

KELLER

*infrared
temperature
solutions*

ITS

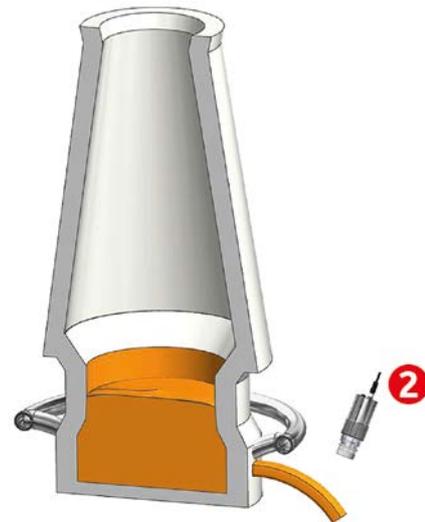
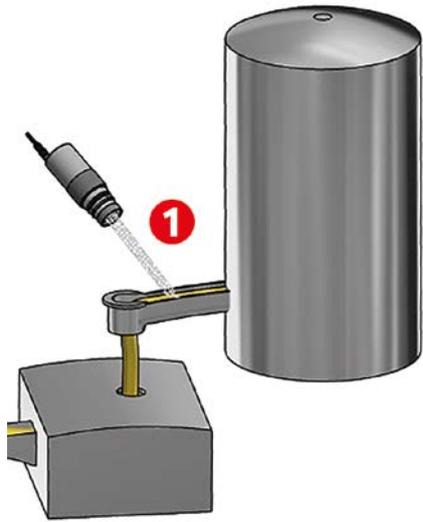


No 1 in terms of
ACCURACY
RELIABILITY
INNOVATION



Application Casting channel

Optical temperature measurement of liquid metals



Temperature measuring points for cupola furnace channel (1) and blast furnace channel (2)

Measurement of liquid metals

In the manufacture of liquid metal products, temperature is one of the most important physical factors influencing the reject rate, quality, strength and processing properties. If the melt is too hot, the refractory material wears out faster and energy consumption is increased. If temperatures are too low, the metal becomes viscous. This leads to problems during further processing or the material must be reheated.

The immersion lance commonly used can only be used sporadically. A continuous measurement of the temperature is not possible. Another disadvantage of immersion temperature measurement is that the measurement accuracy depends on the operator, i.e. on the measuring position and the immersion depth. In addition, the immersion measurement causes high operating costs due to the measuring probes.

The CellaCast system is an optical method for non-contact temperature measurement. It is a wear- and maintenance-free measuring system for temperature measurement on melting, holding hot, cupola and blast furnaces.

The special feature of optical temperature measurement of liquid metal is that oxides and slag form very quickly on the surface of metals. For a correct measurement, it is imperative that the pyrometer only evaluates the infrared radiation of the bare metal surface. For this purpose, the CellaCast has a special CSD function (Clean Surface Detection). This filters out the temperature at the slag- and oxide-free areas of the metal.



Thanks to the two-colour measuring method, the pyrometer delivers reliable measured values even under the harshest industrial conditions despite dust and steam.

Since the pyrometer works without contact and without wearing parts, there are no ongoing consumption costs for the measuring probes, contrary to immersion measurement.

Measuring point for cupola ¹ or blast furnace ²

The temperature in the casting channel of a blast or cupola furnace is determined classically and only sporadically by means of measuring probes that are manually immersed in the melt. Pyrometers, on the other hand, measure the temperature continuously. Temperature changes can thus be reacted to immediately. In this way, a constant material temperature can be achieved. Due to local conditions, the pyrometers are often mounted at a great and safe distance from the casting channel.

Solution

The CellaCast PA 80 is used for temperature measurement of the liquid metal in casting channels. It has very high-resolution optics to reliably detect the slag- and oxide-free areas of the flowing melt even from a great distance. The temperature is permanently determined and displayed.

The measured values can be displayed, recorded and archived online for documentation with an on-site data acquisition system or with the CellaView PC software included in the scope of delivery of the CellaCast system.

For optical alignment and control of the measuring field, the devices are equipped with through-the-lens sighting, a laser or a video camera in order to be able to check the measuring point at any time from the control station.

The portable pyrometer CellaPort PT 180 can be used for mobile temperature control.

Sighting aids of the measuring system



Through-the-lens sighting

Optionally, the CellaCast is equipped with a parallax-free through-the-lens sighting. With the help of the large field of view, the pyrometer can be easily aligned with the measuring object. Due to the extended pupil distance of the eyepiece, sighting is also possible for spectacle wearers and with a helmet. The measuring field marking in the viewfinder indicates the exact position and size of the measuring field.



Laser pilot light

As a further variant, the CellaCast PA 80 has an optional integrated laser pilot light. The laser dot marks the center of the measuring field. It is even at a measuring distance of 10 m still clearly visible. The laser is activated by push-button, interface or external switch.



Colour video camera

Optionally, the pyrometer is available with an integrated video camera as a sighting aid. The HDR camera (High Dynamic Range), which is based on the latest video technology, has an extremely wide dynamic range with automatic exposure control. As a result, the video image is always illuminated with optimum brightness over the entire measuring range without glare or overexposure.



Another special feature is the TBC function (Target Brightness Control). The camera's exposure control does not determine the light intensity from the average value of the entire image, as is usually the case, but precisely in the measuring field of the pyrometer. Therefore, both a cold object in front of a bright background and a hot object in front of a dark background are imaged with optimal exposure. The measured value is also transmitted directly via the video signal and displayed on the connected screen without the need for a separate PC.

Measuring systems

Measuring system	CellaCast PA 80-K001	CellaPort PT 180 AF6
Pyrometer	PA 80 AF 6	PT 180 AF6
Design	stationary	portable
Measuring range	750 – 2400 °C	
Sighting aid	Through-the-lens-sighting Laser pilot light Colour video camera	Through-the-lens-sighting
Measuring procedure	Two-colour pyrometer	
Spectral range	0,95 / 1,05 µm	
Mounting combination	PA 83-002	–
Scope of delivery	Pyrometer Mounting combination Calibration certificate for CellaCast PA Protective screen M46 x 0.75 mm Terminal box for PA VK 30.02	Pyrometer Calibration certificate for CellaCast PA Protective screen M46 x 0.75 mm Case PT 110/A

Assembly combinations

Assembly combination PA 83-002

consisting of:

- Dust screen PZ 10/T
- Fixing clamp PZ 20/L AF 2
- Cooling fitting closed PA 20/M AF1
- Intermediate tube PZ 20/C
- Axial air nozzle PZ 20/A AF1
- Holding device PB 08/K AF2



KELLER

Creating Solutions

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