

POURING STREAMS

The Opportunity

Monitoring the temperature of the pouring melt in foundries is a challenging task due to the varying measuring conditions and characteristics of the metal.

In most foundries, the temperature of the metal melt is usually measured by thermocouple immersion probes. These immersion measurements can only be made in the crucibles or the transfer ladles where the melt is stationary, but not in the pouring stream where insertion of a probe would disturb the flow into the cast. However, the direct temperature of the pouring stream is critical to the quality of the final casting. By continuous monitoring of the pouring stream temperature and pour quality for

each cast, the foundry is able to better control of the casting process.

An undisturbed temperature measurement of the pouring stream can only be obtained by non-contact infrared pyrometers. Where castings are made of different alloys, conventional pyrometers and ratio pyrometers often cannot be used for the measurement of the pouring stream due to considerable differences in the measuring conditions and the characteristics of the metal.

Our Solutions

LumaSense offers a specialized solution to address these issues and to provide a robust temperature measurement system:

ISR 12-LO/GS

For measuring the exact casting temperature of each pouring process, LumaSense Technology's IMPAC division has developed the ISR 12-LO/GS pouring stream pyrometer system.

This rugged, industrial pyrometer system was designed to overcome many of the issues that complicate the temperature measurement of the pouring stream such as changes in stream location and width, start and stop time variation, and slag interference.

An accurate temperature of each pour is displayed online and corrective action can be taken immediately if defined limits are exceeded. In this way, the narrow process window for quality castings can be maintained.



Key Features Include:

- **Armored fiber optics cables** with high temperature precision optics lens head for non-contact measurement in difficult installation areas.
- **Line spot shape optical beam** to minimize effects of pour stream location variation. Integrated laser targeting for ease of alignment.
- **Short wavelength ratio detector** to maximize the signal from low emissivity metals and minimize systematic errors due to emissivity changes, or interference from dust and vapor. Integrated lens contamination warning system.
- **Advanced algorithm** for determining pouring stream temperature. Start and stop pour signals. Pouring time calculation. Immune to random slag events, and pre/post pour drips. Robust tuning procedure
- **Custom TQCS software** for visualization of each pouring stream results, and online presentation. Integrates with foundries control systems to allow casting optimization. Full digital and Analog output functions are also included.



Your Benefits

- ✓ **Direct, accurate measurement of the pouring stream**
- ✓ **Automatic recording of the pouring temperature**
- ✓ **Documentation of the temperature of each single pouring process**
- ✓ **Replacement or reduction of immersion lance measurements with thermocouples**
- ✓ **Minimum system maintenance required**
- ✓ **Increased safety with reduced employee interactions**

Contact your LumaSense applications engineering representative for more details on integrated solutions.

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