OXYGEN ACTIVITY MEASUREMENT IN MOLTEN STEEL

Immersion sensor TOX

For measurement of temperature and oxygen activity of molten steel whenever is requested. Sidermes has developed a probe suitable to control in every step oxidation level of steel bath in order to have always under control production process. Working principle of oxygen activity measurement refers to electrochemistry. The gradient of oxygen activity at the opposite sides of a solid electrolyte produces an EMF according to the Nernst's law. The generated EMF has a direct link to the liquid steel oxygen partial pressure PO₂. Knowing also local temperature, it is possible to use a specific formula able to calculate oxygen activity in a few seconds.
Technical Characteristics of Thermocouple

- **Element:**
  - type S (Pt – Pt 10% Rh)
  - type R (Pt – Pt 13% Rh)
  - type B (Pt 6% Rh – Pt 30% Rh)
- **Accuracy:**
  - \(0 + 3^\circ C\) at 1553.5 \(^\circ C\)
- **Calibration:**
  - ITS 90

Technical Characteristics of Oxygen measurement cell:

- \(\text{ZrO}_2/\text{MgO}\) stabilized cell
- Reference \(\text{Cr}/\text{Cr}_2\text{O}_3\)
- **High ppm (Oxygen activity) determination**
- **Low ppm (Oxygen activity) determination**
- Oxygen activity determination in Copper