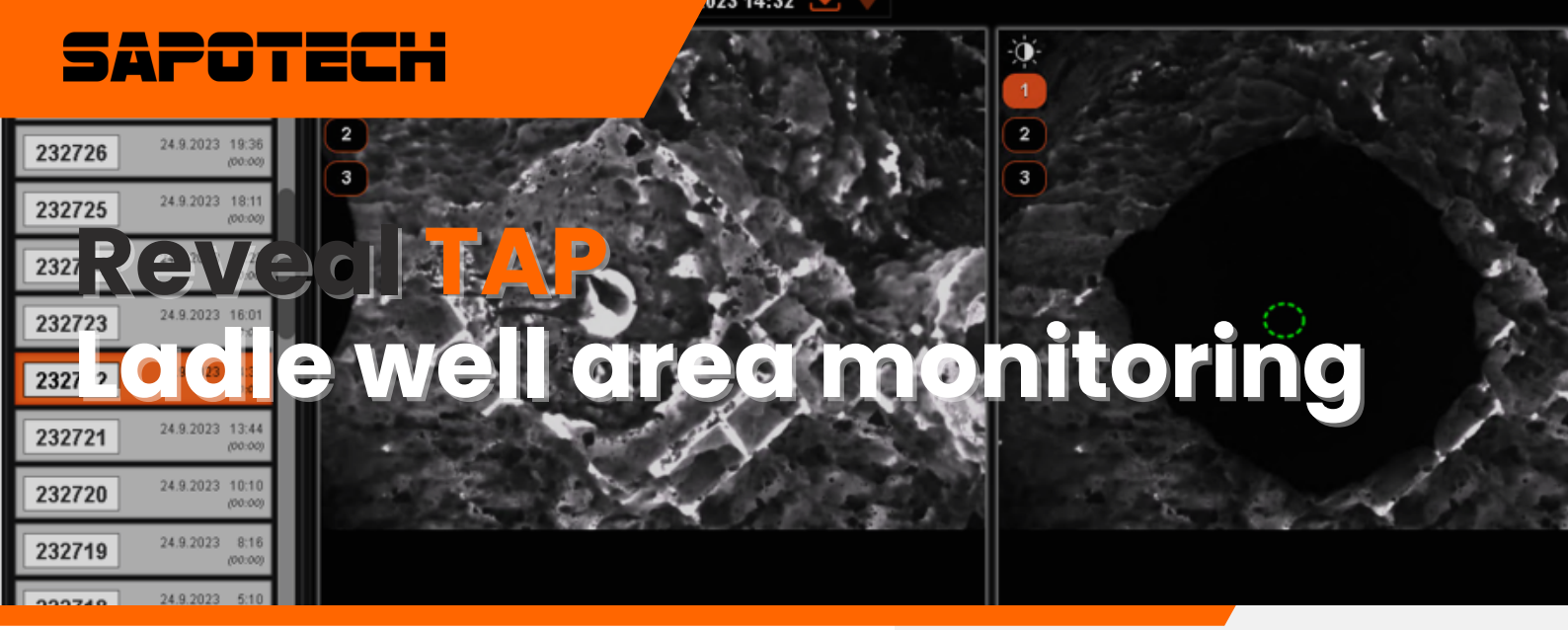
SAPOTECH



Reveal TAP
Ladle well area monitoring

Description

High free opening rate of ladles is a key factor during steelmaking to keep steel quality high and for safety purposes. To ensure a high opening rate, steelmakers use well fillers to avoid direct contact of the liquid metal with the slide gate-system of the steel ladle. However, the quality and amount of added well filler is not enough, it is important to have the correct positioning of the filler, so that the slide gate is protected. Also, there is a need to check that the well block is clear from remaining steel/slag, before the well filler is added.

Application

To systematize the process of well filler addition, Sapotech has developed an automatic monitoring system that analyzes the ladle bottom, especially the well block area, before and after the filler sand addition. The industrial camera, mounted into a stainless-steel housing and accompanied with edge computing and analysis unit, is used to provide the following information:

1. High precision and real time visualization of the ladle bottom area (well block) condition.
2. Ladle positioning assistance for well filler sand addition through live view.
3. Automatic imaging of the well block area before and after filler sand addition.
4. Analysis of the well block cleanliness.
5. Analysis of the “hit rate”.
6. Traceability back to any individual well filler sand addition (search function).
7. Access and sharing through Reveal platform.

Videos and measurement results are displayed in Sapotech user interface for operators to check the condition of the well block area.

In simplest form, the system is plug and play. Power and compressed air is needed from the customer side. All the configuration work can be done via Sapotech provided VPN device, so there is no need for IT department to configure secure connections.

Benefits

1. Increased ladle free opening rate

Achieved through more precise well filler addition, ensuring the quality of steel.

2. Live view for ladle positioning

Facilitates easier ladle positioning for well filler addition.

3. Real-time feedback on slide gate area

Gives operators immediate feedback on the condition of the slide gate area.

4. Systematic documentation

Enables systematic documentation for process tracking and optimization.

5. Savings in process breaks and damages

Results in decreased process breaks and minimizes damages to refractories and ladle shell, leasing to cost savings.

6. Improved worker safety

Enhances worker safety near the steelmaking processes.

7. Multi-camera approach for porous plug monitoring

Offers the option to implement a multi-camera approach for monitoring the condition of the porous plug as well.

8. Fast and easy to implement

Quick and straightforward installation of the system.

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