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VIDEOMAG: high duty video technology applied to supervision of guning application in an EAF

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In the steelmaking industry, safety and precision during refractory maintenance are critical. MAGNA, with extensive experience in robotic gunning for Electric Arc Furnaces (EAF), has identified a key operational challenge: gunning is typically performed manually by an operator using a remote control, positioned near the furnace with direct visual contact. This exposes personnel to intense environmental stress and potential hazards such as heat, radiation, and refractory debris.

To address this, MAGNA has developed VIDEOMAG, an advanced video-based supervision system designed to enable fully remote gunning operations. The system integrates a high-resolution camera mounted on the gunning robot's head, transmitting real-time video to a monitor located in the EAF control room. This allows the operator to perform the entire gunning process from a safe distance, eliminating exposure to dangerous furnace conditions.

VIDEOMAG offers unmatched visual access to the furnace interior, with full 360º movement of the gunning head and superior image quality compared to direct observation from the furnace platform. The system is engineered to operate reliably in harsh environments, including high temperatures, smoke, and dust, ensuring consistent performance during refractory maintenance.

A key innovation of VIDEOMAG is its dual-camera capability: alongside the live video feed, it incorporates a thermal imaging camera that simultaneously captures temperature data. This enables operators to assess refractory conditions in real time and identify hot spots or areas requiring urgent attention. The system also supports inspection tasks, allowing detailed visual and thermal analysis of specific furnace zones at any time. All operations are recorded, providing valuable footage for post-process review, quality assurance, and early detection of issues such as water leaks or refractory degradation. This enhances traceability and supports continuous improvement in maintenance strategies.

VIDEOMAG is currently in use at four industrial sites, where it has proven its value by significantly improving repair times, enhancing operator safety, and enabling early detection of leaks in cooling panels, helping prevent serious accidents. These results confirm VIDEOMAG as a transformative solution for EAF maintenance. By removing the operator from hazardous zones and providing enhanced visual and thermal feedback, VIDEOMAG enables faster, safer, and more effective gunning applications—setting a new standard for remote refractory supervision in steel production.

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