CONTINUOUS MEASUREMENT OF LIQUID STEEL TEMPERATURE

Blackbody Cavity Technology system OPTICAST

Continuous casting has become a critical process for quality and requirement to narrowly control the casting temperature, improve the production yield and operators safety.

The blackbody cavity technology has been developed since 15 years as an alternative to Pt/Rh thermocouples, so as to assure a better accuracy during temperature measurement and a reduced cost considering the absence of Pt/Rh.

Radiation from the bottom of the sensor goes into the probe and is converted to an electric signal, that is elaborated by the signal processor and transduced in a temperature value. Then, this value can be displayed in a big screen or transmitted to the main plant computer for elaboration, storage or automatic correction of casting speed.

Sensor protection shell is made of alumina/graphite, in order to ensure the protection against the liquid steel. Its operating life is up to 40 hours depending on the application, lengths are variable according to customer needs.

The system can be placed in all tundishes, covered and uncovered. No specific calibration of the system is needed.
Technical Characteristics:

- **Measuring range:** Molten steel: 1400~1600 °C; Tundish preheated: 800~1400 °C
- **Measurement uncertainty (°C):** ≤ 3°C(1400~1600 °C) ≤ 7 °C (800~1400 °C)
- **Response time:** Hot response time≤75s Cold response time≤4min
- **Service life of tube (hrs):** 15~40 hrs (Dependent on different steel grade and sequence length)
- **Standard output:** 4~20mA or 1~5V
- **Output drive ability:** ≤400Ω(4~20mA) ≥100KΩ(1~5V)
- **Output accuracy:** 0.5 Grade
- **Power supply:** 100-240V~, 50/60Hz, 45VA

**Environment condition**

- **Ambient temperature:** Measurement probe 5°~70° C Signal Processor 5°~55° C
- **Relative humidity (%):** 10~75 %
- **Atmospheric pressure:** 86~106 (altitude<2000m) KPa