

Electromagnetic slag detection for furnaces

The Agellis EMLI-FurnaceSlag system monitors metal tapping to rapidly detect the presence of slag in the stream, control slag carryover and improve quality in the process.



The EMLI-FurnaceSlag system constantly monitors metal flow during tapping at the furnace and provides fast response outputs at the onset of slag in the stream. These outputs can be used to immediately end tapping, while also giving visual and audible alarms. The system is safe, easy to use and unaffected by flames and smoke.

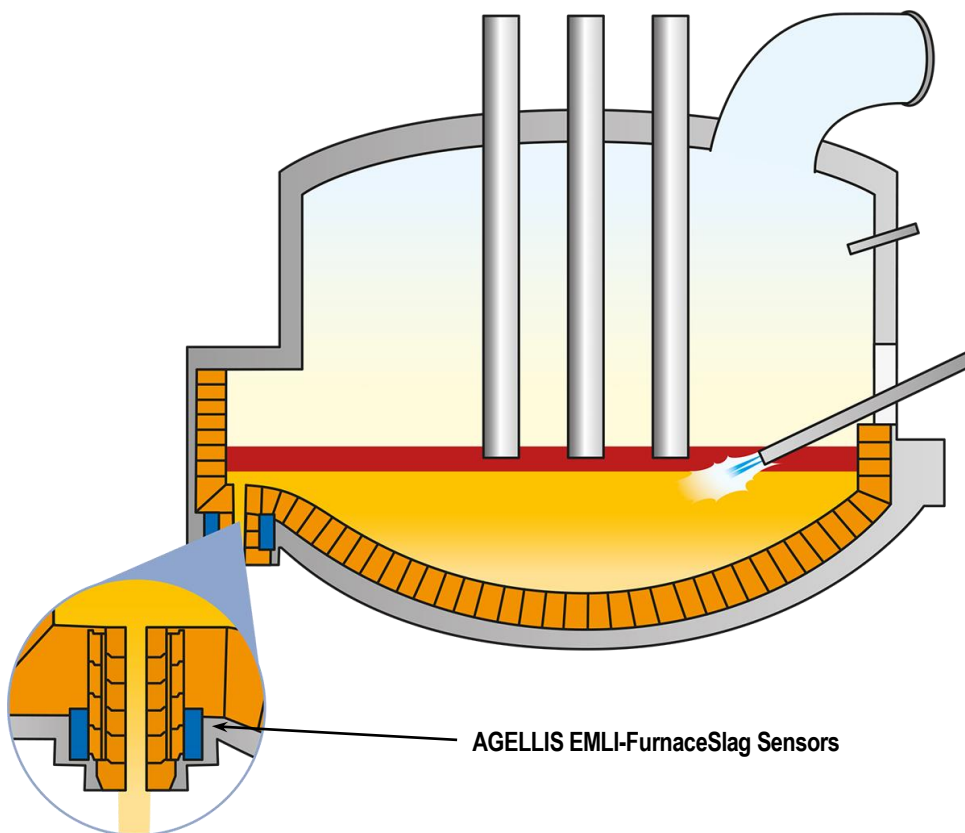
The robust EMLI sensors/cabling are customised to fit any furnace tap-hole

arrangement with only minimal modification to existing equipment.

A consistent secondary metallurgy process is achieved by using EMLI-FurnaceSlag. By maintaining low and predictable slag levels in the ladle it is possible to achieve great savings in terms of additions consumption, reducing unwanted pick-up from the slag and increasing ladle lining life.

The double sensor solution ensures that the measurements are precise and unaffected by high temperatures around the tap-hole.

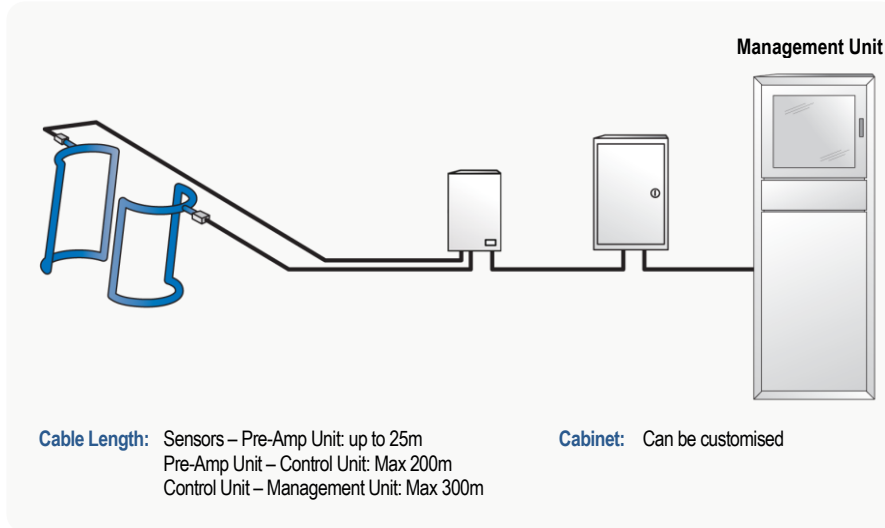
All EMLI systems have compatible electronics which means stocking spares is cost effective and reduced to a minimum.



AGELLIS EMLI-FurnaceSlag Sensors

Agellis follows a policy of continual improvement of design and we must therefore reserve the right to supply equipment differing in detail from that described herein.

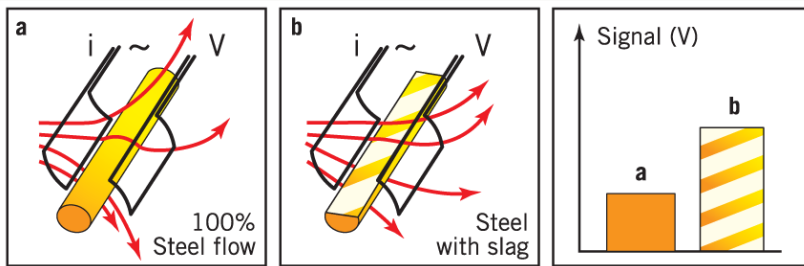
System Overview



Technical Information

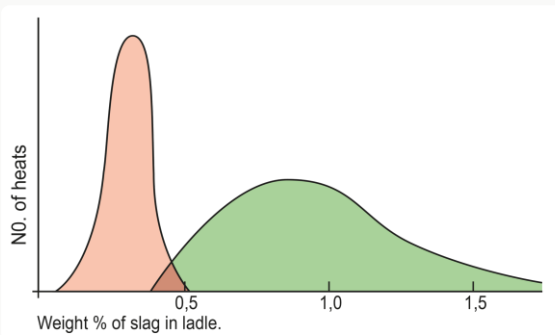
Power Supply:	90 - 230 VAC 50/60 Hz max 500 W
Frequency:	Normally 280Hz
Sensitivity:	0,2%
Alarm level:	Adjustable
Mounting Specification:	Designed to endure the industrial environment mounted on a furnace
Cooling:	Sensors – no cooling required Main Electronics Unit – ambient temp. range up to +55°C
Safety Standard:	Complies with known safety standards
Note:	Above data can vary depending on tap-hole size shape and local conditions

Principle of Operation



A transmitter sensor is supplied with a signal of a selected frequency which creates an electromagnetic field that in turn induces a corresponding signal of the same frequency in the receiver sensor.

When a 100% metal flow exists between the transmitter and receiver there is an induced signal (a) at the receiver. As soon as the flow becomes a metal/slag mix, the induced signal immediately increases (b).



In green the standard variations are illustrated for manual visual control of slag in the tapping stream, while the standard variation for automated slag detection with EMLI is illustrated in red. As the illustration shows the variations in slag transfers are minimised with the EMLI technology.

By reducing the average amount of slag by 50-75%, dependant on plant conditions and practices, the EMLI-FurnaceSlag detection system offers a standardised process. Equally important is the fact that the system completely eliminates all the "surprise heats" with excessive slag amounts that inevitably occur now and then when relying only on visual control.

User Benefits & Advantages

Process control

- Fast response time.
- Calculation of slag transfer amount.
- Detect vortex formation during tapping.
- Unaffected by smoke and flames.
- Avoid heats with excessive slag amounts

Process optimisation

- Ensures minimum slag in ladle.
- Ensures consistent secondary metallurgy process.
- Consistent slag carryover.

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