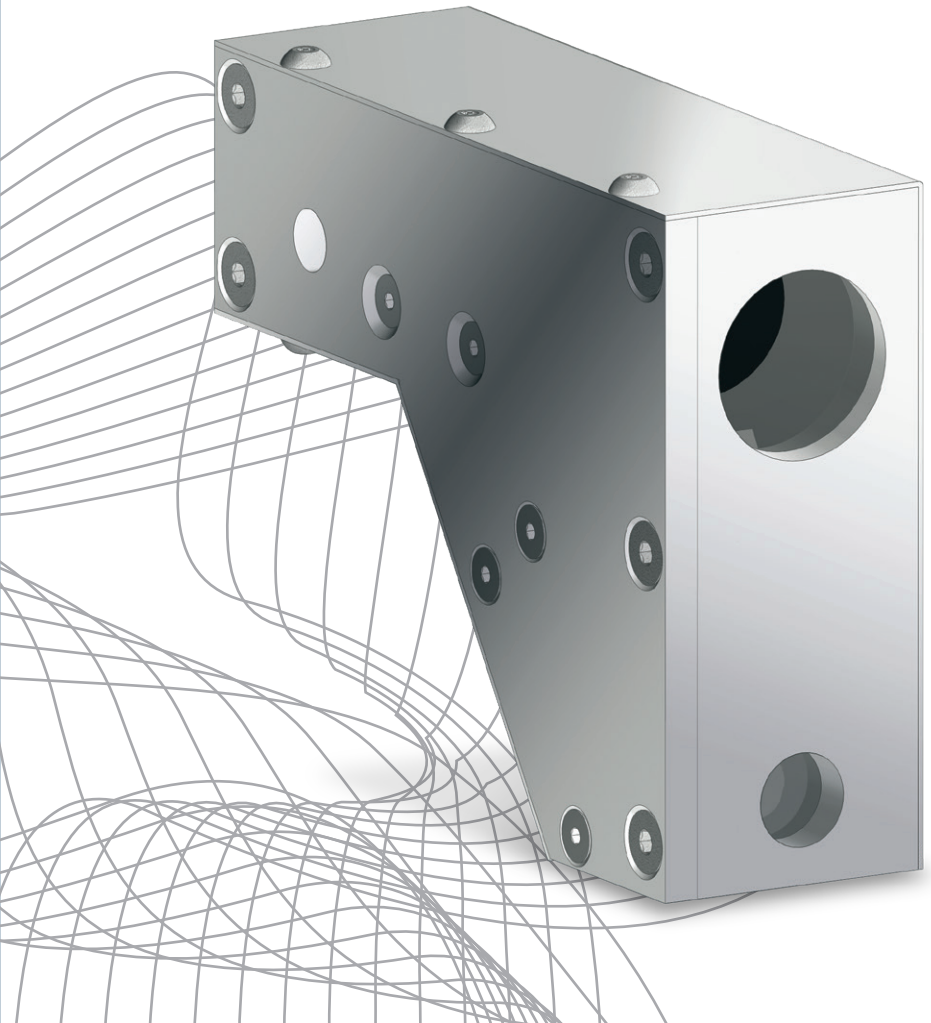
ergolines
INNOVATION PARTNER

OPD – OPTICAL POWDER DEVICE

The crucial role played by mold lubricating powder in submerged steel casting is widely recognized, although optimal result can only be achieved providing that the powder thickness over the steel meniscus is kept constant.

ergolines has developed different technologies able to do it, being the optical powder device OPD characterized by a broad range of applications.

This new optical system enables a real time control of the powder thickness on the liquid bath. It can be used in either combination with a radioactive or inductive mold level control system.



INSTRUMENT MAIN FEATURES

The OPD is designed to work with several section and formats of billets and blooms and allows fine adjustment of the mould powder flow rate.

BENEFITS

- keeping the powder thickness at a constant level
- reducing level fluctuations
- optimizing the mold lubrication
- reducing the inclusions' entrapment
- making the heat exchange more even in the mold
- keeping the product quality constant during casting
- reducing the need for the operators to visually check the powder and manually feed it into the mold.

HOW IT WORKS

Powder thickness is measured by processing the signals measured by two sensors:

- a sensor developed by ergolines made of a multi-spectral camera (necessary for the monitoring of the powder consumption) and of a laser scanner (necessary for the measuring of the powder surface position).
- a mold level measurement system (either radioactive, inductive or ultrasonic, etc.) previously installed into the mold or alternatively supplied by ergolines.

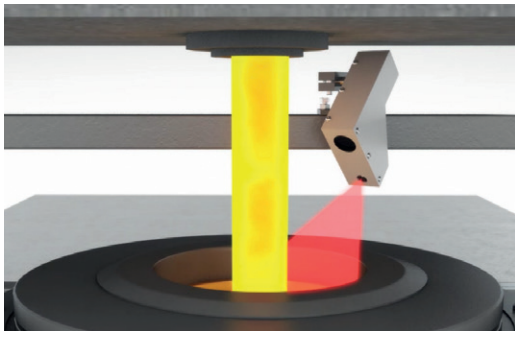
By processing the signals from the two sensors, the ergolines logic module calculates the difference between the powder thickness measured value and set point, and controls the powder feeding system. The latter, in turn, regulates the powder flow rate, keeping the powder thickness at constant value in the mold.

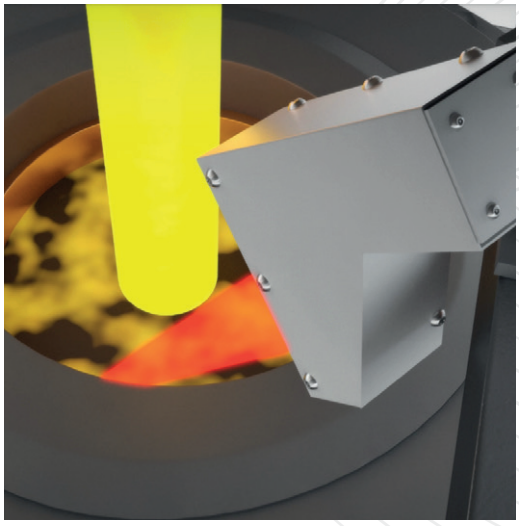
The robustness of the hardware engineered and the accurate algorithms developed for the signal treatment and processing allow for a precise and accurate measure, unaffected by heat radiation and flame occurrence.

INSTALLATION

The OPD sensor is placed on a dedicated support installed alongside of the tundish car.

OPD requires an unobstructed vision line of the liquid bath surface.





SYSTEM COMPONENTS

The system is made up of the following components:

› OPD - Optical Powder Device

› flexible cable (Max LH 5m)

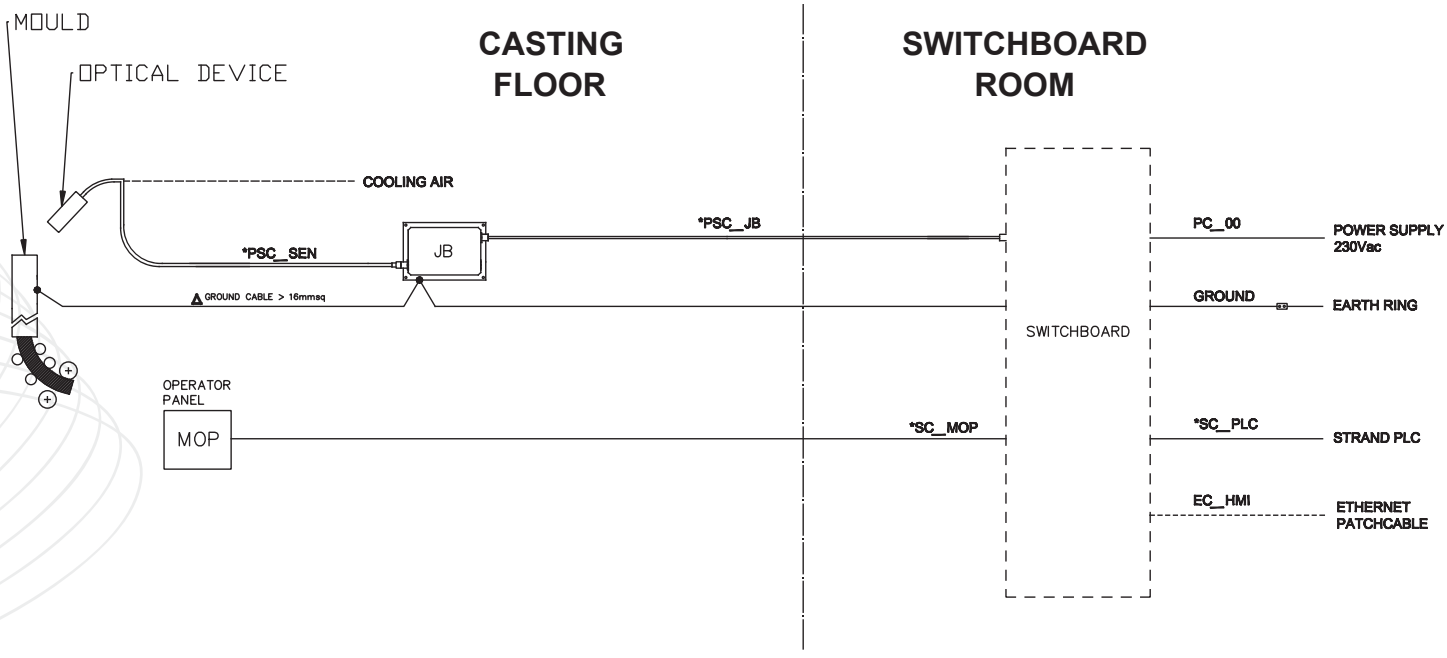
› junction Box

› signal processing unit - SPUe

› ergolines Processing Unit – EPU

› PC-HMI for data recording and processing

› operator Panel (on request).



TECHNICAL DATA

Sampling frequency	max. 10 Hz
Measurement range	200 mm on vertical axis
Precision	± 1mm
Cooling	Cooling

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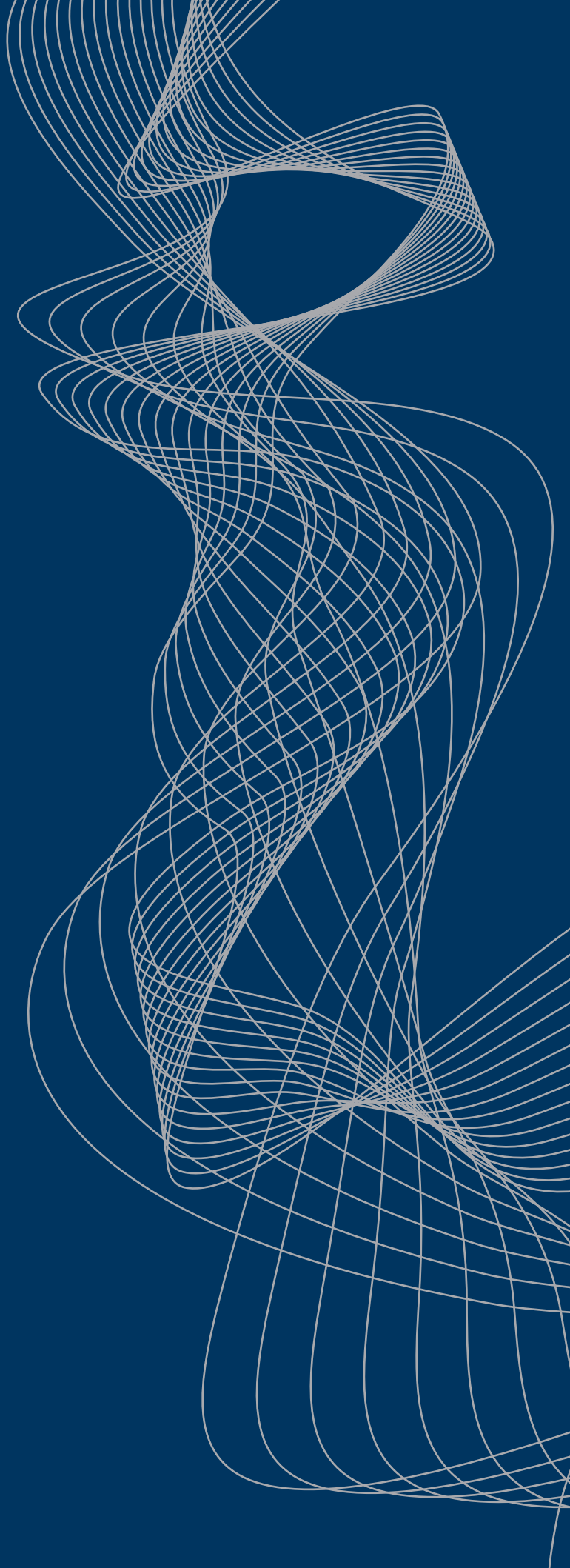

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