

Temperature Measurement of Liquid Aluminium During the Tapping Process



THE TASK

Liquid Aluminium Temperature Measurement

Accurate temperature measurement of liquid aluminium during melting and pouring is important to ensure high-quality casting and efficient process operation.

The optimum pouring temperature depends on alloy type and casting geometry. The solid alloy must all be melted, but not overheated. If the temperature is too hot, the chemical and physical properties of the aluminium and the casting may not meet specification and energy is wasted. If the temperature is too low, molten metal will not flow into all the cavities and apertures of the casting due to solidification.

Liquid aluminium temperature measurement during tapping ensures product quality and process efficiency, and minimises waste or rework.



Using LED sighting, the SPOT exactly confirms the target spot's location and size

THE SOLUTION

SPOT+ AL Smart Aluminium Application Pyrometer

AMETEK Land provides the **SPOT+ AL smart application pyrometer**, an advanced non-contact infrared pyrometer specifically designed to provide a single-sensor solution for multiple aluminium temperature measurement applications. SPOT+ AL's unique **Liquid Aluminium Mode** enables accurate live high-speed measurements of tapping stream temperatures, even on the most reflective liquid aluminium surfaces.

By choosing the preset liquid mode and aligning the patented green target spot with the pouring stream, the pyrometer gives continuous readings through the digital and analogue interfaces within 15 ms.

The integrated visual camera and **SPOT+ AL** patented green LED clearly indicate the target area to aid alignment. Combining the **SPOT+ AL** with the smart **SPOT Actuator**, the spot detects and tracks the tapping automatically without the need for manual adjustment.

Both **SPOT+ AL** and **SPOT Actuator** provide integrated webservers for easy access through a simple browser. Live pouring temperatures and a remote video view of the process can be streamed live to any computer on a site network. Digital and analogue outputs – or Modbus TCP outputs – provide direct input to process control systems. Installed **SPOTPro** monitoring and data-logging software offers additional functionality for temperature trending and product quality recording.



SPOT+ AL pyrometer



Cooling and protection enclosure



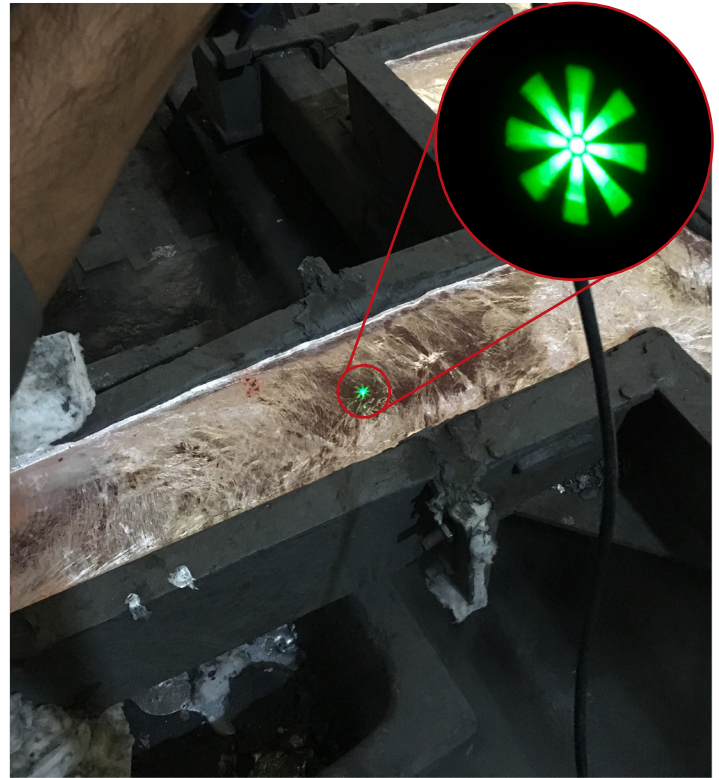
SPOT Actuator and SPOT+ AL

APPLICATION SHEET

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The SPOT's pulsed LED sighting pattern ensures optimum focus



The patented green LED spot can be clearly seen against the surface

BENEFITS

Advantages for the end user

Accurate and fast measurement

Temperature readings accurate to 0.25 % (K) output every 15 ms

Pre-set measuring mode

Plug 'n' play operation by just choosing the operation mode Fixed and pan-and-tilt installation

Smart pyrometer and actuator

Integrated webservers in both the SPOT+ AL and SPOT Actuator

Multiple interfaces

Analogue and digital inputs and outputs, Modbus ethernet protocol

Auto alignment and tracking

SPOT Actuator automatically tracks and aligns to the tapping stream

Remote access and integrated camera

Full process control through digital interfacing and live video view



SPOT+ AL
200-800 °C / 392-1472 °F



SPOT Actuator
± 45° – 900 samples per scan



SPOTPro Software
Process control software