

Editorial
Global presence and
advanced solution
to better serve the steel
world

NEWS
PAGE
04

Announces the opening
of AiC South America

PROJECTS
PAGE
11

AiC has been awarded to
revamp the SeAH plant

PAPERS
PAGE
19

APC for energy efficiency

INNOVATIONS
PAGE
27

AiC joins new Acciarium
Alliance to better serve
steelmakers

EVENTS
PAGE
29

AiC: 40 Years of Servicing
the Steel Industry With
Automation Solutions



We are dedicated to the steel industry



EDITORIAL

Global presence and advanced solution to better serve the steel world

Dear Friends,

After the great success of our first issue of AIC Magazine, we are happy to be with you once again to share our vision and to give you some news.

In this issue of AIC magazine we are introducing our unit recently incorporated in Brazil with the purpose of following all South American customers and helping us to be more present in the area to better serve the steel industry with our services and solutions.

The new resources are bringing to our team a lot of experience and our aim is to become the reference for our partners to improve their performances, so I'd like to give my warmest welcome to Puga & Fernando from Brazil, and Raghunath & Ramesh Sing from India.

In terms of new activities we are also excited to be part of the recently established Acciarium Alliance founded with our friend Mauro Bianchi Ferri and the partners iProcess, KIA and Sicon. We feel that this type of collaboration between medium size companies is a good way to bring added value to the market, putting together skills, expertise, flexibility and knowledge of processes. The result can be innovation oriented to the real need of the industry, like the E-Festo APC developed by iProcess for the reheating furnaces awarded by Italian energy agency after being developed and installed in a bar rolling mill.

In the world of innovation AIC with partners, like Video Systems, can boost high efficiency solutions for camera based systems, laser technology and robotic applications applied with data management in what market is calling industry 4.0.

AIC is historically opened to collaboration with main and niche mechanical partners and the recent projects acquired with the main OEM are confirming the quality of the service that the AIC team can bring to the partners since the commercial activity along all project duration. Korean SeAH special steel mill upgrade in collaboration with German Friedericks Kocks and Swedish Morgardshammar, Philippine Capitol Steel new bar mill in collaboration with Italian Primetals Technologies and the contract with SMS group for Russian Tulachermet Steel project are just the latest cases of successful international partnerships.

In the field of revamping, AIC is always pushing ahead the limit of existing mill and the success in recently commissioned projects for Gerdau Long Steel North America for Cambridge (ON) and Jackson (TN) are confirming also in North America the capabilities acquired by AIC in more than 40 years of experience in overhauling obsolete plants. Other presented case histories refers to Feralpi Stahl Bar & wire rod mill in Germany, Super Smelter bar mill in India, Caleotto Wire rod mill and Alfa Acciai CCM in Italy.

Enjoy the magazine and feel free to suggest us the way to improve it!

Your faithfully



Marco Capitanio

Editorial Global presence and advanced solution to better serve the steel world

News

| | |
|---|---|
| AIC announces the opening of AIC SOUTH AMERICA | 4 |
| Welcome Raghunath Thamattur new Director Operations of AIC India | 6 |
| FERALPI STAHL chooses AIC for the supply of new roughing stands drives of the Riesa Rolling Mill | 7 |
| AIC gets a new order and the final acceptance certificate for a revamping project in Nucor Berkeley (SC) | 8 |
| AIC ends a notable revamping project of Caleotto Lecco rolling mill and has been awarded for new steps of the plant upgrade / AIC successfully revamped charging and discharging control system of Caleotto Spa | 9 |

Projects

| | |
|--|----|
| AIC, together with Kocks and Morgardshammar, has been awarded to revamp the SeAH plant in Changwon (South Korea) | 11 |
| AIC selected as technological supplier by Super Smelters for a new rolling mill | 12 |
| AIC & Primetals Technologies to supply bar rolling mill to Capitol Steel in the Philippines | 13 |

Papers

| | |
|--|----|
| 880, 4800... PLd | 14 |
| New Hydraulic Mould Oscillators for Alfa Acciai CCM, Brescia (Italy) | 16 |
| E-FESTO: an Advanced Process Control framework aimed at energy efficiency achieving in steel reheating furnace | 19 |

Innovations

| | |
|--|----|
| Robotics in steel industry | 22 |
| Partnership: Videosystem | 26 |
| AIC joins new Acciarium Alliance to better serve steelmakers | 27 |

Events

| | |
|---|----|
| AIC: 40 Years of Servicing the Steel Industry With Automation Solutions | 29 |
| AIC & Rockwell Automation Encompass | 34 |
| Next events | 37 |

NEWS
PAGE
04

AIC announces the opening of AIC SOUTH AMERICA

"AIC is proud to announce the opening of AIC SOUTH AMERICA, a new step of the internalization strategy of the company and an opportunity to apply the AIC technology, based on more than 40 years of experience, in the Latin American area. The main target is to ensure added value to the activities of its customers, offering new solutions and a quick and efficient service.



PROJECT

PAGE

11

AIC, together with Kocks and Morgardshammar, has been awarded to revamp the SeAH plant in Changwon (South Korea)

SEAH CHANGWON INTEGRATED SPECIAL STEEL CORP. contracted Friedrich Kocks GmbH & Co KG, Morgårdshammar AB and Automazioni Industriali Capitanio srl for a modernization project at its steel plant in Changwon.



PROJECT

PAGE

13

AIC & Primetals Technologies to supply bar rolling mill to Capitol Steel in the Philippines

Primetals Technologies, in cooperation with Automazioni Industriali Capitanio S.r.l. (AIC), has received an order from Capitol Steel Corporation (Capitol Steel) to supply a new bar rolling mill for its plant in Quezon City, Philippines.



PAPERS

PAGE

16

New Hydraulic Mould Oscillators for Alfa Acciai CCM, Brescia (Italy)

The new equipment were commissioned with the target to improve the steel quality on the CCM#1 (5 lines) of the Brescia plant, where an EAF, n°2 LF, CCM#2 (5 lines) and n°3 rolling mills (for bars, wire rods and coils) are in operation. The whole supply has been designed to accomplish and satisfy the safety requirement of ISO Standard 13849 and the specific safety standard for Casting Machines EN 14753.



INNOVATIONS

PAGE

27

AIC joins new Acciarium Alliance to better serve steelmakers

The company, based in Milan, is a common network within which are inserted four distinct companies (AIC, iProcess, KIA, SICON GmbH). It can synergistically provide the end customer - steel mills - complementary and innovative products and services.



AIC announces the opening of AIC SOUTH AMERICA

AIC is continuously making stronger its presence in America and after the opening of AIC North America in 2011, this year the new company AIC SOUTH AMERICA ENGENHARIA E COMERCIO DE ELETROELETRONICOS E LTDA (AICSA) was opened, in collaboration with the partners Jose Martinez Inocencio Puga, Fernando Cesar Dutra Vieira and Stigelius S.L.

A qualified and specialized team with many years of expertise in the steel industry is for AICSA an opportunity to apply the AIC technology, based on more than 40 years of experience, in the Latin American territory. The main target is thus to ensure added value to the activities of its customers and offer new solutions and a quick and efficient service. The secret is think globally and act locally: the new AIC branch has been thought to stay close to the customers and the choice of Sao Paulo, the biggest city in Latin America, allow immediate connections throughout the world as well as fast and efficient level of assistance.

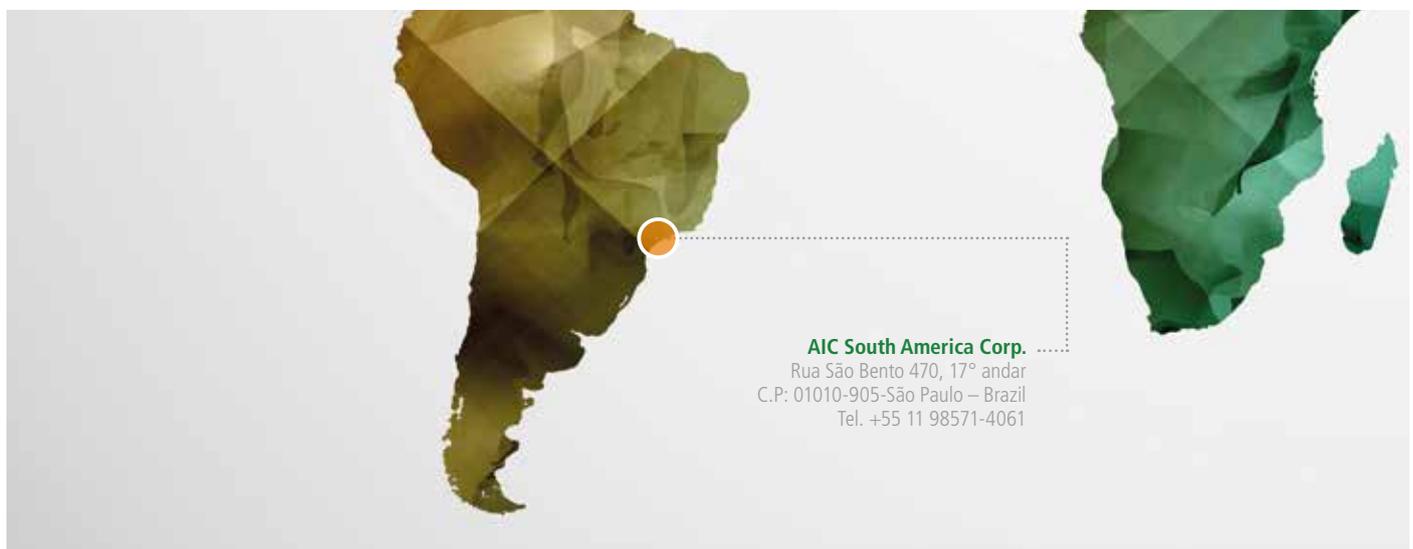
The new subsidiary will be responsible for complete automation projects, power control, electrical cabinets, safety systems, data acquisition, level 2 systems, energy consumption analysis and management, full revamping, technical assistance, spare parts as well as MV switchgears and substations.

AIC SA will be focused on technical assistance, engineering, supervision to erection, commissioning and fine tuning.

The extensive worldwide growth of the AIC group started about ten years ago and after India and the USA, AIC has decided to invest in Brazil. It is not an hazard, because AIC boasts a significant and important customers in the South American area, therefore a basis for being a growing player in this country is actual.

The year 2015 the South American market accounted for AIC 10% of the total, therefore a direct sales presence is fundamental to maintain the strategic position already achieved and to especially increase the turnover, thanks to stronger relationships with customers and research of new partners.

The target of this new opening is the continuous innovation and improvement of the internationalization process that characterizes the AIC company.



Fernando Cesar Dutra Vieira

Technical Director

With almost 30 years of experience in the industry automation, process control and optimization, Mr. Fernando is a guarantee of deep knowledge in rolling mill profile process and automation with huge experience with both ABB and Siemens automation equipment.

Its skills cover project management, control system overview, process optimization, team leadership, business development, process improvements, field engineering, training and customer care. In his career he commissioned solutions, applications & process optimization in Brazil, United States, Canada, Mexico, Chile, Argentina, Spain, Portugal, Wales, Luxemburg and India, working with Customers like Gerdau, Arcelor Mittal and Votorantim.

This multi-tasking know how is based on a different experiences, such as Mills Project Coordination @ ABB Ltda; more than 12 years spent in the rolling mill profile project development/coordination (automation levels 1 and 2) followed by more than 10 years as consultant for Industrial Automation @ Gerdau S.A., focused on industrial automation for CAPEX and process automation improvements at Gerdau Corporate worldwide.

In the last 4 years Mr. Fernando has been working as engineering Manager @ System Integrator Company, where he was responsible for engineering at an international system integrator company in Brazil, with a direct involvement on basic and detailed engineering, commissioning, optimization and after sales maintenance of rolling mill profile plants.



José Inocêncio Martinez Puga

Administrator

Mr. José Puga is an industrial electrical engineer with a Master in industrial processes automation.

Its educational background affect both project management systems and executive updating program (Dom Cabral Foundation) and he can also boast of a Postgraduate in International Marketing @ Ibmec (Sao Paulo).

Its experience is based on more than 30 years of activities in the E&A field. Started in Telefunken at the beginning of 80's as engineer, he moved few years later in ABB where he was working as senior engineer and then as steel sector sales manager. At the end of 90's he became director of after sales services for Groupe Schneider and, few years later, director of Russula do Brasil Ltda. In the last four years he was in charge as Chief Executive Officer at Siderúrgica Latino Americana S.A.

A brief description of its main assignments includes the development and implementation of strategic and operational plans, definition of policies and specific objectives, keep in touch with the client companies' management to identify opportunities for the expansion or improvement, coordination of negotiations for acquisitions, mergers, associations, keep in touch with the management of other companies, professional associations and government agencies.

The target of this new opening is the continuous innovation and improvement of the internationalization process that characterizes the AIC company.



Welcome Raghunath Thamattur new Director Operations of AIC India

Since 1st of February 2016 Mr. Raghunath Thamattur is the new Director Operations, AIC Capitanio Automation Systems India Private Limited.

Mr Raghunath will be the first point of contact for the partners in the Indian Subcontinent, he has deep knowledge of the Company's products and services and will also first line technical customer service.

Mr. Raghunath will be responsible for the overall management of the Company's affairs in Indian subcontinent and the relationships with outside vendors, consultants and customers. He will also be in charge of all the marketing actions and the corporate growth.

Mr Raghunath has an experience of over 26 years in the metals industry focusing on automation systems to the steel industry and has worked with Companies ABB, Danieli & Hitachi.

During his long career in the metals domain Mr Raghunath also co-founded a company "Metsys" providing control systems to the Steel industry which was later acquired by leading MNC. In his role as GM Sales and Service, Mr Raghunath will work very closely with OEM's & Steel Producers to provide AIC's Value added control systems with an aim to improve productivity and mill utilisation.

AIC management welcomes Raghunath in the CAPITANIO TAILORED AUTOMATION family wishing a prosperous collaboration.



Mr. Raghunath Thamattur – AIC Capitanio Automation Systems India Private Limited – Director Operations

FERALPI STAHL chooses again AIC for the supply of new DC motors and drives for 4 steps block of the Riesa Rolling Mill

The job follows previous project for the supply and commissioning of roughing stands AC drives, successfully accomplished during the last Christmas shut down.

As a result of a fruitful collaboration with FERALPI Group, AIC has received the order for the supply of the new DC motors and related DC drives for 4 steps block of the FERALPI Stahl Riesa Rolling Mill plant in Germany.

The scope of supply includes n°2 Nidec ASI DC Motors, rated 1250kW each, in mechanical & electrical axis configuration with torque distribution. The motors, specially designed to meet the layout constraints, will be driven by two main DC Drives Panels in master / slave configuration, with a power current of 2500A each and based on ABB DCS800 control technology.

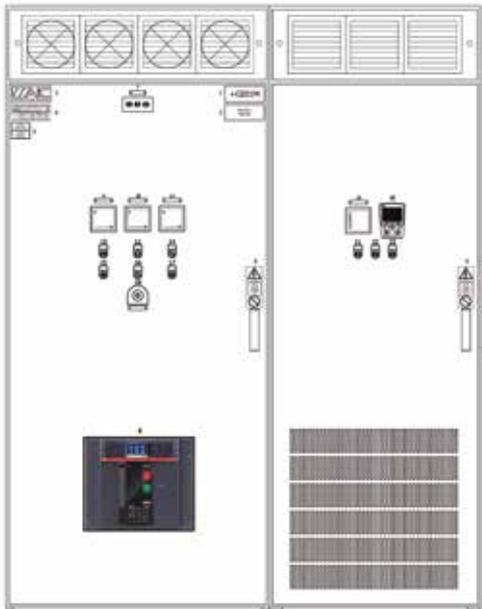
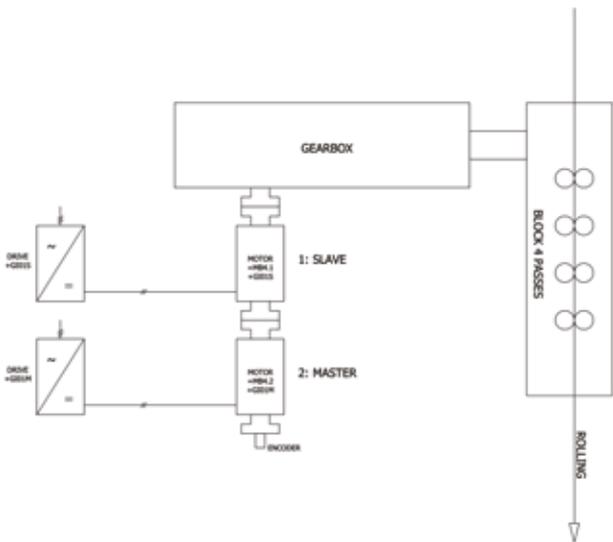
Each converter will be protected by withdrawable & motorized circuit breaker and line contactor, according to the state of the art safety design.

The new power control system will replace the existing and obsolete one and it will be integrated into the existing control system; furthermore it will guarantee a safety performance level PLd, according to the rule ISO 13849-1.satisfaction.

All the equipment, completely designed in the last weeks, are now in the manufacturing phase and they will be tested in AIC workshops, ensuring the top quality standard of the previous AIC supplies to Feralpi ESF.

The delivery and commissioning of the whole supply is foreseen for the next Christmas shut down between December 2016 and January 2017.

The Feralpi Group is a leading European manufacturer of steel products for the construction industry. Over the years, the Group's development plans have covered the acquisition of major companies in Italy and other European countries. The Group today is headed by Feralpi Holding S.p.A. and comprises associated companies whose core business is steel production located in Italy, Germany, the Czech Republic, Hungary and Romania. With a total workforce of over 1,300, the Group turns out over 5 million tonnes of steel and finished products each year.



New Control system configuration for the Block and layout of the master control panel

AIC gets a new order and the final acceptance certificate for a revamping project in Nucor Berkeley (SC)

AIC has successfully accomplished the cut line and cooling bed area upgrade project in Nucor located in Berkeley, South Carolina - USA, during the last shutdown in October and received the final acceptance certificate.

The job consisted in replacing 2 PLC Allen Bradley PLC 5 with a new PLC ControlLogix L73.

The software of the cooling bed area was converted while the control of dividing Shear has been replaced with the AIC logic.

The main criticality of the work was the integration of the new software with the converted part, keeping alive all the signals used for tracking.

The problems arising from the merger into a single PLC software first split over two different CPU round up the critical encounter.

The scheduled shutdown was 7 days but, because of the maintenance work planned by the customer, the available time for the test has been just 3 days.

The perfect preparation of the job, with the collaboration of NUCOR team, allowed a really fast and successfully commissioning, bringing back to production the plant according to the foreseen schedule in the minimum time available given by production requirements. The Plant was back to full production within 2 hours from startup.

The project follows a previous major revamping performed by AIC in 2012 replacing the master speed control for the continuous mill.

Thanks to these good and fruitful relationships AIC has been also awarded for a new job, focused on the upgrade of Saws Area PLC from PLC5 to Allen Bradley ControlLogix.



Dividing Shear at Cooling bed entry

AIC ends a notable revamping project of Caleotto Lecco rolling mill and has been awarded for new steps of the plant upgrade

A long-time history of Italian steel industry survives and after several years of doubts and worries a new page of production can be opened.

Thanks to a four hands project realized by Feralpi Spa and Duferdofin Spa in 2015 the Caleotto Wire rod mill (Arlenico area, Lecco – Italy) has been saved and can restart into operations.

The Caleotto plant was stopped for the last five years because of the global crisis of the metals industry, but now this new project allow the workers and cooperators to face the future with new hopes and certainties.

AIC, as historical E&A supplier of Lucchini Caleotto plant since 2005, is now involved in this new adventures aiming to ensure a new life to this rolling mill.

The first step of the revamping was focused on the problem solving of the main issues that were preventing a new start-up of the production process.

The job started in autumn 2015 was a complete revamping of the reheating furnace area, charging and discharging area including auxiliary machines of roughing mill .

The scope of supply included the dismantling of obsolete drives and control panels and their replacement with new equipment designed, manufactured, tested and commissioned by AIC, according to the following list:

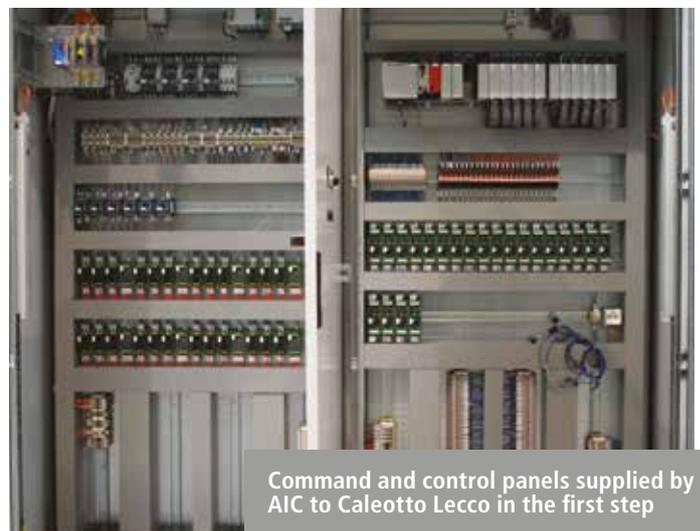
- PLC control panel
- Drives panel for charging area
- Drives panel for furnace and roughing mill auxiliary machines
- Main pulpits
- PC panel

AIC provided a complete turnkey supply, including all necessary electrical installations and PLC & HMI software development; this first step of the revamping project of Caleotto’s rolling mill was

successfully completed during the shutdown in December 2015. The great cooperation between AIC and Caleotto allowed a really fast and successfully commissioning of the new equipment, respecting the production schedule without any deviation.

All automation has been developed using Rockwell system ControlLogix and AB PowerFlex drives completely integrated into the software PLC through Ethernet TCP/IP communication protocol.

AIC revamping increased quantity and quality of rolling mill production, thanks to the optimization of machinery software control and new electrical equipment.



Command and control panels supplied by AIC to Caleotto Lecco in the first step

Following the great results of this phase of the restart into operation, AIC has been awarded for the next steps of the modernization of the wire rod line, focused on the following tasks:

- Design and commissioning of PLC and power control for rotating shear - commissioned during the shut-down of August 2016
- Mechanical & Electrical weighing system - commissioned in October 2016
- Complete revamping of finishing & delivery area for coils - installation in December 2016

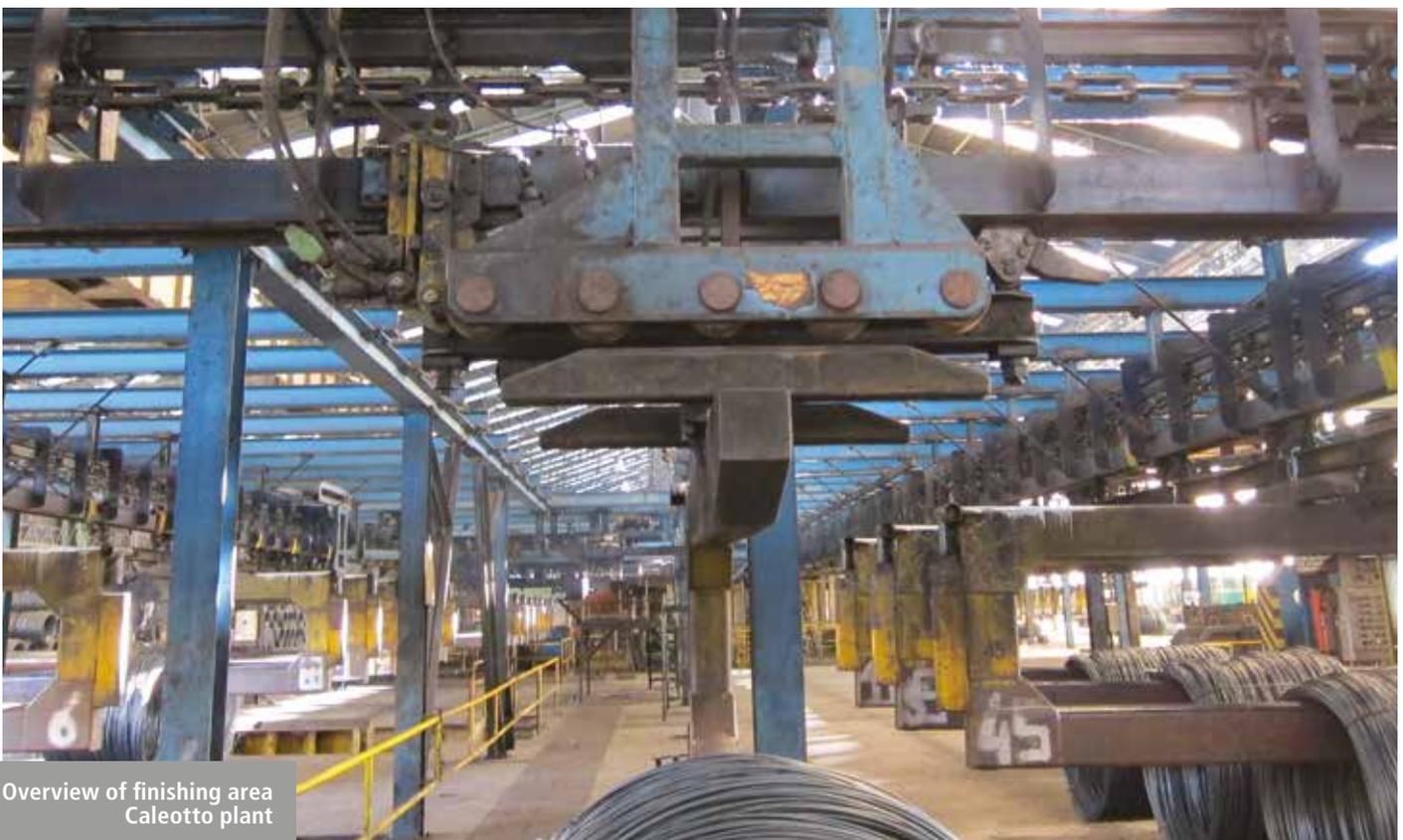
The last step is a great project aiming to a deep upgrade of the finishing area; the commissioning is planned for December 2016 and the following activities & supplies are foreseen:

- New master PLC cabinet for the control of coils delivery area, equipped with safety CPU
- New local control pulpit and stations for binding

machine for coil pressing and finishing area

- PLC & tracking software
- Upgrade of HMI system
- CCTV system for Laying head and cooling blowers area
- Auxiliary drives panels for cooling conveyor, blowers and auxiliary services
- AC motors for cooling conveyor
- Auxiliary AC drives panels and RIO cabinet for dirty water control system
- Engineering and services for the whole project.

According to the previous job the control system will be based on Rockwell system ControlLogix PLC and AB PowerFlex drives completely integrated into the software PLC through Ethernet TCP/IP communication protocol.



Overview of finishing area
Caleotto plant

AIC, together with Kocks and Morgardshammar, has been awarded to revamp the SeAH plant in Changwon (South Korea)

SEAH CHANGWON INTEGRATED SPECIAL STEEL CORP. contracted Friedrich Kocks GmbH & Co KG, Morgårdshammar AB and Automazioni Industriali Capitanio srl for a modernization project at its steel plant in Changwon, continuing decades of successful partnership with the Korean special steel producer.

The SeAH group acquired SEAH CHANGWON INTEGRATED SPECIAL STEEL CORP. (formerly known as POSCO Specialty Steel and Sammy Steel) in March 2015.

The company became Korea's only domestic producer of stainless steel rods and wires made from high-quality special steel materials. With an annual production capacity reaching 1.2 million tons of steel making and 1.0 million tons of steel products, SeAH CSS belongs to the global top ten of special steel manufacturers.

The existing KOCKS blocks – Precision Sizing Block (PSB) and 370/10 Pre-finishing Block will be replaced by two 2-high HV stands, three Looper, a Crob & Cobble Shear and a 370++ RSB SCS®.

The RSB SCS® is the latest milestone in reducing and sizing technology for SBQ products and offers SeAH CSS enhanced bar and wire quality, improved productivity, mill availability and economy as well as a simplified, safe and environmentally friendly operation.

At the core of the future-oriented RSB SCS® is the real-time closed-loop control system SCS® (Size Control System) acting in combination with 3-roll stands adjustable under load (AUL) and / or tension control. The SCS® operation is supported by a new innovative bar gauge called "4D Eagle" based on the light section principle and featuring the highest measuring frequency available in the industry.

These features remarkably further improve the rolled tolerances and their reproducibility and, at the same time, simplify the operation by means of an automated optimization of the process parameters for the rolled bars and wire rods either by roll gap adjustment or control of the tension between the stands.

RSB SCS® is designed for the production of steel bar and rod in

coils with a finished size range from 16.0 to 100.0 mm Ø and any pre-sections for the wire mill with a size range from 5.5 to 16.0 mm diameter at a maximum rolling speed of 15 m / s.

AIC will design and manufacture the electrical & automation equipment for both new Kocks RSB SCS® and new Morgårdshammar Stands and Shear, providing state of the art power control panels as well as new PLCs cabinet and AC motors.

The electrical scope of supply will include n°2 power control switchboards based on Siemens Sinamics S120 motor modules with fully regenerative DC Bus supplier (Active Front End), suited to drive new Siemens AC Motors sized according to the mechanical equipment designed by the partners of consortium.

AIC will be also in charge to manufacture one Auxiliary AC Drives panel as well as a new PLC cabinet and control desks; the complete engineering for the whole electrical portion and PLC software development based on Siemens S7 platform will complete the supply of the Italian company.



SeAH Changwon Integrated Special Steel is Korea's only domestic producer of stainless steel rods and wires made from high-quality special steel materials. Stainless production runs the gamut of industries from automotive, energy, and machine, to shipbuilding and plant production.

AIC selected as technological supplier by Super Smelters for a new rolling mill

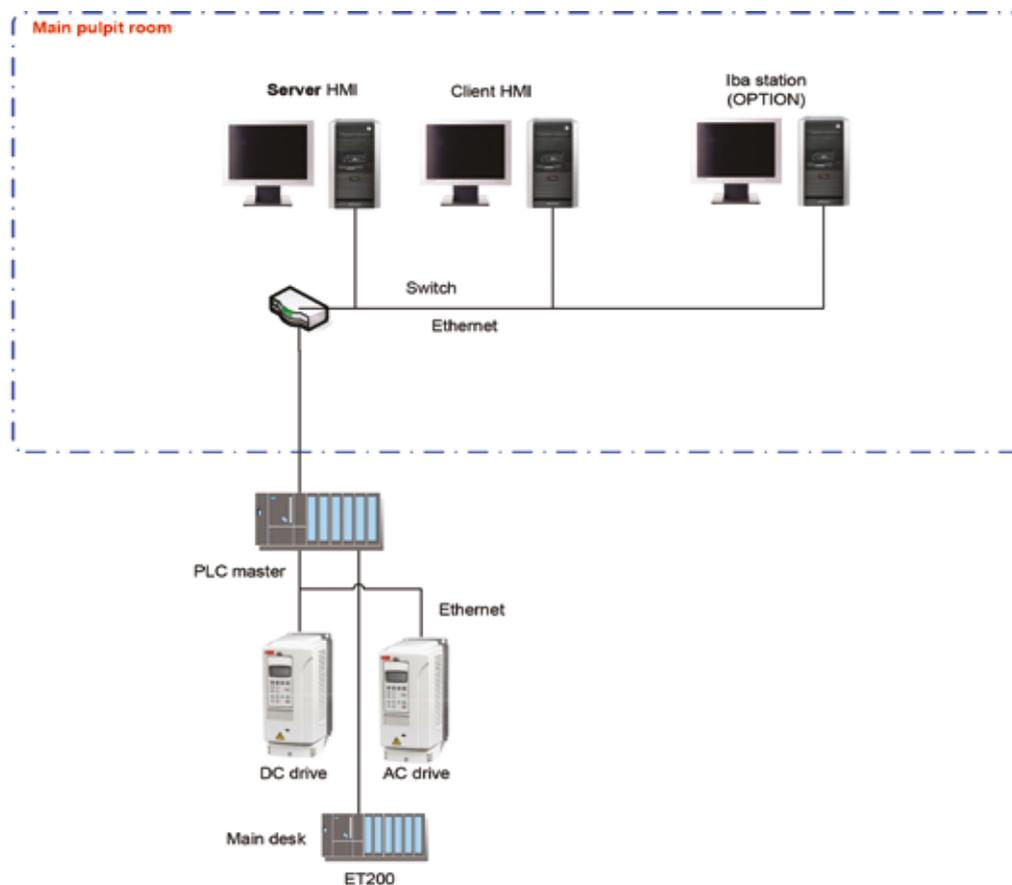
Due to a long term experience in long products hot steel rolling mills, and especially in high speed cooling bed entry systems, AIC was selected as main technological partner by Super Smelters Ltd for their new plan to be installed in Badhwan, West Bengal, India.

AIC will supply control system for the continuous rolling mill and high speed cooling bed entry line.

The project includes:

- 12 stands with 5 loopers
- one six pass finishing block
- 3 start stop shears
- 1 rotating high speed shear
- drum type cooling bed entry and discharge system

Leveraging a many-years expertise in similar projects all around the world, AIC will not only supply and commission the control system for all these components, but also work as overall consultant for sensor placement, process optimization and system validation.



AIC & Primetals Technologies to supply bar rolling mill to Capitol Steel in the Philippines

Primetals Technologies, in cooperation with Automazioni Industriali Capitanio S.r.l. (AIC), has received an order from Capitol Steel Corporation (Capitol Steel) to supply a new bar rolling mill for its plant in Quezon City, Philippines.

The rolling mill will produce around 500,000 metric tons of reinforcing steel (rebars) per annum with diameters ranging from 8 to 50 millimeters. Diameters up to 12 millimeters will be rolled in multi-slit mode. Commissioning is scheduled to start in the second half of 2017. The bar rolling mill is already designed to be able to produce in the future plain rounds and merchant bars.

Founded in 1974, Capitol Steel Corporation already runs a bar rolling mill in Quezon City near Manila, which has a capacity of around 200,000 metric tons per annum. The new bar rolling mill will enable Capitol Steel to considerably increase its capacity for supplying the presently booming construction industry in the Philippines.

The starting material for the bar rolling mill will comprise 6 and 12 meter long billets of carbon steel with square cross-sections ranging from 120 x 120 to 160 x 160 millimeters, which will be processed into rebars with diameters ranging from 8 to 50 millimeters. In order to increase the productivity of the plant, bars with diameters between 10 and 12 millimeters will be rolled in two-slit mode, and those with diameter 8 millimeters in three-slit mode.

The rolling line will consist of a roughing mill, with seven stands, and an intermediate mill, with six stands, in an HV arrangement. The finishing mill will be made up of six stands in H arrangement. The type of all the rolling stands will be Red Ring Series 5. An inline PQS quenching system gives the bars a martensitic case and a ferritic-pearlitic core, enabling Capitol Steel to produce ASTM A615 and A706 Grades from 60 to 80 starting from low carbon steel made raw material. The downstream hot dividing shear is equipped with an **optimization system to**

maximize the utilization of the cooling bed and guarantee the pre-set number of commercial-length bar layers per bundle.

The cooling bed entry automation software will ensure that no short bar is present in the bundles, while saving them on a separate discharge table to be handled and sold separately, **maximizing the yield of the plant**. This function will ensure that all bundles have the same number of bars, and it will be integrated with an additional **camera-based bar counting** system to verify the exact number of bars in the finished bundle. The cooling bed is 84 meters long and 8 meters wide. A re-located cold static dividing shear, whose drive system will be upgraded from original clutch and brake type to start stop type, handles the final cutting of the rolled bars. This is followed by automatic bundling, binding, weighing and dispatching of bundles. The scope of supply also includes fluid systems and operational parts, such as stand-by Red Ring stands, rolling rolls and guides.

Primetals Technologies is responsible for the design of the mechanical equipment supplied, the entire process planning of the bar rolling mill, and specific engineering support for auxiliary systems, such as water treatment plant, workshop and laboratory, fire protection, cranes and civil works.

AIC is responsible for the design and supply of the electrical equipment and the Level 2 automation system to run the bar rolling mill. Both Primetals Technologies and AIC will also assist Capitol Steel with specific technological training of its personnel and with the construction, startup and commissioning of the plant.



Marco Capitanio during signing ceremony

880, 4800... PLd

With these numbers AIC realizes the new control Panel to drive the 5-6-7-8 Rolling Mill Stands of the FERALPI STAHL plant in Riesa, Germany.

880 as the **ABB ACS880** latest generation Drive, used to control the Rolling Mill Stands AC Motors.

The inverters were installed and started during the last winter stop in January 2016, replacing the existing ACV700 inverters series that had been in operation since 1994. For FERALPI STAHL this is the first application of ABB ASC880 Inverter series.

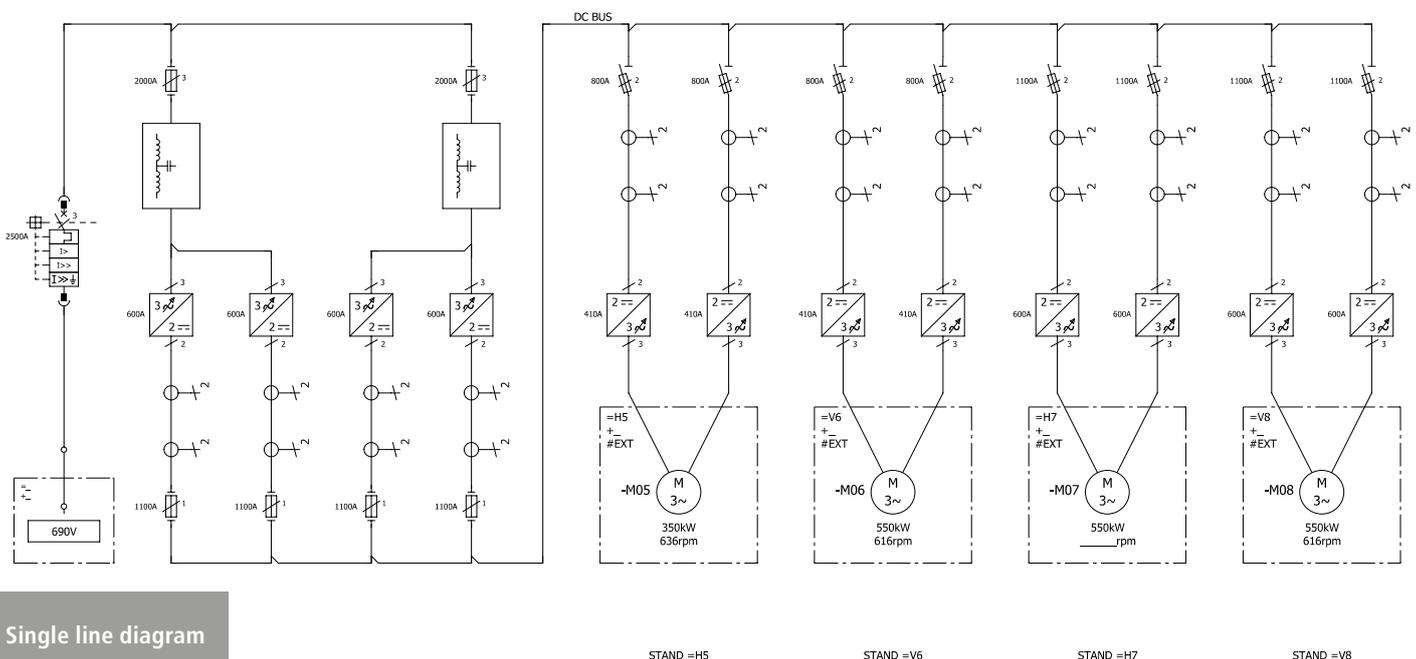
The supply is composed of a DC BUS implemented with AFE Active Front End technology.

The AFE is a power supply and regeneration unit that provides a constant DC voltage regardless of load conditions, it is an option for the inverter that guarantees a four quadrants operation of the machine while maintaining the current distortion factor below 4%.

4800 the overall weight in kg of the +F05 Panel, more than 7 meters length, built and ships in a single battery.

The Panels contain a regenerative AFE DC BUS of 2400 Amperes composed of 4 parallel DC modules, while the inverters are composed of 8 inverter modules pairs in parallel to drive two AC 550 kW Motors and two AC 350 kW Motors for 4000 total Ampere Inverter Drives.

PLd the security level reached, certified and guaranteed by the application.



Single line diagram

As already realized for the previous ACS800 Inverter series, AIC has engineered the installation of new ACS880 Drive within own carpentry considering increased wide spaces and allowing great accessibility to the installed components.

The control units were placed in dedicated cabinets and not within the power compartments.

An ad hoc slide allows rapid extraction of all wheeled Inverter modules installed inside the Panel.



Inverter ACS880 Panel realized at the AIC headquarters in Brescia - Italy

New Hydraulic Mould Oscillators for Alfa Acciai CCM, Brescia (Italy)

Project: Revamp of continuous casting machine #1
Startup date: September 1st 2016

Introduction

During the last spring AIC got the order to supply the Electrical & Automation system for the control of new Hydraulic Mould Oscillators of Alfa Acciai.

The new equipment were commissioned with the target to improve the steel quality on the CCM#1 (5 lines) of the Brescia plant, Italy, where an EAF, n°2 LF, CCM#2 (5 lines) and n°3 rolling mills (for bars, wire rods and coils) are in operation.

In collaboration with the mechanical suppliers SBM-IRFI and LOMA, AIC designed the whole control system for a turn-key project.



Overview of casting lines of CCM#1 (and related local control stations) during the start-up

Scope of supply

The AIC's scope of supply for the project included:

- Upgrade of the PLC control system through the supply of n°5 new PLCs (one for each line) to be installed into the existing cabinets
- Interface with the Tundish
- Interface and control of new Stirrers
- Management & control of new hydraulic oscillators
- Control of cooling system
- New auxiliary drives panels for Hydraulic units
- New main control desk
- New local control station for each casting line, suited with safety devices and Operator Panel

The whole supply has been designed to accomplish and satisfy the safety requirement of ISO Standard 13849-1 (Safety of machinery) and the specific safety standard for Casting Machines EN 14753 (Safety requirements for machinery and equipment for continuous casting of steel).



New main control desk



Hydraulic Oscillators

Main technical data

Actuator: Moog servo proportional valve mounted on hydraulic cylinder

Hydraulic unit: Dedicated hydraulic unit, working pressure 180 bar.

Automation: Dedicated PLC mounted inside existing strand panels

Features

Generation of oscillation movement of the mould following a sinusoidal curve with variable frequency and stroke.

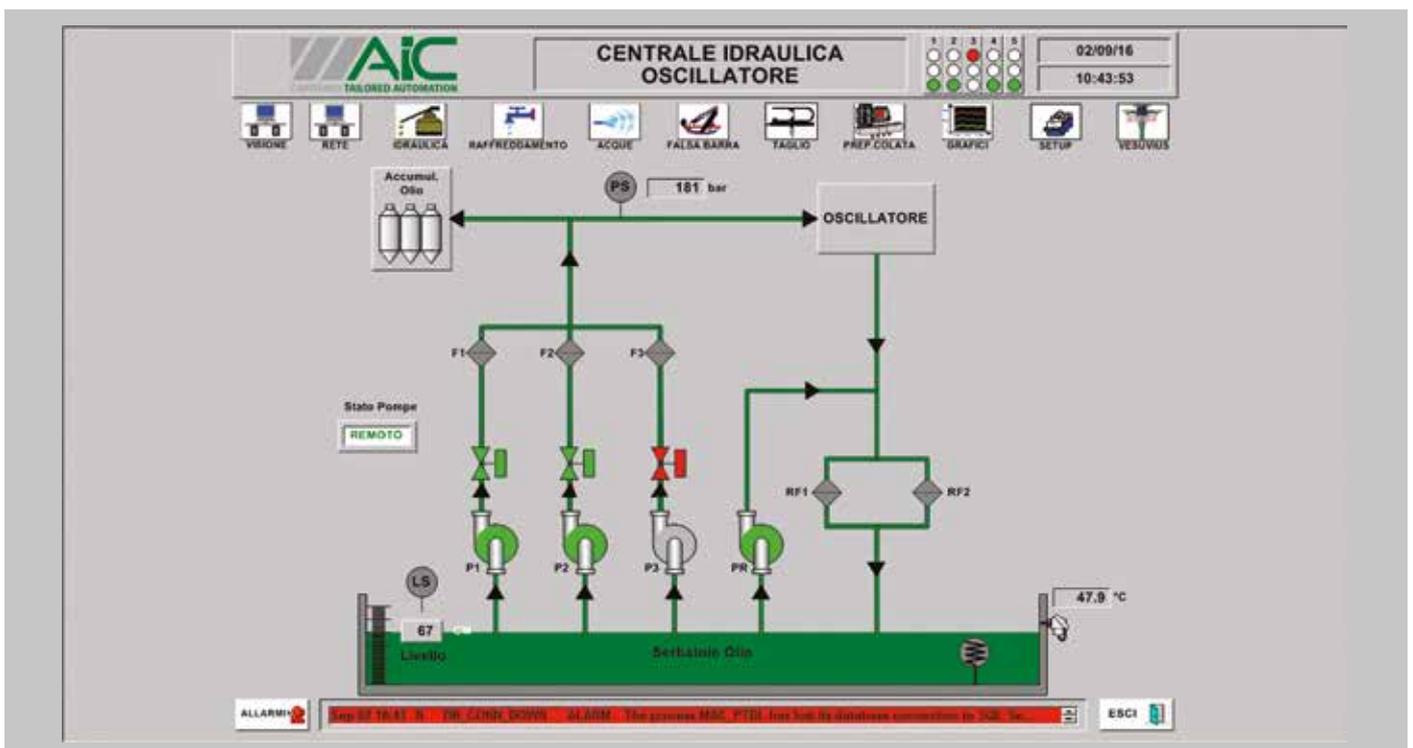
Frequency range: 30 to 300 spm.

Stroke: 3 to 14 mm.

(Ranges can be modified according to the customer request).

Oscillator hydraulic unit

The oscillators require a new hydraulic unit and in this case it is based on 3 main pumps (2 working and 1 in stand-by). This unit serves 5 oscillators and the working pressure is 180 bar. The unit is also equipped with a recirculation pump, filters and heat exchangers to let the oil cooled properly.

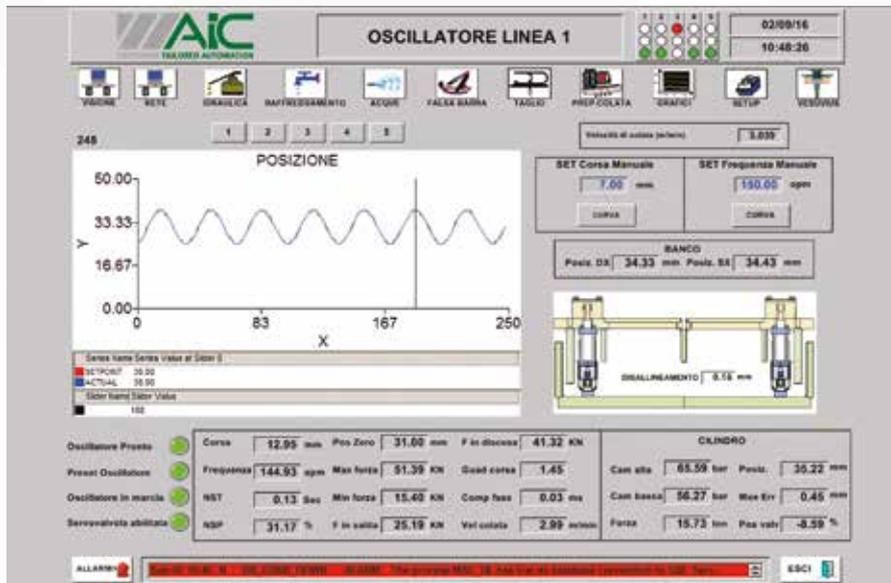


Control and setup

The setup of oscillator is based on curves: Frequency Vs casting speed and Stroke Vs casting speed. The curves are included on recipe system and can be modified both from Level 2 or from HMI.

Additional screen on existing HMI has been made in order to visualize the actual statuses of the oscillators and the control parameters.

The screen has the following behavior:

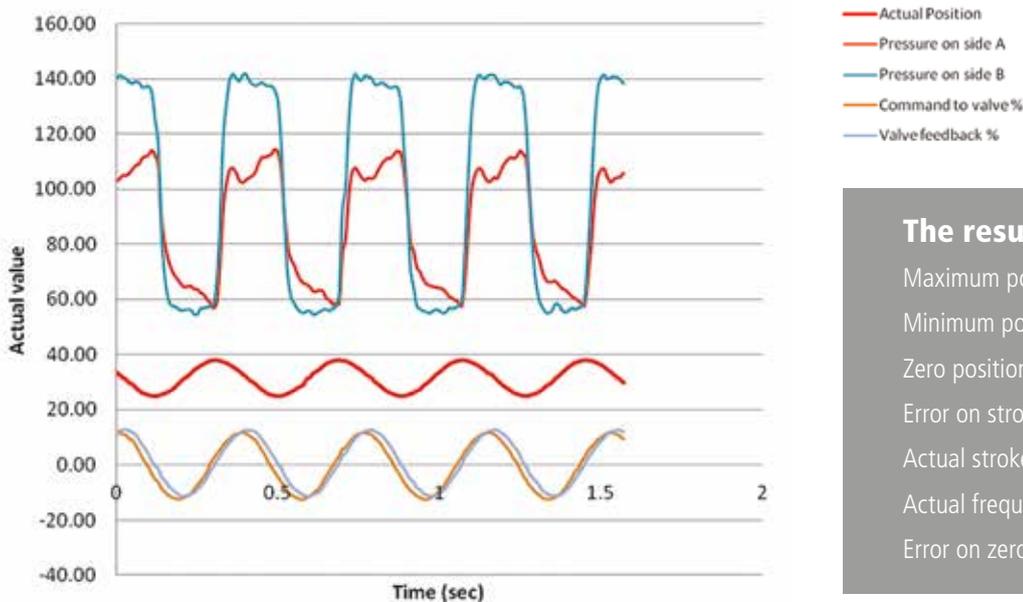


On the screen is possible to plot the last cycles of the oscillator in order to verify the actual position and the target one, moreover is shown the table misalignment based on two additional position sensors placed at the right and at the left of the mould. The maximum misalignment is evaluated and shown each oscillator cycle.

Results

The following graph shows the main trends of oscillator during cast.

The stroke setup is fixed to 13mm, while the frequency depends on speed.



Alfa Acciai Oscillator

The results are:

| | |
|------------------------|------------|
| Maximum position | 38.10 mm |
| Minimum position | 25.05 mm |
| Zero position | 31.57 mm |
| Error on stroke | 0.05 mm |
| Actual stroke | 13.05 mm |
| Actual frequency | 157.89 spm |
| Error on zero position | 0.03 mm |

Conclusions

The great technical result, together with a really short and efficient commissioning and start-up (CCM into operation at the first day of hot commissioning) allowed AIC to completely satisfy the customer needs and to confirm its role of technological partner for the steel producers.

E-FESTO: an Advanced Process Control framework aimed at energy efficiency achieving in steel reheating furnaces

Introduction

Steel industries, in last decades, observed a technological development that has involved the production chain and the automation level. Related to the recent growth, it has become increasingly difficult to find optimal trade-offs between conflicting specifications: energy saving and environmental impact decreasing versus production and product quality maximization. In this context, Advanced Process Control (APC) software solutions are guaranteeing minimum payback time, thus maximizing the return on investment.

i.Process S.r.l. (Italian Plant Realtime Optimization & Control for Energy Saving Services) is an Italian industrial automation society that studies, develops and installs APC systems oriented to energy efficiency improvement in process industries. The adopted control strategies

are based on Model Predictive Control (MPC) techniques, suitably customized for the considered case studies .

Among its APC projects, i.Process S.r.l., through a cooperation with UNIVPM (Marche Polytechnic University) D.I.I. (Information Engineering Department) L.I.S.A. (Laboratory for Interconnected Systems Supervision and Automation), has investigated the problem of energy efficiency improvement in steel industry. In particular, the research activity has been focused on the billets reheating phase, which takes place in a furnace. An APC framework, named as E-FESTO, based on a two-layer MPC strategy, has been developed, introducing it in a proprietary software tool.

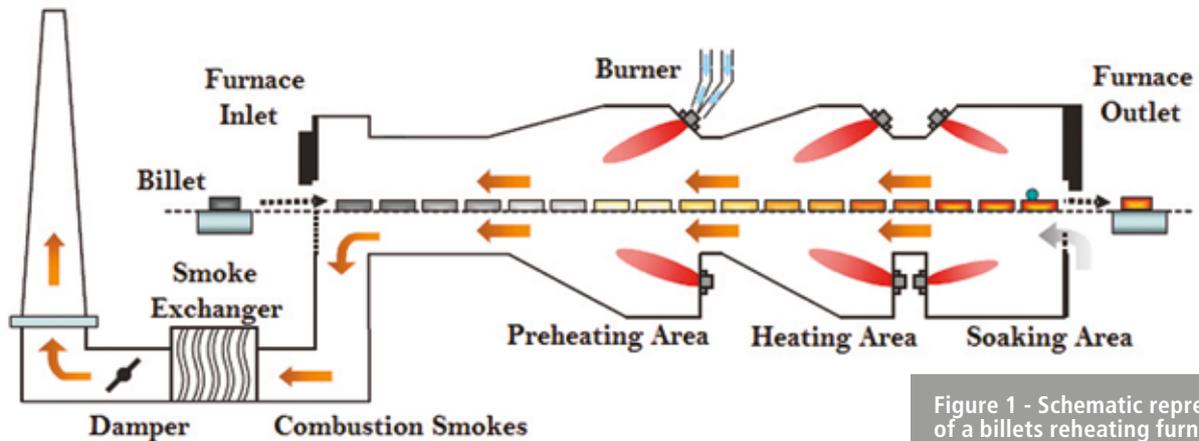


Figure 1 - Schematic representation of a billets reheating furnace.

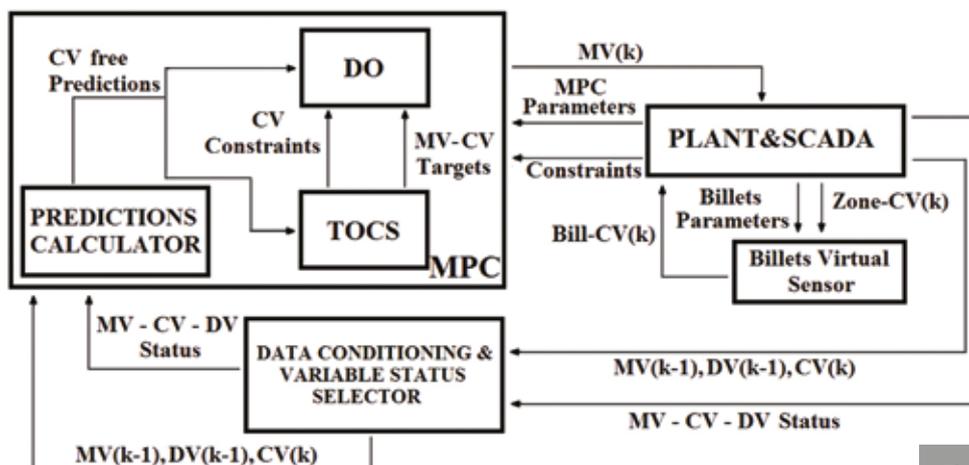


Figure 2 - Architecture of E-FESTO APC framework.

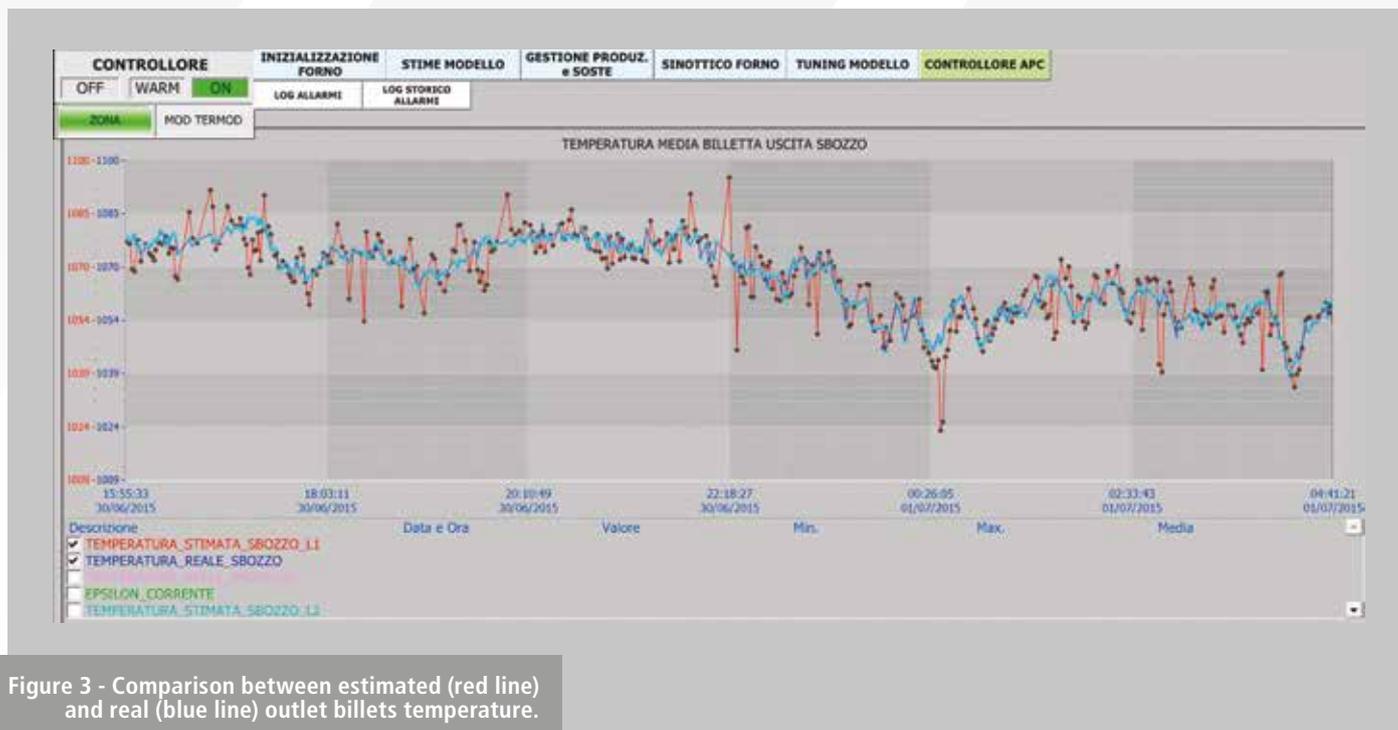


Figure 3 - Comparison between estimated (red line) and real (blue line) outlet billets temperature.

A sketch of E-FESTO APC framework

A billets reheating furnace is schematically represented in Fig. 1, while the architecture of E-FESTO APC framework is reported in Fig. 2.

The billets reheating phase is conducted through burners, e.g. air/fuel burners, which release thermal energy, triggering conduction, convection and radiation phenomena. The billets enter the furnace at various temperatures and the temperature required at the furnace outlet may vary, according to the specifications for the subsequent rolling phase. The billets movement along the furnace is defined by variable furnace production rates.

A very typical aspect of reheating furnaces is represented by the absence of real sensors that measure the temperature of the billets inside the furnace; for this purpose, E-FESTO APC system is equipped with a virtual sensor for billets temperature estimation (Fig. 2, Bill-CV(k)), based on a suitable billets heating first principles model (Fig. 2, Billets Virtual Sensor). The inputs of the developed nonlinear model are the measurements of the different zones (Fig. 1, Preheating, Heating and Soaking Area) temperature (Fig. 2, Zone-CV(k)). In Fig. 3 the performances of the virtual sensor on a walking beam reheating furnace are shown: the estimated surface temperature of the exit billets (red line) are compared to the pyrometer measurements at the furnace outlet (blue line). In this case study, analyzing two years process data, a Root Mean Square Error of Prediction (RMSEP) less than 12 [°C] has been observed (about 1% of the optical pyrometers measurement range).

E-FESTO APC system exploits an overall furnace modellization,

constituted by first principles models and identified ones; the developed models are suitably introduced in a two-layer MPC strategy that takes into account all furnace conditions. The different furnace conditions are represented by the definition of a status value for each process variable, which is set by a cooperative action of plant operators (through the developed Human-Machine Interface) and internal logic operations (Fig. 2, Data Conditioning & Variable Status Selector). MPC block is constituted by three modules: a Dynamic Optimizer (DO), a Targets Optimizing and Constraints Softening (TOCS) and a Predictions Calculator.

Thanks to the developed MPC architecture, the desired trade-offs between energy and production specifications can be achieved.

Results

E-FESTO APC framework has been installed in five steel plants, characterized by pusher type or walking beam reheating furnaces. Energy efficiency certificates, together with an improvement on processes control, have been obtained. The developed reheating furnaces control method has been awarded with an Italian patent. Furthermore, the first E-FESTO APC project, related to a walking beam reheating furnace, has been awarded during the "Secondo Workshop Annuale CESEF" (CESEF, Centro Studi sull'Economia e il Management dell'Efficienza Energetica) among "CESEF Energy Efficiency Awards". In particular, it has been awarded with the "Project Energy Efficiency Award".

In particular, it has been awarded with the "Project Energy Efficiency Award".

In all real installations, the designed controller has replaced the previous furnaces conduction, based on advanced PID controllers manually managed by plant operators. With the previous control system, operators had no information about billets heating behavior inside the furnace. Thanks to the developed virtual sensor, this information

has been provided. Furthermore, with a manual conduction of local control loops, operators have difficulty in finding optimal trade-offs between energy and quality aspects. With the previous control system, operators safely assured the desired billets outlet temperatures and neglected aspects related to fuel minimization, thus achieving a limited energy efficiency.

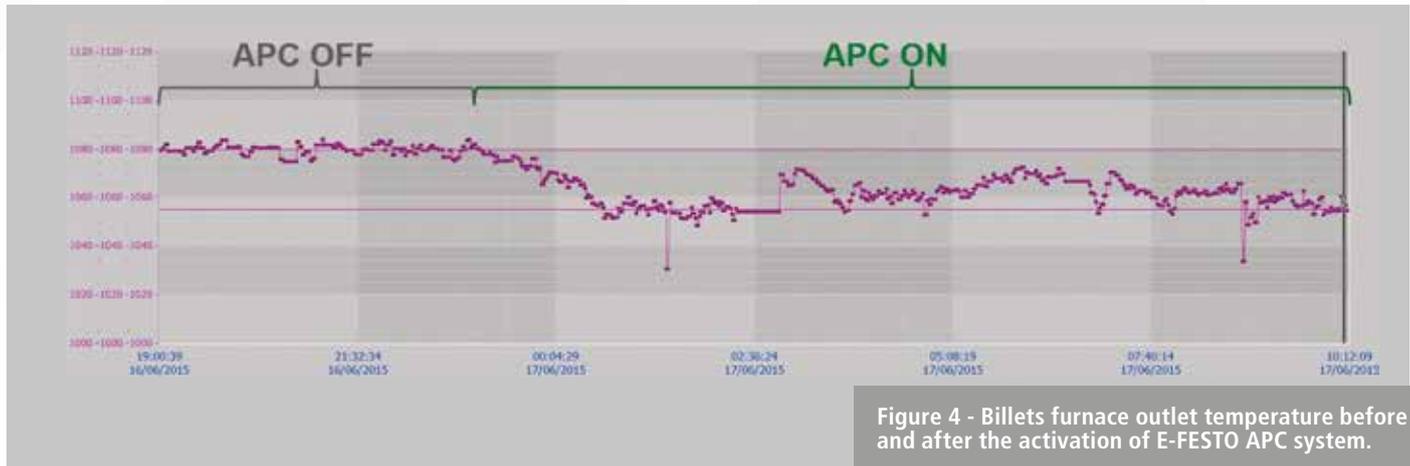


Figure 4 - Billets furnace outlet temperature before and after the activation of E-FESTO APC system.

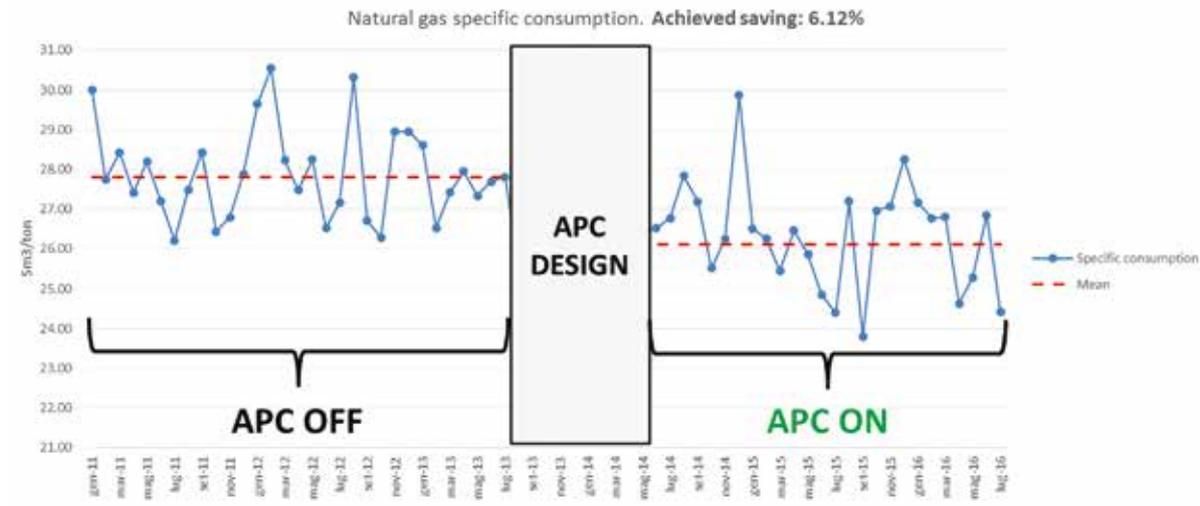


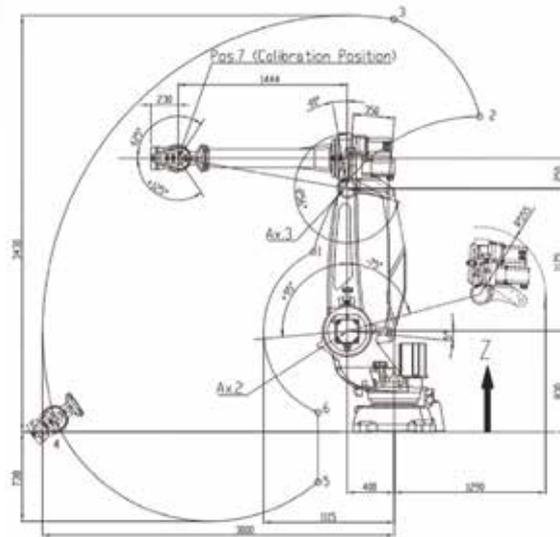
Figure 5 - Fuel specific consumption before and after the activation of E-FESTO APC system.

A comparison between the previous control system performances and E-FESTO APC ones related to one of the real case studies (walking beam) has been reported in Fig. 4. Fig. 4 depicts the optical pyrometer measurements of billets temperature at the furnace outlet (15 hours total period): the first 4 hours refer to the previous control system, while the last 11 hours are related to the E-FESTO APC one. The furnace boundary conditions, e.g. billets input temperature and furnace production rate, are similar, and the billets outlet temperature constraints (Fig. 4, straight lines, 1055 [°C] – 1080 [°C]) are kept

constant. As can be noted, when E-FESTO APC system is switched on, the billets outlet temperature lower constraint is approached, thus improving furnace energy efficiency. In the considered case study, energy efficiency improvement has been proved taking into account fuel specific consumption before and after the E-FESTO APC system activation. With respect to the defined project baseline, a 5% reduction of the fuel specific consumption has been observed after one year from the first start up, reaching a reduction of about 6% after two years (Fig. 5).

Robotics in steel industry

The growing number of our customers' need to maximize security within their manufacturing plants has pushed AIC to step up its projects in robotics, especially on taking samples in meltshops area, where they find wide applicability anthropomorphic robots that are suitable to pickup samples in EAF and LF. New projects for automatic tagging devices in casting area for billets and finish area for bundles and wire rod rolls are being finalized. Collaborations have been tightened with leader partners in robotics sector. Another important collaboration for AIC it is the one with Infosight, leader of the identification field and in printing high-temperature resistant tags (more than 1200 °C). Tags can be applied directly on billets at the exit of continuous casting machines by MIG welding without the help of hooks.

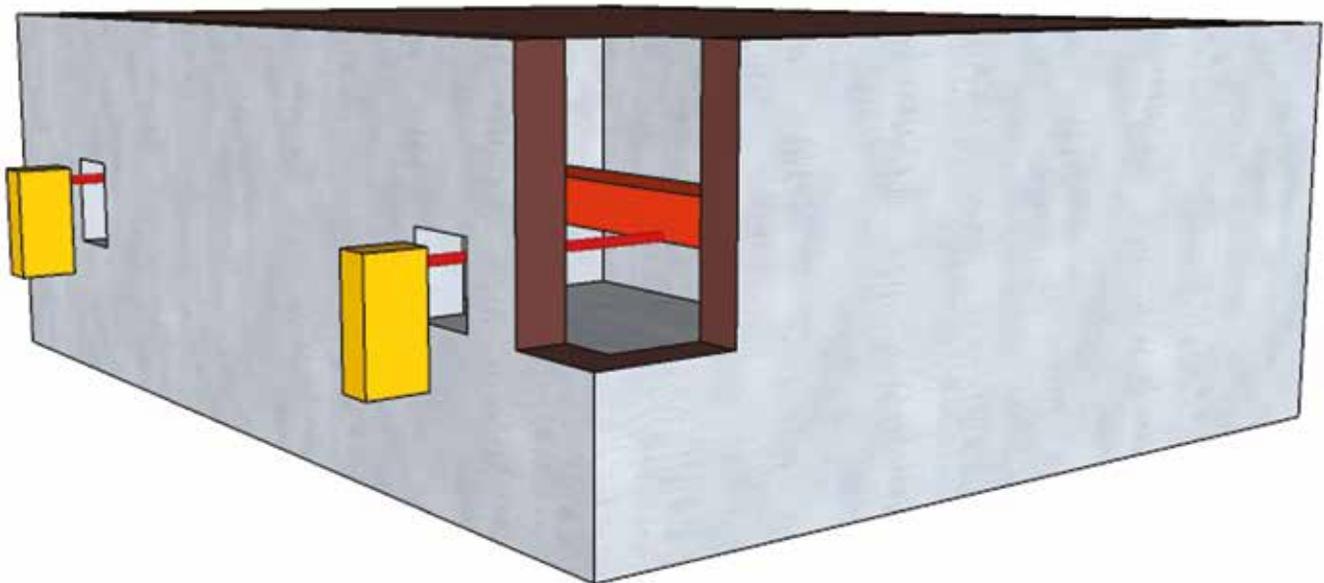




photos courtesy
Infosight

Automatic furnace discharge, from mechanical devices to lasers

In many reheating furnaces where the automatic discharging is still based on mechanical devices AIC has developed a discharging system based on non-contact probes with infrared sensors to determine the position of the billet inside the oven, and then that commands the pusher to discharge the detected billet decreasing significantly the use of mechanical devices.



Profilemeter and Defectmeter

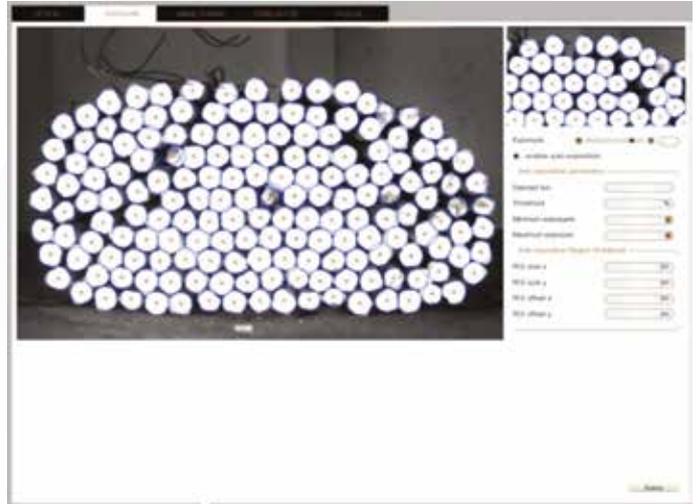
AIC, in collaboration with sector leading companies, is able to provide stations fully integrated with the plant automation to measure profiles in production and to in-line detect defects on material while production is running.

Speed measurement system

AIC has been developing a cut to length system on cooling bed optimized to have precision of +/- 20mm on flying shears, this has been done by using speed measurement devices based on infrared technology. Using no-contact sensors AIC can guarantee the best performances on cut to length also on high speed production lines.

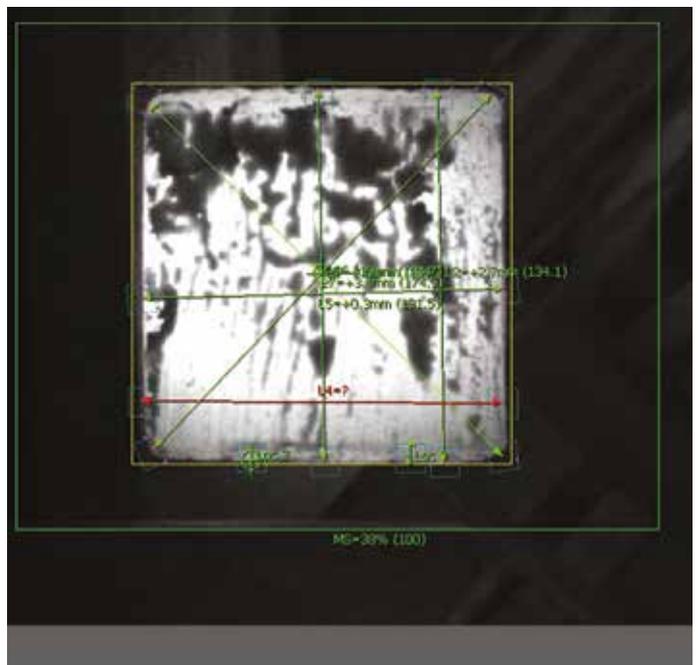
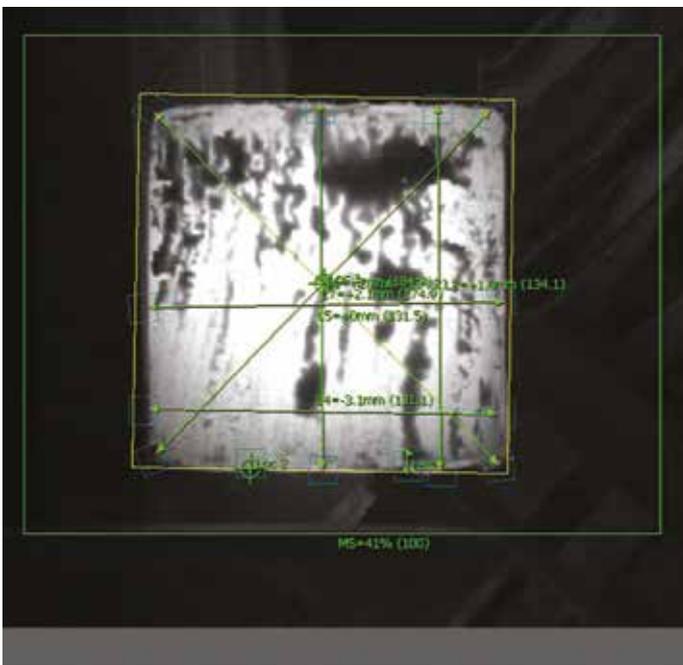
Barcounting

AIC, in collaboration with VideoSystem, is able to provide bar counting systems while material is being translated on chains and when is already in a bundle as well, all integrated in plant automation to allow the operator to act in the minimum required time and in the appropriate way in those plants where the bar counting is a must.



Billett shape detector

A camera-based system to detect billet shape while just out from cast continuous machines has been developed, in order to immediately check the deviation from target devices, giving an alarm when billet sizes and rhomboid are out of settable thresholds. System can be used also on reheating furnace entry at rolling mills.



| System Configuration | Inspection Status |
|----------------------------------|-------------------|
| Device IP Address: 10.10.115.22 | PASS |
| Device Name: Tvc2LatoLa | |
| User Connected: | |
| Solution Running: ID 4 | |
| Description: Sol_005 | |
| Display Update: Continuo (Tutto) | |

| System Configuration | Inspection Status |
|----------------------------------|-------------------|
| Device IP Address: 10.10.115.22 | FAIL |
| Device Name: Tvc2LatoLa | |
| User Connected: | |
| Solution Running: ID 4 | |
| Description: Sol_005 | |
| Display Update: Continuo (Tutto) | |

Level 2

AIC can supply different kind of level 2 software, starting from production stops analysis modules, material tracking modules etc. going to APEX and QMOS systems from QUAD Infotech.

The screenshot shows the AIC Level 2 software interface. At the top, there is a user login field with 'user: administrator' and a 'LOGOUT' button. Below this is a navigation bar with tabs: 'GEST.UTENTI', 'GEST.NOTE', 'REP.DIARIO', 'REP.FERMATE', and 'TRACKING'. A yellow warning banner reads: 'ATTENZIONE LA GIUSTIFICAZIONE RAPIDA FUNZIONA SOLO IN CASO DI SELEZIONE AUTOMATICA TURNO ATTIVA (PULSANTE 'TURNO ATTUALE' VERDE)'. Below the banner is a grid of buttons for various production actions: 'cambio diametro', 'cambio canale', 'cambio gabbia', 'cambio attrezzatura', 'cambio colata/qualita', 'fermate carica', 'fermate forno', 'fermate treno', 'fermate rotoli', 'fermate placca', 'incaglio treno', 'incaglio cesoie', 'incaglio placca', 'incaglio rotoli', 'arresto elettrico', 'arresto meccanico', 'attesa forno', 'pausa mensa', and 'fine laminazione'. There are also buttons for 'GIUSTIF. MULTIPLA' and 'MOD. MULTIPLA'. The server clock shows 'Orologio Server: 13:52'. The main data area is titled 'Ultimo Diametro 0' and 'N. Billette Lamine 221'. It contains a table with columns: 'Spezza', 'Inizio (GG-MM)', 'Ora Inizio', 'Ora Fine', 'Totale (h:m:s)', 'Zona', 'Cause', and 'Diam.'. Each row has buttons for 'GIUSTIFICA' and 'MODIFICA', and a 'NOTE' button.

| Spezza | | | Inizio (GG-MM) | Ora Inizio | Ora Fine | Totale (h:m:s) | Zona | Cause | Diam. |
|------------|--------|--------|----------------|------------|----------|----------------|---------|---------------------|-------|
| GIUSTIFICA | IMPOST | RAPIDO | 18-01 | 13:15:44 | 13:16:09 | 00:00:25 | nn ass. | nn giust. | ND |
| GIUSTIFICA | IMPOST | | 18-01 | 11:46:43 | 11:46:54 | 00:00:11 | nn ass. | nn giust. | ND |
| GIUSTIFICA | IMPOST | | 18-01 | 11:30:38 | 11:31:19 | 00:00:40 | nn ass. | nn giust. | ND |
| GIUSTIFICA | IMPOST | | 18-01 | 11:18:08 | 11:20:18 | 00:02:10 | nn ass. | nn giust. | ND |
| MODIFICA | IMPOST | | 18-01 | 11:07:05 | 11:15:23 | 00:08:18 | nn ass. | cambio diametro | ND |
| GIUSTIFICA | IMPOST | | 18-01 | 10:54:58 | 10:55:36 | 00:00:37 | nn ass. | nn giust. | ND |
| MODIFICA | IMPOST | | 18-01 | 09:18:25 | 09:26:35 | 00:08:09 | nn ass. | cambio attrezzatura | ND |
| GIUSTIFICA | IMPOST | | 18-01 | 09:02:11 | 09:02:58 | 00:00:47 | nn ass. | nn giust. | ND |
| GIUSTIFICA | IMPOST | | 18-01 | 08:56:22 | 08:59:44 | 00:03:22 | nn ass. | nn giust. | ND |

Quad Melt Shop Operation System

QMOS

Melt Shop & Rolling Mill

Quad Infotech Inc.
75 Scarsdale Rd.
Toronto, Ontario
Canada, M3B 2R2
Tel: (416) 391-3755
Fax: (416) 391-3845

Partnership

Videosystems

AIC has partnered with Videosystems for image processing processes for the steel industry, AIC has exclusive rights for the US and Canada markets for Videosystems products and for products that has been developed with the partnership.

Videosystems was founded on 1993 by Liani's family after a twenty-year experience gained in the field of electronic innovation and nowadays is synonymous of effective, high quality technology, at the same time Videosystems is a company leader in image processing in steel industry.

Videosystems Adamantis line is a complete line of sensors, cameras, quality control systems and measuring systems specifically designed and manufactured for use in the hot rolling process and to withstand the severe conditions of the steel environment.

The Adamantis® family includes sensors that meet the most varied applications:

- hot metal detectors;
- loop scanner: loop control;
- on-line dimension detectors;
- weld detectors;
- cameras for monitoring/shooting outside and inside furnaces.

Furthermore, the demand for the design and implementation of customized control solutions, to meet the specific requirements of each customer, consented to develop a range of sophisticated systems and technologies for advanced quality and process control: Adamantis Evoluta, Adamantis experience combined with Video Systems high-tech.

Adamantis Evoluta includes:

- advanced bar counting systems;
- identification systems;
- material surface control;
- advanced dimensional controls;
- stereoscopic measuring systems.

Part of this series is the Computo; it consists in a barcounting system able to count bar while are transferred on chains in its INLINE version or when they are already formed in a bundle in its BUNDLE version. This system is not slowing down production since is not going in contact with the material and guarantees best performances in counting.

With this partnership Limen has been developed and tested; its consist in a system able to measure material dimensions during rolling without having the cost of a profilometer, in this way customer may install Limen system in several positions between rolling stands eliminating obsolete procedures with man measuring material using wood.

A camera-based system to detect billet shape while just out from cast continuous machines has been developed, in order to immediately check the deviation from target devices, giving an alarm when billet sizes and rhomboid are out of settable thresholds. System can be used also on reheating furnace entry at rolling mills.

Partnership with Videosystems will bring always much more image processing in steel industry.



AIC joins new Acciarium Alliance to better serve steelmakers

Acciarium Alliance has born. Bianchi Ferri: "The market always welcomes new ideas"

It would hardly have been possible to identify a name in line with the philosophy of this new initiative. It's called the fact Acciarium Alliance the initiative that has officially seen the light last Friday April 15th and brainchild of Mauro Bianchi Ferri, Managing Director of Acciarium, after holding roles of prime importance at Union Carbide, ABB and Tenova.

The company, based in Milan, is a common network within which are inserted four distinct companies, synergistically, can provide the end customer - steel mills - complementary and innovative products and services. A unique solution, in short, to answer all the needs of a market in constant evolution.

AIC has entered into the Alliance with the aim to boost its capability to propose Tailor Made Solutions to Steelmakers.



The treasure of medium companies

"I've always believed that within mid-sized companies operating in the steel sector, like AIC, were residing great skills and a quick constructive ability to choose and act - says Bianchi Ferri - and Acciarium Alliance have created a fruit of the project actually thought for years."

"Within Acciarium Alliance are four companies - continues Bianchi Ferri - two Italian and two Germans." They are:

- AIC Capitanio Industrial Automation, specialized in automation solutions for rolling mills and steel mills,
- iProcess, team of engineers who provide innovative solutions marked to energy saving and the German:
- KIA Kern Industrie Automation, automation developer for process lines,
- SICON GmbH, supplier of modern plant for the treatment and separation of scrap.

"The complementary nature and the technological development of these four companies account for the added value of the offer of Acciarium Alliance - continues Bianchi Ferri - from which customers can receive customized solutions through an integrated, flexible and rapid response and precious guidelines for energy saving."

The idea maker of the Alliance is a good and long friend of AIC: "It was rather hard to leave big Companies" - stated Mauro Bianchi Ferri - "that's why it took me so long to start-up this idea that I always kept in mind and I shared with Dino Capitanio, his son Marco and all the other Alliance's Partners: I strongly believe that there is a great future for mid-sizes Companies sharing together their Passion and Competences".

"By using the synergies created among the Partners" - wrapped up Bianchi Ferri - "the Added Value to the final Customer will be multiplied. AIC will develop new Automation products together with the Partners entering in the field of Scrap Treatment and Process Control for EAF and Reheating Furnaces".

AIC together with the other Partner Companies, even though acting independently, get today a common base into the "ACCIARIUM ALLIANCE" to fasten together their unique Know-how and to offer clever and quicker solution to Steelmakers.

You can contact info@acciarium.com or visit our web site www.acciarium.com



Acciarium SRL

Via Vittor Pisani, 13
20124 Milano (Italy)

AiC: 40 Years of Servicing the Steel Industry With Automation Solutions

By **Karen D. Hickey**

In 1975, Dino Capitanio began a one-man shop in Odolo, Italy – after moving himself and his family from their hometown – to service the steel industry with customized automation and safety solutions. At that time, Odolo, was a growing market for the Italian (and thus the world) production of rebar. In 1992, he changed the name of the company to Automazioni Industriali Capitanio s.r.l. and began looking for markets outside Italy, but he continued to pay attention to the details of his clients' needs. Though the name changed, the idea of customized solutions was retained.

Now, to mark 40 successful years since its founding, the company name has again changed, this time to AiC Capitanio Tailored Automation. In 2014, AiC had a turnover of € 12 million, and the company now has more than 800 installations in over 40 countries. Its 120 customers include steel producers like Nucor Steel and Gerdau. Operations are based out of three main offices: Odolo, Italy; Kolkata, India (since 2008); and New York City, USA (since 2011).



Tour of Feralpi
Siderurgica S.p.a.



The tour of Feralpi Siderurgica Spa during AIC's anniversary celebration included the CCM control room, where AIC's safety technology is installed.

On 19 May 2015, AIC held a celebration of its 40th anniversary in the Brescia region of Northern Italy. Iron & Steel Technology was among the invited guests, who included customers as well as business partner.

The event began in the morning with a visit to the AIC workshop in Torbole Casaglia. Guests were given a tour of the workshop and had a chance to speak with some of the employees. AIC currently has 45 employees, all of whom engage in continuous internal and external training, as well as teamwork activities. Marco Capitanio, Dino's son and the managing director of AIC, said of his AIC teammates, "The reason for our success is that we trust our people".

Following a luncheon at Hotel Villa Fenaroli, guests were taken by bus to Feralpi Siderurgica Spa, part of the Feralpi Group. Feralpi Siderurgica, located in Lonato del Garda in the province of Brescia, has been in operation since 1969 and produces rebars and coils for reinforced concrete, as well as wire rod. The plant has a scrapyard, an electric arc furnace (EAF), a ladle furnace, a continuous caster (CCM), two hot rolling mills, a shear and a car shredding plant. An internal producer on the site stretches the wire rod and produces electrowelded mesh for the building industry. The No. 1 rolling mill rolls billets 140 m² x 12 m long for producing rebar, while the No. 2 rolling mill produces straight bars and wire rod. Feralpi Siderurgica is OSHA and ISA safety certified and newly EMAS certified.

AIC's partnership with Feralpi has been ongoing since 1975, with AIC providing both production efficiency and safety. The control rooms of the EAF, CCM and No. 1 rolling mill were all recently modernized by AIC.

The 123-MVA EAF has a 100-ton tap, with a power-on time of 32 minutes and a tap-to-tap time of 40 minutes. Two electrodes provide 70 kA of electric charge to the furnace. In the EAF control room, there is a new AIC safety system for lockout/tagout (LOTO). The modernization project began with a study of the activities that take place in each area. Master and slave keys are utilized for LOTO, and each key can be used on only one part. All necessary conditions must be satisfied in order for the equipment to run. At times a furnace stop may be necessary for safety's sake, but once safety is in place, then production increases can be achieved. The CCM and rolling mill use the same type of safety system from AIC. Following the tour of Feralpi Siderurgica, guests were bused back to the Hotel Villa Fenaroli for a presentation regarding AIC. A gala dinner followed.

Capabilities and Recent Projects

AIC supplies all types of automation equipment, from medium-voltage switchgear to field devices, for everything from steelmaking control rooms to rolling mills, roughers, breakdown mills, shiftable and reversing stands, shears (known as experts) and the finishing end. The company has established business partnership for both small projects and turnkey installations with such name brands in automation (level 2 and 3 systems) as Quad Infotech (the QMOS system), Stigelius S.L., Siemens, Rockwell, ABB and Nidec. AIC's work is exclusively in the metals and environmental industries, with 95% of the work focused on steel.



Advanced solutions from AIC include vision systems combined with robotic applications, instrumentation and energy certification. The reliability and value-added solutions are comprised of enhanced maintenance packages, Web-based document management, spare parts management, and training for maintenance technicians and operators. But the company is becoming more known for its safety systems, helping steel companies move toward safety as a benefit and not as a cost.

Some of the most recent projects from AIC are as follows:

- ArcelorMittal Acindar, San Nicolàs, Argentina – a complete revamp of the rolling mill automation consisted of replacing the old mill controls with a brand-new system based on an ABB AC800 platform. The revamp also comprised new technology for clutch-brake and start-stop shears managed by Siemens SIMOTION, as well as new controls for braking slide and moving rakes to improve discharging of the material and positioning on the rakes.
- Gerdau Long Steel North America Jackson Mill, Jackson, Tenn., USA – Complete revamp of the DC drives according to UL508A and OSHA prescriptions for lockout and arc flash risk reduction. The project consists of a complete replacement of the main DC drives for all the rolling mill stands, as well as the design and development of a state-of-the-art safety solution, in order to allow the operator safe access to the stands for all maintenance and repair activities. The safety design adheres to North American standards, mixing the experience developed from working with European clients with the standards adopted by OSHA. The result maintains all the previous milestones in the existing culture but in a more modern and efficient way. The major work consists of 17 new DC drive panels; the selected ABB DCS800 drives will be fully controlled via Ethernet/IP. Furthermore, every panel has been designed and certified according to UL508A North American regulations.
- Gerdau Long Steel North America Whitby Mill, Whitby, Ont., Canada – AIC received the final acceptance certificate for its work in replacing the complete control of the cooling bed area that was based on Reliance Auto-Max PLC with a brand-new system based on Allen Bradley ControlLogix platform installed. AIC also replaced the existing AC and DC drives going from the run-in conveyor to the runout conveyor, including braking slide, moving rakes, transfer chains and transfer lift. AIC already has several other orders with Gerdau plants, including new cold shear drives, finishing area drives and stacker magnets drives.

- SiderPeru, Tren 2, Nuevo Chimbote, Peru – AIC received the final acceptance certificate for replacing the complete automation and power control of the start/stop roughing shear, installing Siemens SIMOTION technology, after a previous successful project regarding the cooling bed entry shears commissioned in October 2014. The roughing shear has been brought from an AC motor and drive configuration to a DC configuration using a Siemens SINAMICS DCM drive to reuse a DC motor existing in the plant and to improve cut precision.
- Corporación Acerera Centroamericana, Escuintla, Guatemala – The new section mill, which started production in January 2015, includes two production lines, one for small sections and another for medium-section products. AIC performed the complete rolling mill automation, starting from the reheating furnace to the cooling bed area, including the reheating furnace automatic billet charging, discharging and temperature control, the single-stand reversible roughing mill, the 5-stand roughing mill, 5-stand medium-section line and much more.



Marco Capitanio (left) and his father, Dino (right), at the 40th anniversary of AIC

Growth in North America

Having joined the company after his schooling, Marco Capitanio has now taken a leading role in the organizational structure of the company and developing a more worldwide presence. AIC is a small, family-owned company that is obviously growing in its international esteem. Its first order in North America was in the year 2000, but since 2011 the number of projects has increased dramatically.

Two key projects in North America have recently been completed at W. Silver Inc. (WSI) in El Paso, Texas, WSI is a steel re-rolling mill specializing in the manufacture of high-quality steel products, such as studded steel T-posts for the farm and ranch market, grape stakes for the vineyard industry, angle steel for the bed frame industry, and both lightweight and heavyweight T-posts for the erosion control marketplace.

In 2013, AIC successfully upgraded the automation system for WSI's reheating furnace and rolling mill control. The original PLC was based on the Allen Bradley PLC5 platform. The new Allen Bradley ControlLogix PLC manages the reheating furnace automation, and all the automation functions were implemented in the PLC software without any external PID controller. The new AIC system allows a more efficient and steady control, thanks to a set of functions including temperature control for the reheat zones, automatic start/restart management, and alarm management and diagnostics. AIC also upgraded the HMI system to supervise the furnace with a new SCADA client, implemented with the FactoryTalk platform. Prior to the furnace project, AIC was involved in modernizing the crop shear on the rolling mill at WSI.



The AIC workshop in Torbole Casaglia

Bhupendra Kenjale, head of engineering, maintenance, safety and environmental at WSI, attended AIC’s 40th anniversary celebration in Italy and told Iron & Steel Technology his thoughts on his partnership with AIC:

“AIC started their work on our rolling mill control system in 2012-2013. The timely completion of the project at reasonable cost was commendable. We were very pleased with the outcome. AIC technicians are professional and dedicated. They worked with our rolling mill schedule, even though they were obliged to work some odd hours. Only a few snags occurred later in the software, and the remote support at that time was excellent. AIC’s performance on the furnace control system upgrade in 2013-2014 was equally as good. Their unparalleled support to us was evident in one gesture in which they just “gave” us a PC loaded with resurrected software in exchange for a broken PC that we had shipped to them for repair. This was so that we could keep running while they wrote the new control system software for us. Overall, AIC has made a deep and positive impact on WSI and has been a diligent partner in WSI’s success”.

Conclusion

AIC, a reliable partner in automation and safety solutions, is proud to celebrate 40 years of servicing the steel industry. The recent change in the company name to AIC Capitanio Tailored Automation keeps the family name but also shows the company’s unchanging customer focus. “Tailored automation means having a solution that fits each customer’s need. There is no out-of-the-box solution,” said Marco Capitanio. As the company slogan goes, “the worldwide experience in engineering metal automation process is all in your hands” with AIC Capitanio Tailored Automation.

AIC & Rockwell Automation Encompass

April 14th 2016

AIC, Rockwell Automation Encompass Partner, is a global system integrator providing advanced and tailored automation solutions for the steel industry, with the aim to continuously improve both efficiency, competitiveness and safety of the production processes. With more than 800 applications worldwide and 40 years of history, AIC can boast a unique experience in both green field and revamping projects in long products rolling mills and continuous casting machines.

The more than twenty years of collaboration with Rockwell Automation, has the aim of combining performance and integration of the Rockwell product range with specialist skills in the sector.

Since few years ago Rockwell Automation has given to AIC, unique in Italy and among the few in Europe, the status of Recognized Power System Integrator that allows AIC to integrate at the highest level all Rockwell Automation products in complex architectures, both of automation control engines, with direct access to information and training courses internationally.

AIC is proud to host the AIC and Rockwell Automation Encompass event at the operations of Torbole Casaglia (BS) focused on practical demonstration of SCADA application on Stratus servers.

An installation of FactoryTalk View clients will be set up to simulate different types of faults in order to test the robustness of the system.

Stratus Technologies, Rockwell Automation Encompass Partner, is a global provider of fault-tolerant computer servers, which offer rapid deployment and ease of use.

Each ftServer® platform integrates fully replicated hardware components that eliminate virtually any single point of failure and safeguard data integrity. The system automatically manages its replicated components, executing all processing in lockstep. The ftServer is quick and easy to use with click and go installation and centralized management tools requiring no special skills, saving you in IT overhead.

Operational continuity and ease of use are essential to industrial automation processes especially with the advent of virtualization; Rockwell Automation offers the Stratus Technologies solutions to protect their software applications.



Automation Encompass event at the operations of Torbole Casaglia (BS)

Sicme Motori is a leading manufacturer of AC-DC motors and generators, vaunting more than 45 years of ENGINEERING know-how applied to new technologies, innovation and customized solutions. Its activity dates back to 1967, when firstly started to design and produce customized electric motors for industrial applications power up to 2600kW. Since then its ability to focus on continuous technology development and provide high quality motors has led to increasingly success, proven by today's facts and figures. The company underwrites a Technology License Agreement with Rockwell Automation Technologies Inc., which entitles Sicme Motori's asynchronous motors to be included in the Rockwell Sales network.

During the morning, the Sicme presentation was based on the following points:

- Sicme official supplier of Rockwell Automation (label "Enabled by RA" on Sicme motors);
- Sicme Motori history;
- Certifications (UL / CSA for Rockwell);
- Rockwell Automation Encompass products (motor "BQ" and "AW" air-cooled / liquid);
- Sicme Motori and Rockwell Automation - Drive Motor: integrated architecture & Online Configurator Sicme motors for RA;
- Sicme Motori worldwide service organization and New Hub in US for Sicme Motori - Elwood Corporation (RA Encompass Partner).

ProSoft Technology provides connectivity solutions that link dissimilar automation products in the industrial automation world.

ProSoft Technology® designs industrial communication solutions that connect automation products seamlessly. ProSoft Technology is a highly diversified, customer intimate, global organization with a focus on quality and ease-of-use. Their products include in-chassis communication modules for PLC/PAC controllers, standalone protocol gateways, and a wide range of robust, field-proven wireless solutions. These are found in applications spanning the industrial marketplace.

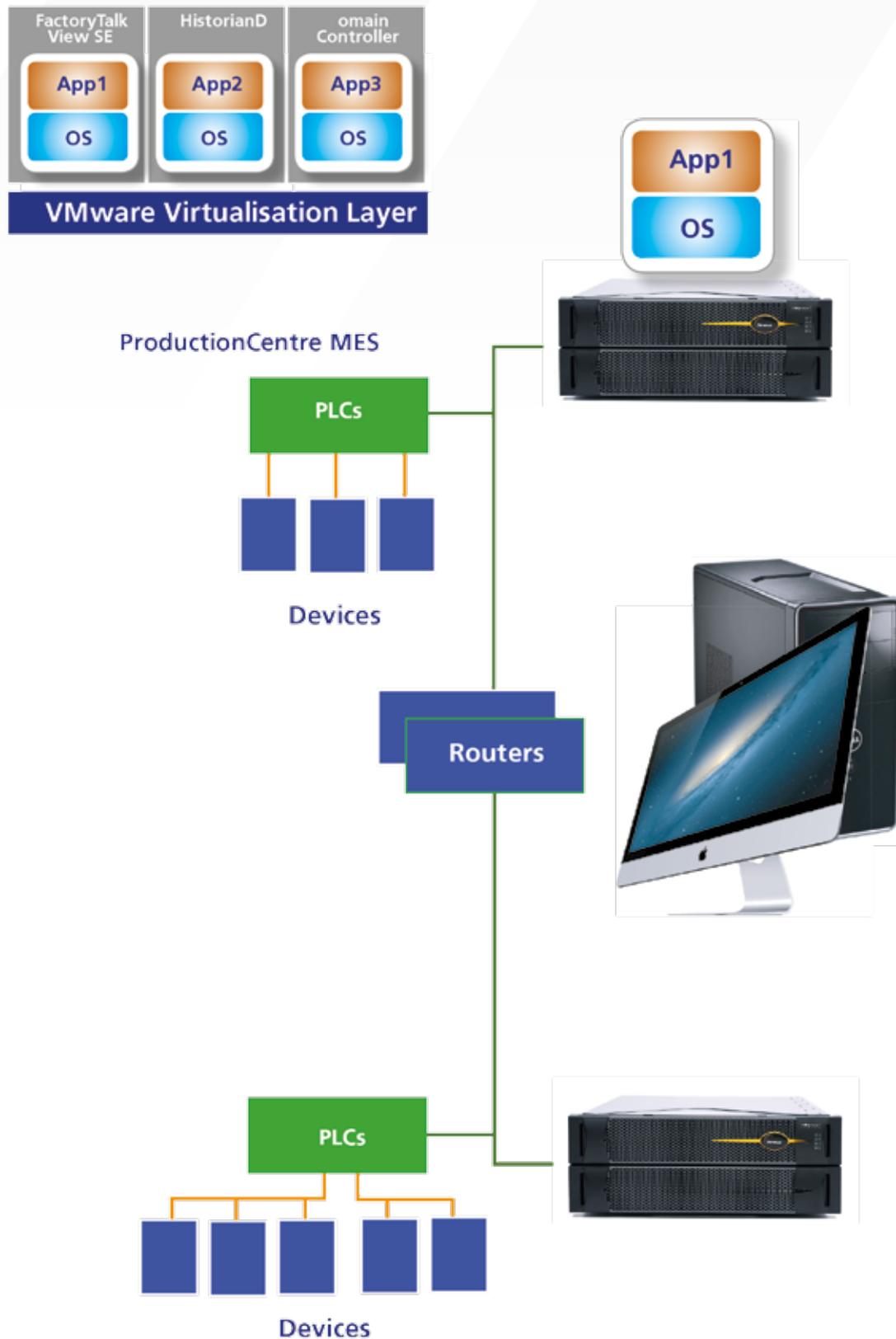
In the last 25 years, the range of ProSoft Technology solutions has expanded to more than 400 products, supporting more than 60 industrial protocols.

ProSoft Technology specializes in the development of communication solutions compatible with the large automation suppliers' controllers such as Rockwell Automation and Schneider Electric. The primary focus is to provide connectivity solutions that link dissimilar automation products. ProSoft Technology provides field proven connectivity and communication solutions that bridge between various automation products as seamlessly as if they were all from the same supplier. With more than 400 distributors and regional offices in Asia Pacific, Europe, Middle East, Latin America and North America, ProSoft Technology provides an unparalleled support to customers worldwide.

The Prosoft Technology presentation involves a specific focus dedicated to the wireless solution, the MIMO technology to radiating cable, made in the most varied industrial sectors, by End User Automotive OEM packaging:

- When and why use wireless communication;
- Industrial Benefits of 802.11n Technology;
- Radiating Cable;
- Application.

Typical Stratus and Rockwell Automation Configurations



NEXT EVENTS

AISTECH EXPO:

May 8 - 11 2017 at AIC's **Booth #2629**



MADE IN STEEL:

May 17 - 19 2017 at AIC's **Booth D11**



FUTURE STEEL FORUM:

June 14 - 15 2017 at AIC's **Table Top A13**





AIC is a Worldwide Company

Our presence is wide: over 800 installations in more than 40 countries

"Since 1975 learning, listening and solving our Customers' needs"

We are also present in India since 2008, in U.S.A. since 2011 and in Brazil since 2016.

Representative agents in every continent.

Operations:

Electrical Equipment

Assembling & Testing

Warehouse, Packing & Shipping

Headquarters:

Management & Finance

Hardware & Software design Service

Sales & Help desk

AIC North America Corp.

825 Third Avenue, 12th Floor
10020 - New York (N.Y. - U.S.A.)
Tel. +1 971 241 2264
www.aicnet.it - info.america@aicnet.it

AIC South America Corp.

Rua São Bento 470, 17^º andar
C.P: 01010-905-São Paulo
Brazil
Tel. +55 11 98571 - 4061

Automazioni Industriali Capitano Srl

Via Del Bosco, n°10
25076 ODOLO (BS) - Italy
Tel. +39 0365 826333 - Fax +39 0365 826336
www.aicnet.it - aic@aicnet.it

AIC Capitano Automation Systems India Pvt Ltd

375 Jodhpur Park, Kolkata 700068
West Bengala - India
Tel. +91 33 24729090
www.aicnet.it - info.india@aicnet.in