

KT2000 GEN2 vs. Electromagnetic Ladle Slag Detection Systems

Comparing Detection Performance, Availability, and Cost

Choosing a ladle slag detection system involves more than selecting a sensing method. Detection timing, system reliability, maintenance requirements, and operational impact determine performance in daily casting operations. Long-term cost determines the overall value of the system.

KT2000 GEN2 provides clear operational advantages over electromagnetic systems

Reduced Thermal & Mechanical Risk – Sensor mounted on the manipulator arm, away from extreme ladle heat and wear.

Higher Heat-to-Heat Availability – Accessible design supports sustained uptime during production.

No Per-Heat Handling – No plug/unplug or connection cycles required.

Tunable Yield & Slag Strategy – Adjustable sensitivity supports maximum steel yield or minimum slag carryover objectives.

Lower Lifestyle Cost – Reduced maintenance, fewer consumables, and predictable operating expense.

The comparison chart below outlines the key operational and performance differences relevant to system selection, upgrades, and plant trials.



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Detection & Metallurgical Performance

Category	KT2000 GEN2	Electromagnetic Systems
Detection Principle	Acoustic signature analysis with machine-learning classification. Detects vortex/slag flow prior to carryover.	Conductivity-based electromagnetic sensing. Detects conductivity change after slag has entered the discharge stream.
Clean Steel Optimization	Capable of achieving zero slag carryover to the tundish when using the high-sensitivity setting.	Detection occurs after slag has entered the stream.
Yield Optimization	Adjustable detection sensitivity settings enable tuning between maximum steel yield and minimum slag carryover strategies.	Limited tuning flexibility.

System Design & Installation

Category	KT2000 GEN2	Electromagnetic Systems
Sensor Architecture	Single-sensor design.	Multiple sensors or probes common.
Sensor Exposure	Sensor mounted on manipulator arm, away from extreme ladle heat and wear.	Sensors installed in the ladle, exposed to extreme heat, refractory wear, and mechanical stress.
Installation & Commissioning / Startup	Pre-assembled, PoE-equipped system requiring no caster or ladle modifications.	May require ladle modifications for sensor installation.
System Trial & Proof of Performance	Rapid installation allows evaluation and proof-of-performance within months.	Trial periods often limited by ladle modification requirements.

Operations & Monitoring

Category	KT2000 GEN2	Electromagnetic Systems
Per-Heat Handling	No plug/unplug cycles required.	Connection/disconnection cycles common.
System Availability	High heat-to-heat uptime.	Availability dependent on sensor condition and replacement intervals.
System Performance Analysis	Heat-by-heat analysis capability enables review of detection timing, signal behavior, and overall system performance.	Closed "black box" systems with limited visibility and no practical ability to review or analyze individual heats.

Maintenance & Lifecycle Cost

Category	KT2000 GEN2	Electromagnetic Systems
Maintenance Profile	Low maintenance frequency with accessible replacement without missing heats.	Higher maintenance frequency often tied to relining cycles.
Consumables & Spare Parts Profile	Minimal consumables with small spare parts inventory.	Higher consumable turnover with larger spare parts inventory.
Lifecycle Cost Profile	Predictable operating cost supported by long sensor life, reduced parts use, and structured remote support.	Higher lifecycle cost driven by consumables, labor, inventory, and maintenance required to sustain availability.

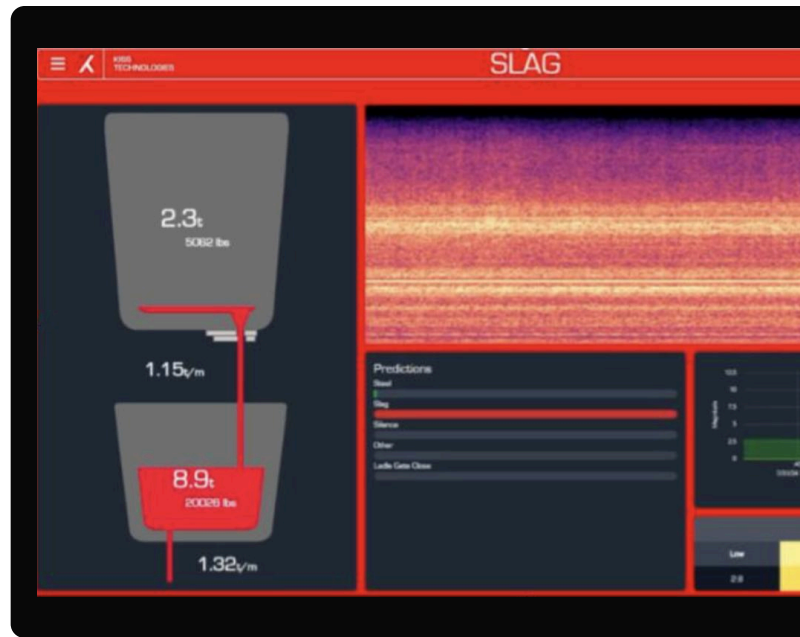
Built for Real Casting Conditions.

The KT2000 platform has been deployed across a wide range of caster configurations. KT2000 GEN2 builds on that foundation with machine-learning-based signal classification designed to address operational limitations commonly seen in threshold-based electromagnetic systems.

The result is a slag detection system that prevents slag carryover, maintains high availability, and delivers consistent long-term performance.

Talk with an Expert to explore how KT2000 GEN2 can be evaluated within your specific caster configuration and performance objectives.

Talk with an Expert



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