

Electromagnetic Level Profile

AGELLIS ELP

Electromagnetic Furnace Profile System

Fast, Efficient & Accurate Level Measurements

The Agellis Electromagnetic Furnace Profile System is a measurement unit for recording a complete furnace material profile at a fixed location when required. Can be used in all furnace/smelter types where access is possible and the process requires knowledge of different material levels. Slag thickness, matte level and bottom build-up can all be provided quickly and easily.

System Capabilities

Level Sensing

The System is easy to use with a pre-prepared lance performing a software controlled sequence of immersion and withdrawal. During the immersion sequence an electromagnetic sensor picks up conductivity changes as it passes through different materials. This information, in combination with lance position and time is fed to the plant PLC.

Lance mechanisms, speed and immersion times are all customized to fit the specific requirements at a measurement location. The system is capable of measuring a change of electromagnetic coupling in the order of 2% and will produce a complete furnace conductivity profile.

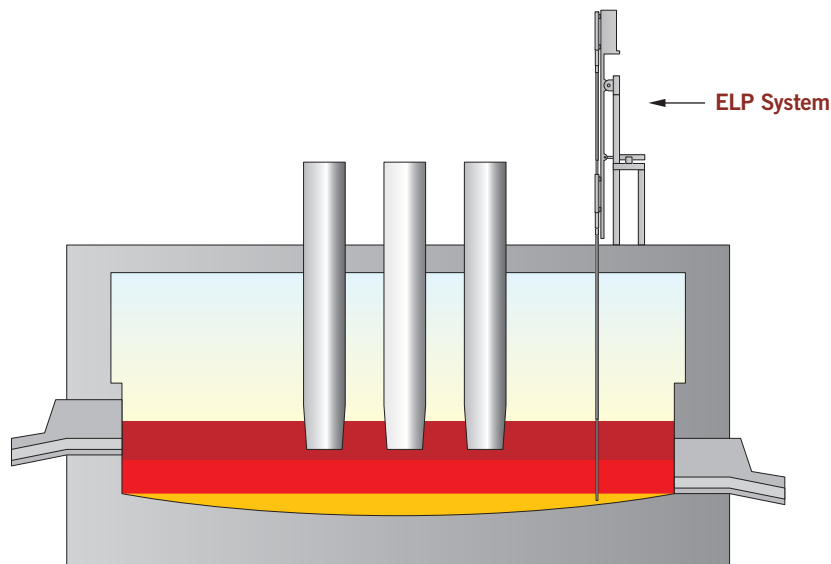
The output from the system will be lance position, shown as height above the furnace bottom, and material conductivity, which can be shown as two 4 – 20mA signals or in Profibus format.

Bottom Build-up

High resolution lance carriage encoders, mechanical structure, and sensitivity to solid surfaces, allow the system to provide accurate information about hearth position, including bottom build-up at location of measurement. Information is received and transferred to plant PLC.

Temperature Measurement and Sampling

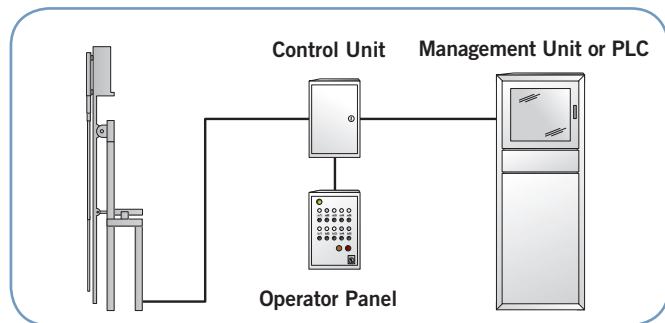
In twin lance format the ELP system can also provide matte temperature measurement and pure samples. The second lance functions independently of the profile measurement and can be programmed to follow immediately after or at any other occasion. Correct temperatures or samples from the required level, (in the matte), is assured by knowledge of exact matte location.



Technical Information

AGELLIS ELP

System Overview



Technical Information

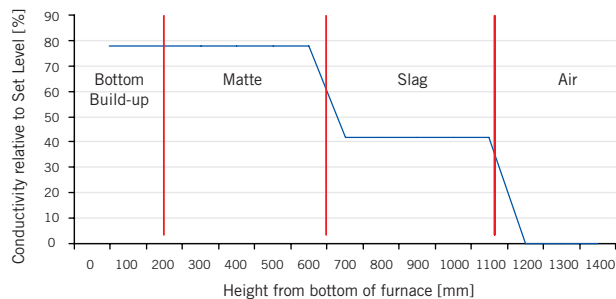
Lance Mechanism

Electrical:	As required locally.
Dimensions:	According to local specifications
Safety standard:	Complies with known safety standards
Sensor Unit	
Power Supply:	90 - 230 VAC 50/60 Hz max 500 W
Frequency:	Selected for local application
Sensitivity:	2%
Safety standard:	Complies with known safety standards

System Description and Options

By combining Steel Plant proven electromagnetic measurement and lance delivery technologies we have created a system which is both innovative and reliable. A motor driven, software controlled lance mechanism equipped with electromagnetic sensor is designed to detect the change of electromagnetic conductivities as it passes through different material layers in a furnace.

Lance carriage encoder information is tied into the received electromagnetic sensor signals that make accurate level reading possible. Safety devices make sure the lance is not damaged during insertion or contact with the bottom.



Sensors are enclosed inside the steel lance which is covered during operation by a protective sleeve. The design guarantees that equipment installed will work well year after year. Both original lance equipment and electromagnetic sensor systems are still in operation after 20 years.

Options include a twin lance system to enable temperatures/samples to be taken and various delivery mechanisms are also available as shown right.

System delivery types

Flexible systems

Normally the standard system is permanently mounted on a stand over the roof of the furnace and the lance is immersed in a perpendicular down/up motion. Other types of installation can be made to save space or to improve flexibility. Solutions can be found for in-line furnaces, slag cleaning furnaces, holding furnaces or others. Study of your furnace, process conditions and available space will guarantee that the system installation will be practical and effective.

Swing-arm type

A swing-arm moves the lance carriage into position prior to immersion sequence. This offers operators the safety of preparing the lance at the side of the furnace. Once initiated, the lance carriage swings into the measurement position and the lance is immersed. At the end of the measurement sequence the lance carriage swings back to the start position.

Telescopic lance type

Where space is limited, a drive mechanism with telescopic lance can be installed. This system gives twice the stroke length compared to a standard system with the same overall size of the lance drive mechanism.

User Benefits & Advantages

Easy & fast system	– Automated procedure that takes seconds.
Material profile	– Measures the different conductivities in the furnace.
Hearth level	– Provides bottom build-up information.
Repeatable results	– reliable information irrespective of operator.
Multiple lances	– Profile and temperature/sampling measurements in sequence.
Optimizes production process	– Aids efficient decision making.
Improves safety	– Removes need for operator to be on roof area.
Cost effective	– Excellent return on investment.

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.

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