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VISIOMAG: Advanced Technology for Safe and Efficient Refractory Monitoring in the Steel Industry

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The steel manufacturing industry faces increasingly demanding technological challenges, particularly regarding the safety, efficiency, and reliability of maintenance processes. One of the most critical issues is monitoring the condition of refractory linings in furnaces, ladles, and converters without exposing operators to risk or interrupting production. In response to this need, MAGNA—leveraging its extensive experience in robotic gunning for electric arc furnaces (EAF) and refractory repair—has developed VISIOMAG, a groundbreaking 3D scanning system that redefines how refractory health is assessed.

VISIOMAG is a wraparound system installed around the object to be measured, enabling a precise 3D reconstruction in just 15 seconds. Its compact, autonomous design eliminates the need for auxiliary machinery or risky proximity to high-temperature zones. Measurements can be completed in only 6 seconds, without halting steel production, representing a major advancement in operational safety and industrial efficiency.

A key advantage of VISIOMAG is its ability to function reliably under extreme conditions, such as smoke, intense heat, and radiation, without compromising measurement accuracy. The system delivers real-time, dependable data that supports strategic decision-making regarding refractory lifespan and helps prevent structural failures, perforations, and costly downtime.

Designed with usability in mind, VISIOMAG features an intuitive interface that allows any operator—regardless of experience—to interpret results and act quickly. It also includes an automated repair recommendation module, specifying the type of product and exact location for application, streamlining interventions and improving repair quality.

Currently, VISIOMAG is operational in two industrial plants. One of them has fully integrated the system into its production workflow, using its data to guide both maintenance planning and repair execution. This implementation has led to significant improvements in operational efficiency, personnel safety, and refractory durability.

With VISIOMAG, MAGNA delivers a cutting-edge solution tailored to the real needs of the steel sector, combining innovation, safety, and performance in a system that sets a new standard for refractory monitoring.

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