Fighting off slag with specialized Haznedar bricks for the steel ladle at Akdaş Döküm

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Fighting off slag with specialized Haznedar bricks

The background situation

Akdaş Döküm is Turkey's largest steel foundry, with an annual casting capacity of 20,000 tons, with 240 tons of liquid metal capacity and 80 tons of Ladle Furnace, Vacuum Degassing Furnace and Vacuum Oxygen Degassing furnace.

The request from the customer

Due to its content, magnesite bricks are resistant to basic slags. However, when the liquid metal stays in the ladle for a long time, it may encounter negative situations due to the change in the amount and type of slag.
The fact that the slag does not stick to the bottom surface of the bottom pouring ladle systems is an issue that Akdaş Döküm pays attention to.

Akdaş Döküm needed a supplier that was capable of observing both the behavior of magnesite bricks at the slag/steel level and the behavior of the spinel-shaped bottom bricks during long casting times.

Akdaş Döküm’s target is to reach more than 3,000 minutes for the run time and more than 20 heats.

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Analysis of the customer request

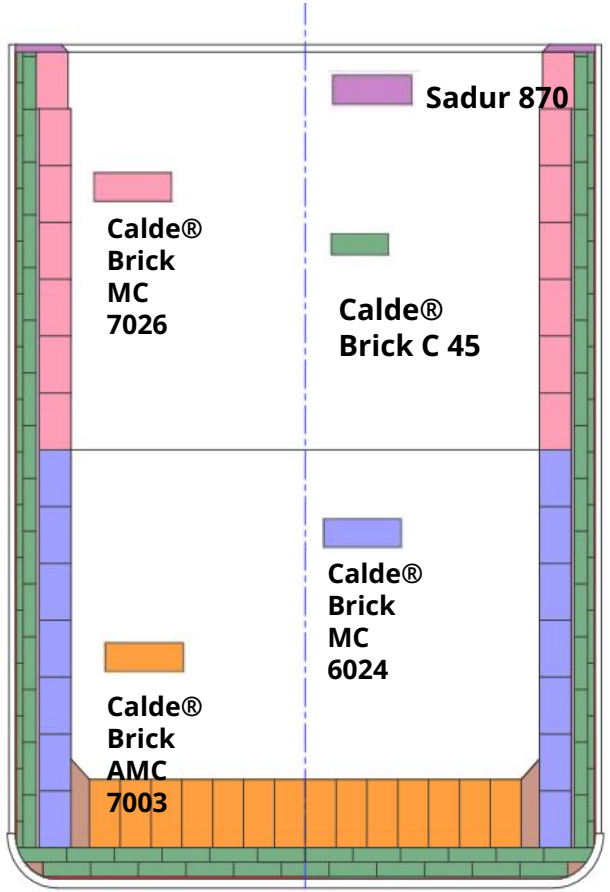
The ladles operate in the Ladle furnace and Vacuum Degassing process in each casting. There is also a 20% Vacuum Oxygen Degassing process.

Slag level bricks are required to be resistant to high basic character slag produced in secondary metallurgical processes.

After pouring, when the ladle is turned upside down, it is desired to separate the slag accumulated at the bottom from the brick surface.

Description of the solution developed by Calderys

- Magnesia Carbon Bricks, which are produced using fused magnesite with high MgO content, at the slag level, will be **Calde® Brick MC 7026.** At the steel level, they need low carbon content such as **Calde® Brick MC 6024**.
- In the base zone, corundum-based AMC Spinel Brick **Calde® Brick AMC 7003** is proposed.
- Design and Installation services fully provided by our local technical team
- **Calde® Brick C 45** is used as a safety brick
- In combination with **Sadur 870** as Regular dense castable, **Ramdur MG95MS** as Filling Mortar, and **Durbond 95 Cr** as Bonding Mortar



Designed by Haznedar Technical Team

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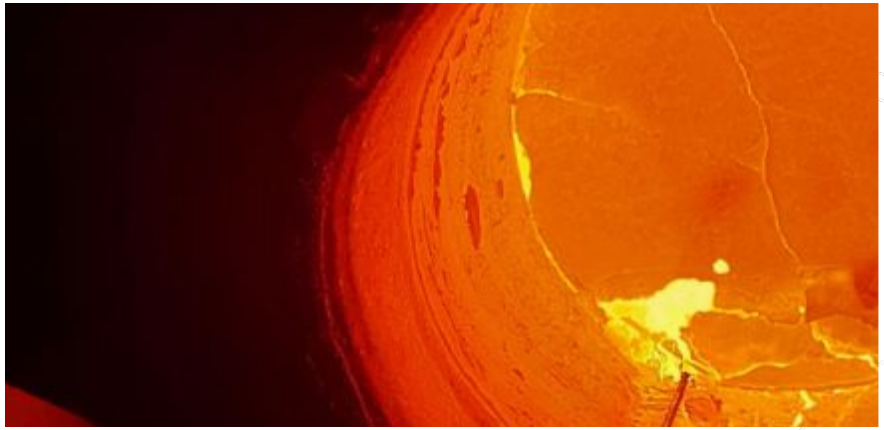
Benefits brought by the solution

The slag does not adhere to the brick in the base area. This stands out among the desirable features.

Liquid metal preparation takes 10-14 hours for castings of 100 tons and above at Akdaş Döküm. During this long period, Sadur 870, which we applied in the ball area of the top, showed high resistance to the temperature it was exposed to for a long time.

As of May 24th, 2023, we have reached 80% of the customer target in terms of number of heats and run time. Ladle still being in usage.

Top photo: low slag adherence
Bottom photo: Sadur 870, an Alumina Based Regular Castable in action.



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Product presentation

Calderys has developed a full range of refractory products dedicated to ladle furnaces, and created to withstand strong corrosion, erosion attacks, and long usetime.

The magnesia, alumina and spinel based bricks offer includes **CALDE® BRICK MC 7026, CALDE® BRICK MC 6024, CALDE® BRICK AMC 7003, CALDE® BRICK C 45**. All standard shapes are available.

Services - Expertise

Calderys has a full range of services dedicated to foundries: from material selection and design to installation, maintenance and technical support, we are now offering a full range of digital services to help foundries keep their productivity high.

Thank you for your attention

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