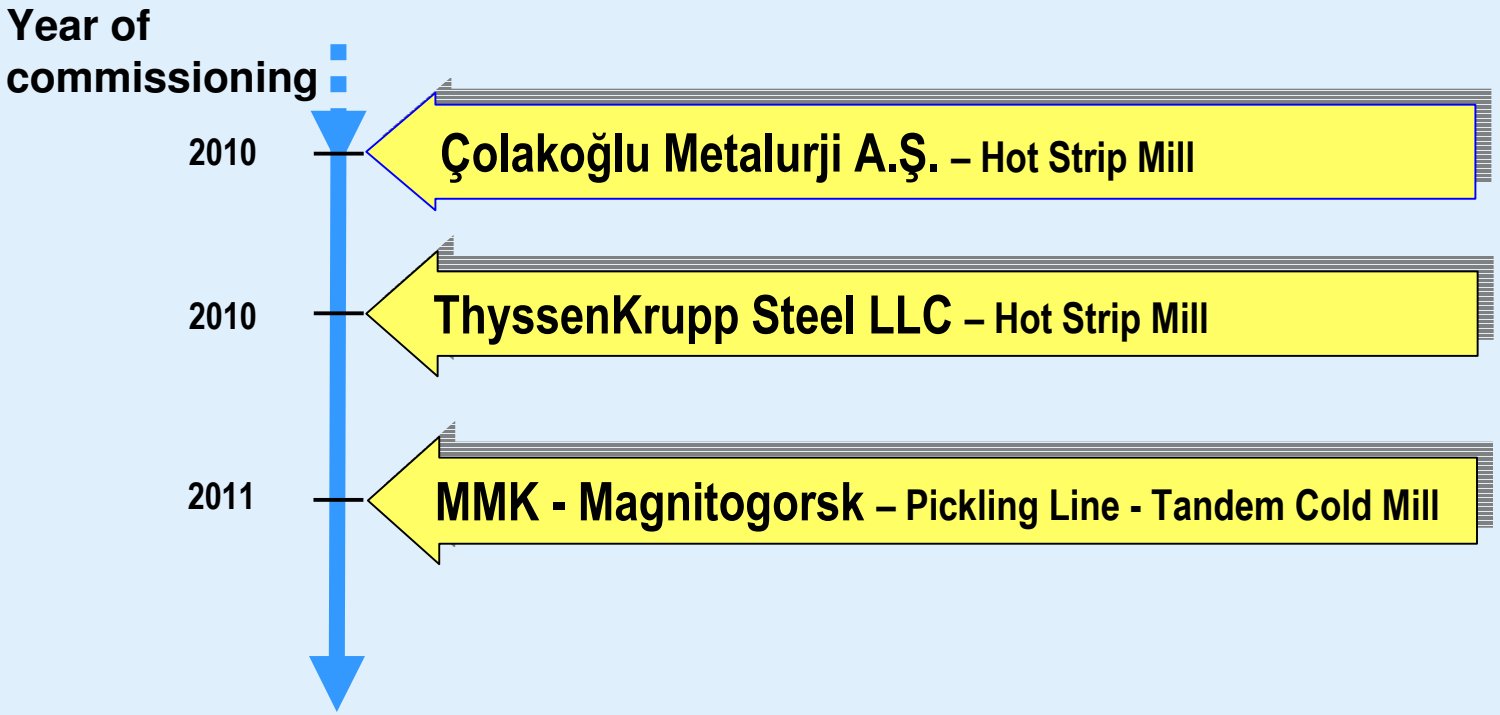


Task force for trouble shooting

Regular updates & upgrades

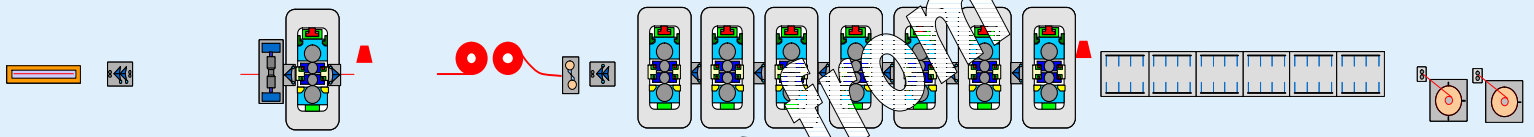
Remote inspection & diagnosis

Examples of latest references for hot and cold rolling mills



Electrical and Automation Systems

Çolakoğlu Metalurji A.Ş., Turkey Hot Strip Mill, Commissioning 2010



Complete package from SMS

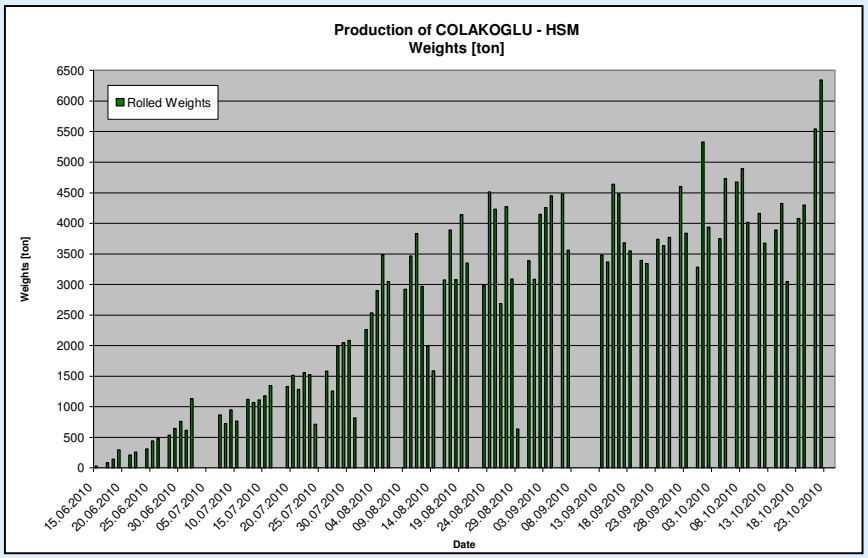
		L3 Production planning system
		L2 Process automation
		L1 Process, sequencing control and operating
		L1 Plant automation network
		L0 Measuring devices, field devices and sensors
		L0 Converter systems
	Main motors	L0 Motors
		L0 Low voltage distributiona and transformers
	Transformers	L0 Medium Voltage distribution and transformers
		L0 High voltage distribution and transformers

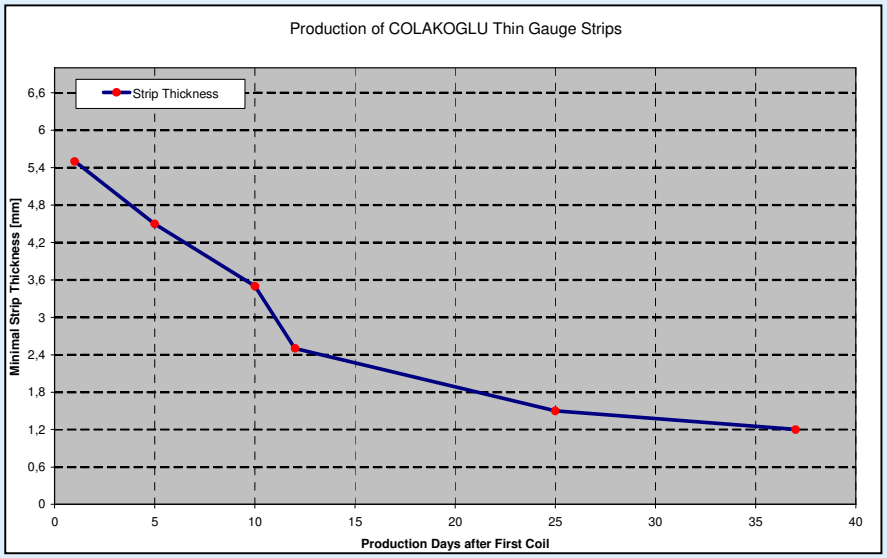
SMS Siemag AG Furnace supplier Customer

Benefits from a package solution supplied by the market leader for hot rolling mills

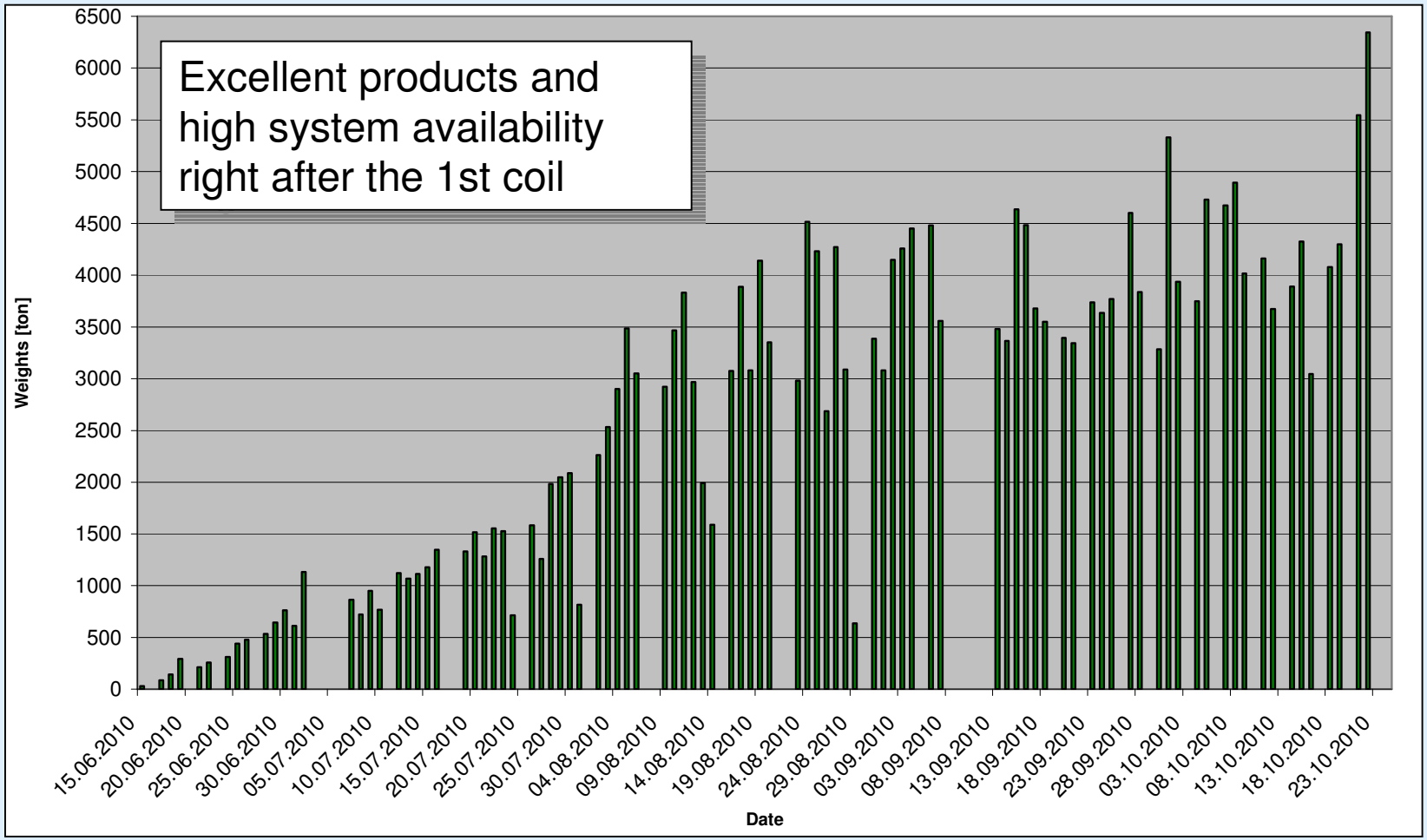
For production and technology:

- Best product quality, high plant availability, low maintenance due to harmonized mechanics, electrics & automation

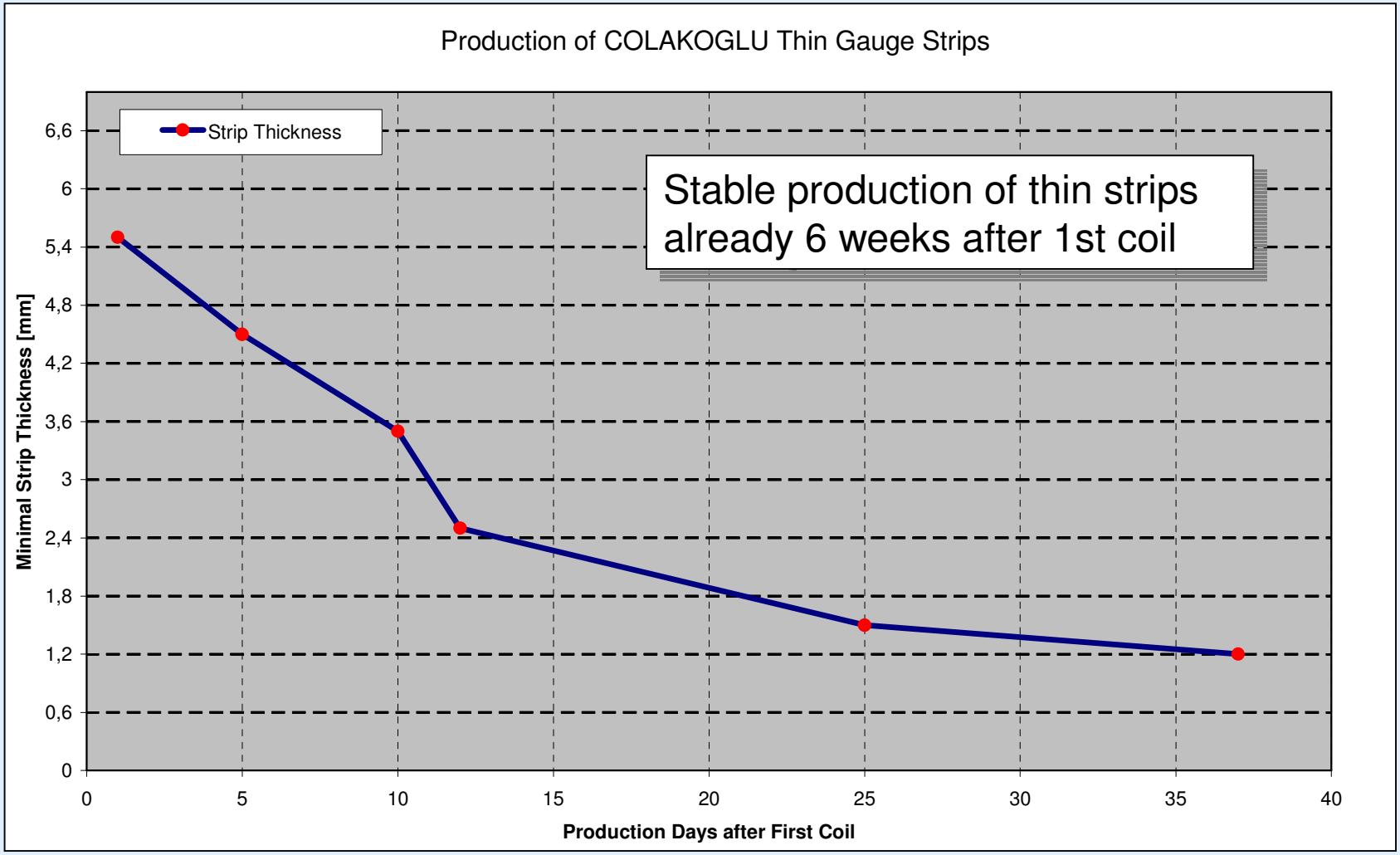




Example: Production of COLAKOGLU - HSM

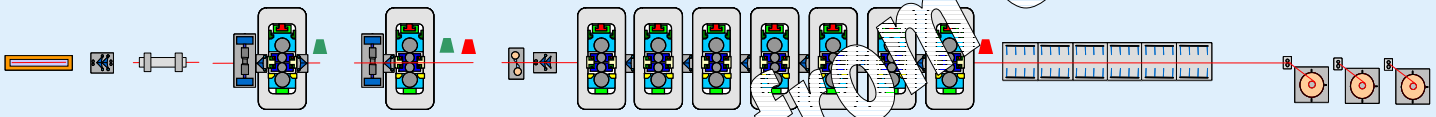


Example: COLAKOGLU - HSM run-up of minimum strip thickness



Electrical and Automation Systems

ThyssenKrupp Steel LLC, USA, Hot Strip Mill, Commissioning 2010

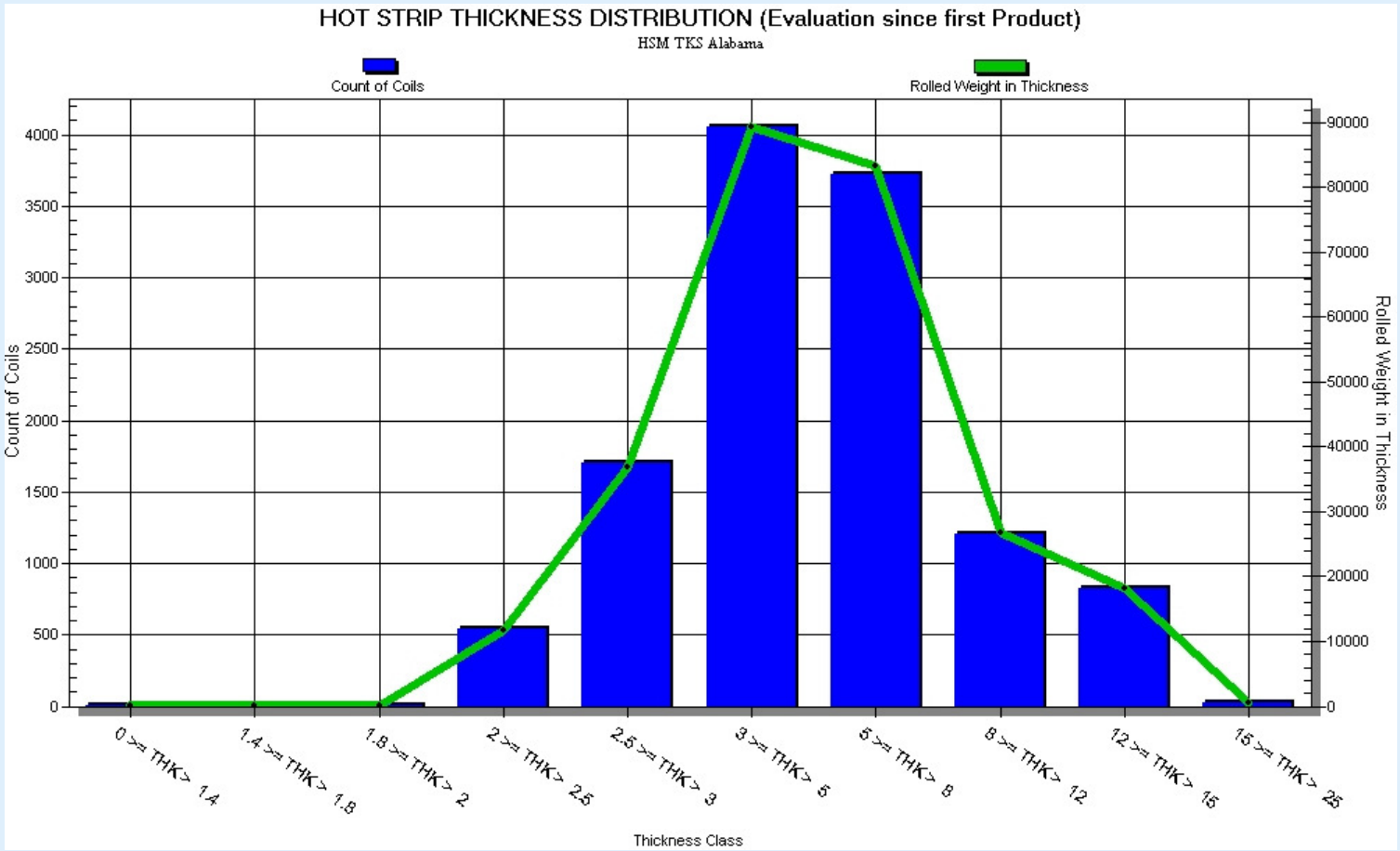


Complete package from SMS

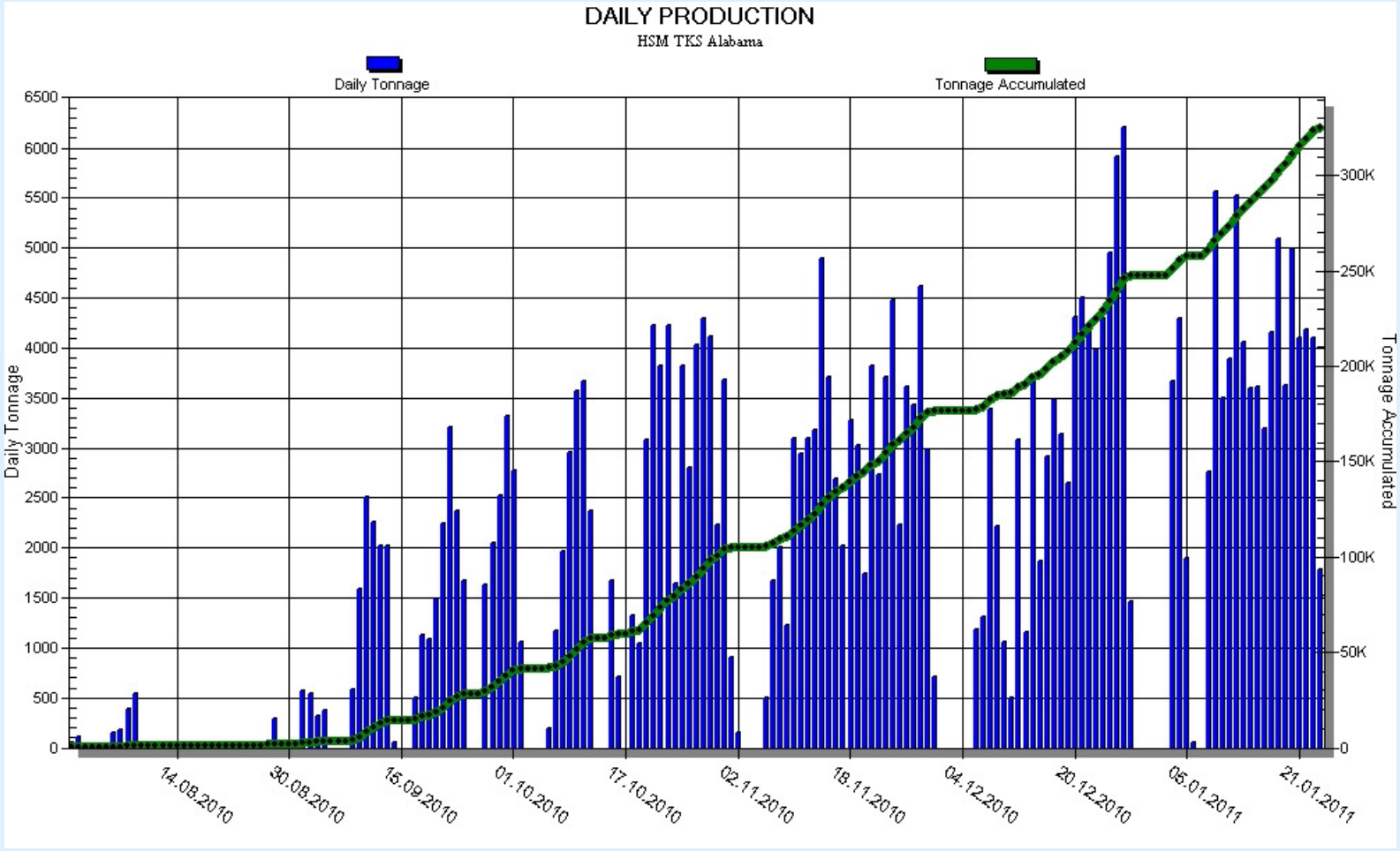
L3 Production planning system
L2 Process automation
L1 Process, sequencing control and operating
L1 Plant automation network
L0 Measuring devices, field devices and sensors
L0 Converter systems
L0 Motors
L0 Low voltage distributiona and transformers
L0 Medium Voltage distribution and transformers
L0 High voltage distribution and transformers

SMS Siemag AG Furnace supplier Customer

Example: Thickness Distribution of TKS Alabama - HSM

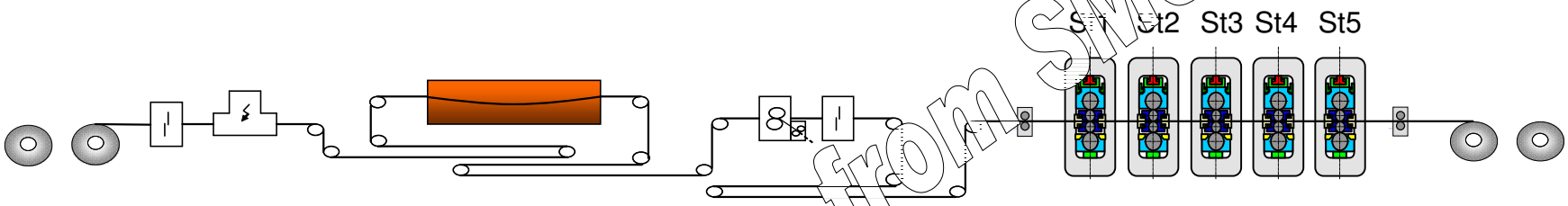


Example: Production of TKS Alabama - HSM



Electrical and Automation Systems

Scope of supply for MMK, Russia, PL-TCM



Complete package from SMS

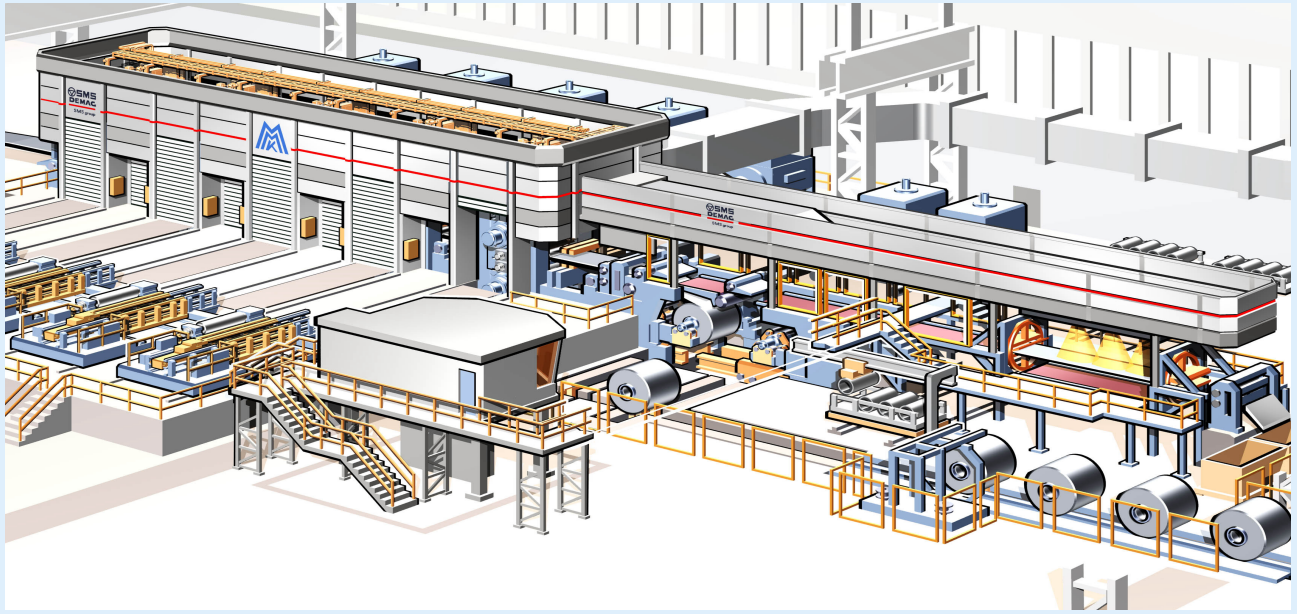
L3 Production planning system		
L2 Process automation		
L1 Process, sequencing control and operating		
L1 Plant automation network		
L0 Measuring devices, field devices and sensors		
L0 Converter systems		
L0 Motors	**Main motors**	
L0 Low voltage distribution and transformers		
L0 Medium Voltage distribution and transformers	**Main motor converter transformer**	
L0 High voltage distribution and transformers		

SMS Siemag AG

Consortium or Customer

PL-TCM: Production and product data

Total capacity:	2,100,000 tpy
Products:	LC, IF, HSLA, MA,DP, CP TRIP, BH (all automotive)
Coil Weight:	35 t
Entry Thickness:	1,2 to 6,0 mm
Exit Thickness:	0,28 to 3,0 mm
Strip Width:	880 to 1,880 mm
Commissioning:	April 2011



Selected mill performance data

Production rate:	≥ 216…421 t/h *
Strip centering accuracy before TCM:	± 1 mm
Coiling accuracy:	± 5 mm for the whole Coil ± 1,5 mm winding to winding
Knife changing time (side trimmer):	≤ 45 s
Roll change time:	≤ 5 – 10 min *
Thickness tolerances:	± 0,5 …1,1 % *
Flatness tolerances:	≤ 9…12 I-Unit *
Off gauge length:	≤ 6…16 m *

* **dependent on material and or material dimension**

Profit from integrated solutions supplied by the market leader in metallurgical plants

- **for production and technology:**
  - Technological controls and process models are developed and designed together with the mechanical equipment, jointly optimised and tested for Your technological requirements
- **for the project handling:**
  - One single partner for the total process-relevant supply: clear responsibilities including guarantees
  - Fast plant start-up and optimisation
- **for the future cooperation:**
  - One single partner with overall know how
  - Long term strategic cooperation and joint development with our customers

Thank you for your attention!