

3Q TECHNOLOGY
SUCCESS STORY
RIVA THY
MARCINELLE





THE CUSTOMER

Riva Group is Italy's largest steel producer and the fourth biggest player in the European steel industry. Founded in 1954, the group has specialized in the manufacturing of long products using electric arc steelworks, achieving an international leadership in the main European countries, thanks to high production standards and to a focused and steady strategy of growth and investments. It has 21 industrial plants located

in the following countries: five in Italy, seven in France, five in Germany, two in Belgium, one in Spain and one in Canada. Riva Group supplies different product areas, some of which, for example mechanics engineering, automotive and earth-moving machines, demand especially high quality standards. Production includes drawn, peeled and ground steel items derived from further cold-rolling processing.

Riva Thy Marcinelle steelmaking plant is located in Charleroi, Belgium, and it consists of:

- > 160-t electric arc furnace;
- > ladle furnace;
- > eight-strand continuous caster for billets;
- > pusher-type reheating furnace;
- > a two-strand bar and wire rod mill for reinforced concrete;
- > Cold rolling and straightening for concrete-reinforcing rounds.

The vision of the Riva Group and the solutions developed by Danieli Automation are come together at the Thy Marcinelle plant. This system upgrade paves the way to a new concept of control for the steel industry, for improved plant performances and reduced dependence on the skill of operators. This concept has led to develop a new generation of operator interface and pulpit design, to make operators work more safely,

efficiently, and easily. This pulpit matches very well the requests from the Riva Group. At the Thy Marcinelle plant Danieli Automation has won the opportunity to create a unique and revolutionary workspace where the operators don't see the plant through windows, but rather watch huge screens and apply a new system approach. The Knowledge-Based Approach consists of showing the operator only the useful information

required for that precise process step. The operators have the ability to work on different plant areas from one single pulpit, safely and quickly. They direct every machine as required by the process and with the control system driving them to the right action in the right time, whereas traditional plants depend mostly on the operator's skill to choose the sequences and process steps.

THE CHALLENGE

THE SOLUTION

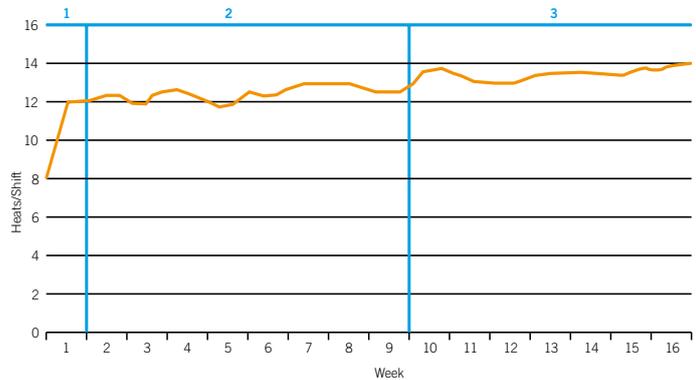


The solution adopted by Riva Thy Marcinelle with Danieli Automation is to unify and integrate the control pulpit of the EAF with the one of the LF. The new control station is defined by a room without windows, in order to control two different technological processes. The pulpit has two workspaces, one for each furnace, where one operator commands one machine set. This new pulpit is divided into two parts: every operator looks at two big screens, one for the CCTV (Closed Circuit Television) and the other for the API (Area Performance Indicator). The pulpit control desks are equipped

with a minimal number of pushbuttons and controls, thanks to the new Operator Assistant.

The new 3Q automation control pulpit is composed of:
 > **OA Operator Assistant** Instead of working on a panel with many pushbuttons, the OA is a multi-touch display interface with a knowledge-based approach, that advises about the situation of the plant, any problem or difficulty and, most important, suggests the right sequence of actions to obtain the expected result. The Auto-Pilot and the advanced messaging system guide the operator throughout all melting and refining phases.

> **API Area Performance Indicator** The API function provides, for each technological area, overall information on the status of the process in the controlled area. It receives and translates information into a graphical overview presented to the operators in the simplest and direct way;
 > **PPI Plant Performance Indicator** The PPI function provides overall information on the status of the processes in the controlled areas. As for the API, the PPI receives information from the EAF/LF and translates that information into a graphical overview for a quick recognition of critical process status;



Number of heats per shift during three-stages commissioning



THE BENEFITS

> **OWS Operator WorkStation** the basic interface between operators and Process Control Automation;
 > **CCTV Close Circuit Television** for a real and direct vision of the plant, without unnecessary risks for the operators.

The additional goal of this project was to increase the plant's output by reaching 14 heats during each 12-hour shift. The commissioning phase was divided into three stages:

> **The first stage**, the startup time, during which only five days were needed to reach 12 heats/shift (before the update intervention, the average production per shift was 12.37;

> **The second stage**, the adjustment period, lasted about two months; the record shows a fast stabilization of production at 12 casts/shift, as well as a fast and deep improvement of the operators' knowledge of the new system;

> **The third and last stage**, the improvement phase. During this period, up to scheduled shut-down period for maintenance, it was possible to achieve the target rate of 14 heats/shift.



Both Riva Thy Marcinelle and Danieli Automation are well satisfied with the results of the revamping. The new system had sensibly decreased the unscheduled delays during production, and therefore the power-off of the furnace has been reduced. The Auto-Pilot and the advanced messaging system guide the operator throughout all melting and refining phases.

While in the past the production of 14 heats was very difficult to achieve, after revamping and with the same loading charge it is possible to complete the 14th heat before the end of the shift. The result was obtained without mechanical or process interventions but only by power-off decrease, thanks to average delay reduction per heats. This phenomenon is realized by the good effect of the launch of all the functionalities of the Autopilot system, along with the



huge introduction of overlapping cycles, in the reduction of overall delays caused by automation.

Moreover, the enhanced reporting system allows the meltshop department manager to control each day's results and

to tune the process to increase the level of production. Riva Thy Marcinelle recognized that over a long period there are margins to achieve even better performances, and expressed its appreciation to Danieli Automation for a job well done.

THE FUTURE



As a confirmation of this successful operation, Riva Thy Marcinelle awarded Danieli Automation for the revamping of Process Control Automation of the 8-strands CCM billet caster, with the target to extend and harmonize the same 3Q Automation to all the plant.

DANIELI HEADQUARTERS



DANIELI

Via Nazionale, 41
33042 Buttrio (UD) Italy
Phone +39 0432 195 8111
www.danieli.com
info@danieli.com

DANIELI AUTOMATION

Via Bonaldo Stringher, 4
33042 Buttrio (UD) Italy
Phone +39 0432 518 111
www.dca.it
info@dca.it

WORLDWIDE DANIELI COMPANIES

AUSTRIA

Max Planck Strasse, 5
A - 9100 Völkermarkt
Tel (43) 4232.51440.6101
info@austria.danieli.com

UNITED KINGDOM

4 Ignite, Magna Way
Rotherham S60 1FD
Tel (44) 1709.724300
info@uk.danieli.com

SPAIN

Poligono Sondikalde
Calle Portu Bidea, 2
48150 Sondika - Vizcaya
Tel (34) 94.4872800
info@spain.danieli.com

INDIA

Technopolis Building
Plot 4, Block - BP, 5th Floor
Wing - B, Sector - V, Salt Lake
700 091 Kolkata - West Bengal
Tel (91) 33.39847777
info@india.danieli.com

GERMANY

Brunshofstrasse, 12
D-45470 Mülheim - Ruhr
Tel (49) 208.3780000
info@germany.danieli.com

THE NETHERLANDS

Rooswijkweg 291, 1951
ME Velsen-Noord
T +31 (0)251 500 500
F +31 (0)251 500 501
info@danieli-corus.com

TURKEY

1. OSB Istiklal Mahallesi
1. Cadde No. 15
Beykoy - Duzce
Tel (90) 380.5537110
info@turkey.danieli.com

INDIA

7000 Central Expressway,
Sri City
517588 Andhra Pradesh
Tel (91) 8576.304000
info@india.danieli.com

GERMANY

Scherl 12
D-58540 Meinerzhagen
Tel (49) 2354.70820
info@germany.danieli.com

SWEDEN

Nya Ågatan, 23
SE-77782 Smedjebacken
Tel (46) 240.668500
info@sweden.danieli.com

RUSSIA

Avtozavodskoe shosse 48
Nizhny Novgorod Region
606000 Dzerzhinsk
Tel (7) 8313.310310
info@russia.danieli.com

THAILAND

Land Plot N. K11
The Eastern Seaboard Ind. Estate
Tambol Pluakdaeng, Amphur
Pluakdaeng, 21140 Rayong
Tel (66) 38.929000
info@thailand.danieli.com

FRANCE

Les Mercuriales
F-93176 Bagnolet Cedex
Tel (33) 1.49722269
info@france.danieli.com

SWEDEN

Box 994
SE-85125 Sundsvall
Tel (46) 60.139400
info@sweden.danieli.com

CHINA

No. 19, Xing Gang Road, CEDZ
Changshu, Jiangsu 215513
Tel (86) 512 52267088
info@china.danieli.com

USA

600 Cranberry Woods Drive
Suite 200
Cranberry Township, PA 16066
Tel (1) 724.7785400
info@usa.danieli.com

WORLDWIDE OFFICES AND SERVICE CENTERS

SWITZERLAND

Olsbergerstrasse 2
4310 Rheinfelden
Tel (41) 61.8368310
info@switzerland.danieli.com

TURKEY

Adalet Mah. Manas Bulvari No. 47,
Folkart Towers, A Block, Ofis 3208,
35580 Bayrakli, Izmir
Tel (90) 232.4355577
info@turkey.danieli.com

INDIA

D-402 Lotus Corporate Park,
Ram Mandir Road,
Off Western Express Highway
Goregaon (E), Mumbai 400 063
Tel (91) 22.39917100
info@india.danieli.com

KOREA

Room 201, Daecheon Building
157-4 Samsung-dong
Gangnam-gu 135-090, Seoul
Tel (82) 2.5626622
info@korea.danieli.com

CANADA

P.O. Box 24062
Sault St. Marie
Ontario P6C 6G7
Phone (1) 705.9468779
info@canada.danieli.com

RUSSIA

Leningradskiy Prospekt 31A
Building 1, 24th Floor
125284 Moscow
Tel (7) 495.9819073
info@russia.danieli.com

EGYPT

76 Al-Moltaka Al-Arabi Dist.
11799 Sheraton Zone
Heliopolis, Cairo
Tel (20) 2.22699491
info@egypt.danieli.com

INDIA

Furnace Building
1, Taratala Road
Kolkata - 700024
Tel (91) 33.33013510
info@india.danieli.com

JAPAN

42F, Yokohama Landmark Tower
2-2-1, Minatomirai, Nishi-ku,
Yokohama-City
220-8142 Japan
Tel (81) 45.651.7077
info@japan.danieli.com

MEXICO

Edificio Sierra Madre
Ave. Vasconcelos Oriente 310
Colonia del Valle
66250 Garza Garcia, N.L.
Tel (52) 81.83781055
info@mexico.danieli.com

RUSSIA

Lenin str. 130, Office 109
Chelyabinsk Region
445038 Magnitogorsk
Tel (7) 3519.244043
info@russia.danieli.com

UAE

Najda Street, Old Nissan
Masaood Building, Flat 1003
P.O. Box 322 Abu Dhabi
Phone (971) 2.6812268
info@uae.danieli.com

THAILAND

Muang Thai-Phatra Office
16th Floor, Tower II
252-91 Rachadaphisek Road
Huaykwang - Bangkok 10310
Tel (66) 2.6933520
info@thailand.danieli.com

TAIWAN

26F-1, No. 31
Hai-Bian Road
Kaohsiung City, Taiwan 802
Tel (886) 7.3358655
info@taiwan.danieli.com

BRAZIL

Rua George Rexroth, 609
Diadema
CEP 09951-270 São Paulo
Tel (55) 11.35085900
info@brazil.danieli.com

UKRAINE

Glinky Street 2, Office 301
49000 Dnipropetrovsk
Tel (380) 56.7904301
info@ukraine.danieli.com

KSA

Silver Tower 6th floor
P.O. Box 4867
Al-Khobar 31952
Tel (966) 3.8993145
info@ksa.danieli.com

VIETNAM

Lot A4b Industrial Park
Tan Thuan EPZ (E-Office Park)
Tan Thuan Dong Ward, District 9
Ho Chi Minh City
Tel (84) 8.35287400
info@vietnam.danieli.com

USA

114 Chesser Crane Road
Chelsea, AL 35043
Phone (1) 205.6787451
info@usa.danieli.com