

## Celsa Group

www.celsagroup.com



*“The expectations we had when we started the project have been greatly exceeded by the tremendous results obtained: Nervacero now boasts a flexible system and more dynamic visualization thanks to Wonderware technology”.*

Gerardo Galdeano,  
Plant Manager,  
Acería de Nervacero

## A Robust Control System Tailor-Made to the Diverse Production Needs of the Iron and Steel Industry

by Wonderware Spain

### Goals

- Modernize the production control system in the rolling and steel plants, both obsolete and unable to make future expansions.

### Challenges

- The implementation had to be fast and completely operational right from its launch as the technological infrastructure in use was showing clear signs of exhaustion putting the whole production line at risk;
- Communications between a large range of heterogenic systems installed over the years had to be guaranteed;
- Despite each factory- steel and rolling-working with independent hardware, a common solution to control both was being sought.

### Solutions and Products

- Wonderware Historian Client;
- Wonderware System Platform.

### Results

- Achieved a robust system connecting multiple non-standard PLCs gaining total visibility into the production process;
- The new technological architecture is capable of managing timing, down-time and consumption data offering more reliable information as regards true final product costs;
- A more fluent connection with the ERP putting real-time production data into context with the defined KPIs ensuring complete efficiency in the installation.

**Trapaga Valley (Biscay), Spain** - Celsa Group is a business conglomerate made up of 8 steel production companies to which more and more transformed companies are joining, making it one of the biggest steel industry corporations in Europe. Nervacero-historic steel works acquired by Celsa Group in 1988 - enabled the business group to become Spanish market leaders in the production of corrugated round, a product which together with cement, formed the well-known 'reinforced concrete', the most utilized construction system in Spain. The Nervacero plant is composed of a steel works with an electric oven with a Hopper for preheating scrap with a production capacity of one million tons of liquid steel a year and one Danielli mill where the steel bars and rolls of corrugated round and smooth round are both produced. Thanks to this production structure Nervacero offers the market different quality products in varying finishes responding to the multitude of different uses their clients give the material, be it industrial processing, civil engineering, construction, etc.

### Urgency for the Implementation of a Production Control System

Despite boasting market leading levels of production and having a clearly innovative vocation for the sector- introducing the roll finishing methods in plant, for example- the production control system in Nervacero's plant was not responding to the companies requirements.

*"For the steel works as well as the rolling, the monitoring architecture was showing clear signs of exhaustion: technologically obsolete, complex maintenance and impossible to expand in order to adapt to the growth in production"* explains Jesus Blazquez, sales manager for Dinalan Automatización, System Integrator responsible for the project. Together with that, the works contained two totally disperse control platforms; one for the steel works based on Unix and one for the rolling plant based on Windows NT making it incredibly difficult to connect the two production processes which despite being monitored differently, should be interrelated to guarantee maximum efficiency levels and profitability. Within this complex scene the challenges faced for a new control architecture were numerous, explains Blazquez. *"We were looking for a technological solution that would permit a fast implementation as the old system could stop working at any moment, guarantee communication between heterogenic systems and that was easily installed without effecting independent hardware in either of the*

*works, steel and rolling, offering a common technological structure to the whole plant...Wonderware allowed us to cater to all these demands"*, he points out.

The basis for deciding which technology should be key for Nervacero was the modernization of the control system giving them the opportunity for preparing the factory for any future production expansion. In this sense, as Dinalan comments, Wonderware responded to all of the defined needs for modernizing the plant offering a solid based technological system, common to both works, with the possibility of being easily configured to the specific production needs of the steel works and the rolling plant, guaranteeing wide connectivity, future scalability, possible redundancies in new developments and also the capability to advance with the new virtualization technologies, for example.

### A New Dimension to Plant Monitoring

The project was planned in five large phases which spanned from the design and global approach to the connection of the control system to the ERP platforms in the company. Despite deploying similar solutions, each plant was treated as an independent project to be able to attend the demands set down by two different production processes.

In general terms, the technological architecture is configured to two object servers, one for steel and one for rolling, which communicates via various tailor-made applications relying on 5 operator posts per factory and two historic's databases. The solutions that make up the system are Wonderware System Platform, Wonderware Historian Client and Wonderware Information Server, part of the Wonderware System Platform software solution, technology which offers production information in



Thinning oven electrodes.

real-time to both types of defined user: operator and supervisor.

In the steel works' case, the system is prepared to give complete product traceability thanks to production planning, down-time management and master recipes data collection be it automatically from the machine or from a manual interface, seamless connection with measuring equipment and instrumentation (OPC). Ticket and reports functionalities were also configured and communication to the company's SAP platform was habilitated.

The rolling plant, as requested by the IT department, had to be divided into sub-networks to guarantee greater system stability. Manual assignment error elimination was also possible through the new structure by implementing assistants and alerts for the operators.

In practical terms, via on-site PLCs, sensors, analyzers or plant printers, field signals are collected and are available in real-time through Wonderware System Platform properly configured with the required procedures for managing and registering the information. A Wonderware Historian Server contains the database which stores the information for later consultation. On a user level, Wonderware Information Server, allows the networked devices to interpret, use and complete the data stored in the servers.

*"Now the plant possesses as valuable functionalities as planning, traceability, stock control, ticketing, volume control, quality control, etc, deployed against a robust technological background just like the one we were looking for when we began the project,"* states Jesus Blazquez from Dinalan.

## Advantages at all Levels

According to Gerardo Galdeano, head of the Nervacero steel works, implementing Wonderware has improved day to day processes in both plants: *"Apart from achieving better visual control for daily production it facilitates the programming and modification of productive tasks"* he explains. Gonzalo Fernandez, head of the rolling plant, goes on to point out the importance of a system like Wonderware during recessions: *"Given the current difficult circumstances markets are experiencing,"* he comments. *"The orders list is much more diverse and assorted. Wonderware software, being more visual, enables us to work with much more confidence as it assures us of correctly filling orders which in some cases, require part by part traceability, unconceivable without this kind of tool,"* continues Fernandez.

In both the steel works and rolling plant the new system for timing, down-time, consumption and production data management offers the possibility of transferring data to all the different levels, from plant to corporate direction, in real-time. This facilitates accurate planning of production, true cost evaluation of the final product and consequently analysis of plant productivity and efficiency. Also, a great number of manual reports have been suppressed due to the automation of the data flow and 100% reliable information coming straight from production. Just as hoped for, states Blazquez, *"Nervacero now possesses a robust system which has avoided the connection errors experienced with the ERP initially, preparing it for future system expansion, offering complete data reliability for key information like prime material stock availability in real-time"*, The rolling plant has also automated its ticketing process giving more flexibility to working procedures, he explains.

In the System Integrator's opinion the key to the benefits of using Wonderware software is knowing that the control structure will be capable of advancing with the technology, migrating to a virtual environment with guarantees such as assurance of scalability possibilities for the future: *"We've started with basic modules but the introduction of some modules for variables analysis through Wonderware Historian Client (formerly known as Wonderware ActiveFactory) is already being planned"* they explain. Along these lines, the possibility of expanding much more quickly and easily thanks to reusing the objects allows, *"that the system adapts to the factory's needs daily"*.

From a business management stand point, since the deployment of the new system, the ERP connection has been much more fluent. *"The information transmission at the company's management level is better and much more reliable"*, explains Gerardo Galdeano, coinciding with Gonzalo Fernandez who underlines that being able to count on information in real-time and share it with the team by email allows them to be much more agile. *"For example"*, Blazquez points out, *"just as some Nervacero clients have specifically requested, the volume of the different product batches can now be sent ahead of reception by truck, boat, etc, meaning that they can forward production planning"*. In his opinion this, amongst other factors, is a clear demonstration of the competitiveness achieved through Wonderware control technology.

---

*This document was realized thanks to the support of: Celsa Group.*