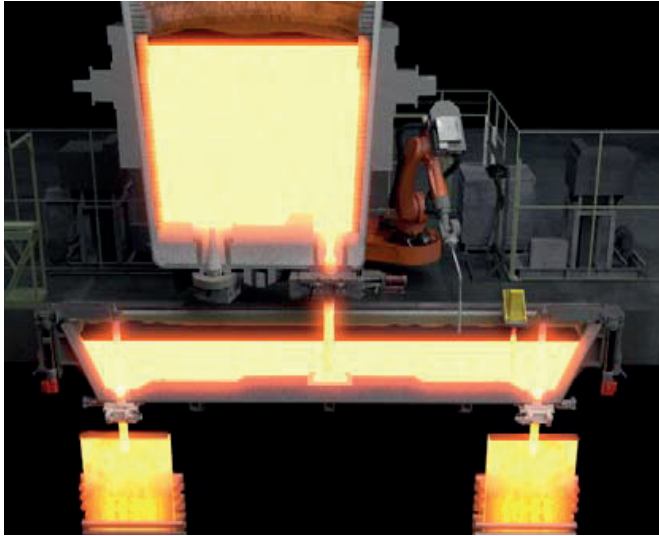


Vesuvius and thyssenkrupp CSA cooperate for the breakthrough Robotic Casting Technology

Vesuvius has been awarded with a turn key project in thyssenkrupp CSA (Brazil) for the installation of Robotic Casting Technology on both slab caster ladle platforms.



“ This implementation will bring more safety to our employees, reducing risk exposure, so we select a company with high reliability in the market. ”

Leonardo Demuner
Steel Plant Manager, thyssenkrupp CSA

The requirement for health & safety is increasing and safety standards in steel industry become more and more strict. The continuous casting operators are the most exposed people in the steel plant. They work 2-3 meters away from huge amounts of liquid steel, splashes, potential overflows, while steel break out can occur at any time leading to severe injuries or to fatalities.

The Vesuvius Robotic Casting Technology (RCT) is offering a solution that automatically carries out all tasks and supervision necessary on the casting platform. It improves safety as the operators can be reassigned to process supervision tasks in a safer, remote working place. Moreover the Vesuvius RCT provides enhanced operations traceability, increased productivity, better reliability and consistency for all casting operations.

Robotic Casting Technology is an industry breakthrough that paves the way towards a fully automatized monitoring of the steel continuous casting process. After Hyundai adoption of RCT for their high performance steel caster in Dangjin, the turn key contract with thyssenkrupp CSA confirms the leadership of Vesuvius in developing high tech solutions for the future requests of the most advanced steel producers.

The project has been elaborated with CSA during the last 2 years including several customer visits in Hyundai reference plant as well as in our Systems Technology Center in Ghlin Belgium. Our customer CSA highly appreciated the solutions and standards that Vesuvius developed and implemented for fully automatic casting on continuous casting ladle and tundish casting platform. CSA is setting high expectations in operational safety and process repeatability with this robotic installation. The decision for our Ladle Tube Changer (LTC) was motivated by improved process safety as well as improved stability of casting conditions, especially for operations like ladle shroud handling and oxygen lancing of the casting channel.

At times when the major steel companies develop extremely demanding ultra high performance grades, RCT brings a critical step change in the quality performance of the continuous casting process: Improved steel quality protection through increased tightness between ladle and tundish as well as the possibility to perform safely the ladle opening with the ladle shroud submerged in the tundish steel bath.

The unique LTC concept has been proven during operation of the first generation, however the CSA project as such is an important milestone. Vesuvius is particularly proud of the trust that thyssenkrupp CSA is showing for its products and service offering.

This confidence has been built through close cooperation between the Vesuvius Brazilian specialists, regional and global product management as well as the valuable support of the Vesuvius Korean colleagues.



In the CSA RCT layout for the ladle casting platform, two industrial robots will collaborate to perform the following tasks:

1. Ladle shroud transport and connection on Ladle Tube Changer
2. Ladle shroud cleaning and inspection
3. Oxygen lancing of the casting channel
4. Tundish powder distribution
5. Temperature measurement in the tundish
6. Steel sampling
7. Hydrogen measurement



Ladle Tube Changer additional advantages :

A. Increased Operational Safety:

- No operator exposed to liquid steel thanks to remote casting operation
- No permanent connection between ladle and casting platform during casting operation, ensuring reliable turret movement in case of emergency evacuation

B. Increased Productivity:

- Fast, safe and consistent ladle shroud handling (connection, disconnection, cleaning and inspection)

C. Improved quality through Increased Consistency and Repeatability:

- Increase overall process reliability using industrial robot (high tech solution)
- Better consistency and accuracy of casting operations
- Defined and repeatable location for steel and temperature sampling
- Enhanced traceability through data logging of casting process parameters



CSA is an integrated steel plant part of thyssenkrupp AG and located near to Rio de Janeiro. thyssenkrupp has reached agreement with Ternium on the sale of the CSA. The two parties aim to close the transaction by September 30, 2017. CSA has the capacity to produce up to 5 million tons of high quality steel slabs per year that are cast on two 2-strand slab casters. This order also comprises the conversion from current Ladle Slide Gate to VESUVIUS LTC34 (Ladle Tube Changer) technology for the complete fleet of 330 metric ton ladles.



thyssenkrupp

Vesuvius Steel Flow Control develops solutions to channel and control the flow of molten steel from ladle to tundish and tundish to mould: Robotic Casting, Nozzles, Plates, Stoppers, Protection Tubes, Tundish and Mould Fluxes, as well as Slide Gate Systems to regulate and monitor the steel flow. These products have been designed to resist extreme thermomechanical stress and corrosive environments. Most of these products are consumed during the process of making steel and, consequently, demand is primarily linked to steel production volumes. Continuing innovation allows us to offer enriched solutions that create additional value in our customers' processes.



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