

The worldwide renowned steel mill company, voestalpine Stahl GmbH based in Linz Austria, puts great care and attention into the quality of their products. This includes the excellence and dedication of the suppliers and partners of this model Austrian company. A remarkable example of outstanding cooperation and commitment to partnership when sharing know-how is evident in the successful replacement of an existing control system in a continuous casting plant with a complete solution from B&R. And that – mind you – on running systems.

A Partnership Strong as Steel

Original text: Dr. G. Strzyzowski, TR

In continuous casting plants, molten steel is continuously cast into solid slabs, a preliminary product for the steel mill. At the beginning of this process, the metal is cast in a permanent mold. The permanent mold consists of copper plates arranged in the form of a rectangle. The molten steel solidifies on these copper plates and a solid shell is formed with a core that is still molten. This shell is brought down over rollers, located under the mold, and is then intensively cooled using laterally positioned spray nozzles as more molten steel is cast from above. At the end of the casting plant, the solidified bar is cut into different length sections (slabs).

Otfried Kretzschmar, supervisor

for the technical modernization of the CC4 casting plant from voestalpine Stahl GmbH: “Within our casting plant, there used to be multiple control stations for the various separate areas, from which the process could be continuously monitored and interacted with if necessary. Today, we are also able to evaluate and to control the entire process from a single central control station. The entire production process can be followed live using monitors. It is our goal to reach the point where the main control station can be operated by just one person. The purpose of the system conversion was also to gain additional information for quality assurance and the documentation for our customers.”

Production record

Chemserv Industrie Service, a MCE AG company based in Linz, Austria, was entrusted with the major task of adapting the process control system in the CC4 casting plant. All work was performed in scheduled temporary standstills as well as during running operation. This prevented additional interruptions in production. As a special highlight, a production record was reached immediately following the conversion. This was made possible with the process control system supplied by B&R.

Helmut Danner, the person in charge of the Chemserv project: “Our job was to adapt the existing control system to the enhancements and conversions planned

Steel is created in the converter through the “LD process”. Pure oxygen is pumped into hot metal and scrap.

Extracting a molten iron sample.

The bars are passed along on rollers during continuous water cooling before being cut.



voestalpine

STAHL GMBH

voestalpine Stahl GmbH is the main divisional company of the Division Steel. The company employs 6,600 employees of more than 23,500 in the entire voestalpine Group. Thus, voestalpine Stahl GmbH is the largest individual company within the voestalpine Group. voestalpine Stahl achieved total sales of EUR 1,725.35 million for the 2003/2004 financial year (ending on March 31st, 2004). All of the company's production systems are in Linz. The core business of voestalpine Stahl GmbH deals with the development, production, processing and sale of the highest quality steel products.

by voestalpine Stahl with a guarantee of full operability during the entire conversion phase.”

The defined task of this control system is to enable the operator the fully automated regulation, control and monitoring of all functions in the casting plant. The plant is operated 24 hours a day in four shifts, but the conversion was carried out without hazard and within the shortest amount of time.

Therefore, voestalpine Stahl GmbH and Chemserv each used one of the 8 – 16 hour breaks in operation which occur just every second month, as well as an additionally planned five-day standstill, during which time the old system was replaced with the new system.

Danner: “These general conditions were a big challenge for us. In the event that something didn't work out during the conversion, we had to guarantee that we could get running on the old system within 16 hours if necessary.”

B&R was the obvious choice

The cooperation between B&R and Chemserv, as specialist for industrial service within the corporate group MCE, has been going on for decades. There is mutual support and appreciation for the expertise and experience of the other. Danner: “One particular area of expertise is certainly the ability of our colleagues at B&R to react so quickly. Questions that come up are always answered promptly. Our longstanding, strong cooperation is based on a friendly and rewarding foundation.”

Sophisticated project

Ludwig Hafner, the person in charge of process control system sales at B&R, was able to draw on abundant resources for the conversion of voestalpine Stahl's casting plant control system: “We were able to apply the entire B&R product range for the project here in Linz: The high-performance CPUs with a large amount of application memory and extremely fast cycle times, the process control technology, the reliable industrial PCs and the most modern solution in the area of drive and control technology - ACOPOS!”

There was no question that voest's wish to have operability using remote terminals instead of distributed control stations on the system was also able to come true with B&R.


Fully functional in a tough environment

Where molten metal is processed and where steam, dust and vibrations are present, the industrial durability of all systems is clearly a requirement. Ludwig Hafner: “Chemserv as plant builder and voestalpine Stahl GmbH as end customer put together dependable planning. Questions such as the placement of distributor cabinets or controller and PC components were discussed in detail. This is how, for example, the operator stations located directly on the casting console, which are subject to extremely high temperatures and where molten iron could occasionally splash through the area, were outfitted with a layer of glass. In that

particular situation, we applied the most modern touch technology. Essentially all of our control systems are suitable for industrial use and can even be applied in the roughest environments.”

People matter

“Throughout this project, we could clearly see how – with close cooperation between plant builder, end customer and system manufacturer – a difficult task can be solved optimally. All employees from the companies involved, a total of about 40 technicians, spent days and nights in the plant demonstrating extraordinary personal commitment. This is the only way that such a vision could become reality”, said Hafner, expressing his thanks to all of those involved.

Naturally, the system that is now implemented is capable of expansion in all directions. There are reserves for both the server resources as well as the available interfaces, which could even be utilized to create a “transparent factory”. “This concept could become an important topic for voestalpine Stahl GmbH, and I feel that we are certainly up to the task”, states Ludwig Hafner with optimism. 

www.voestalpine.com/stahl

Finished slabs lie at the voestalpine storage yard in Linz/Austria. The maximum stock could consist of 400,000 tons.



One person monitors the entire continuous casting process at a single, central control station.



The successful team: Otfried Kretzschmar (voestalpine Stahl), Helmut Danner (Chemserv), Ludwig Hafner (B&R), Christian Fürst (voestalpine Stahl).

