Oxygen Probe



Product Overview

DKKI Oxygen Probe is recognized as the world standard for on-line process control in modern steelmaking. Utilizing an advanced electro-chemical cell based on Nernst's law (EMF), the oxygen probe provides steelmakers with fast and accurate real-time measurements in liquid steel. Within seconds of immersion (recommended time is 8 to 10 seconds), DKKI probe simultaneously determines oxygen activity (O) and temperature (T), while subsequently calculating crucial parameters like carbon (C) content and soluble aluminum (Al). The sensor achieves this using an electrochemical cell and a Pt/PtRh thermocouple. This real-time data allows for immediate, precise metallurgical adjustments and facilitates the calculation of necessary Aluminum additions. The system ensures superior steel quality and consistent castability. By enabling process optimization like "Quick-Tap practice," the probe significantly improves productivity, capable of shortening tap-to-tap times by 5 to 10 minutes and potentially increasing daily heat counts by 3 to 4. DKKI Oxygen Probe is essential for maintaining control across various crucial steelmaking steps, including Converter Decarburization, Degassing, and Ladle Treatment.

Key Features

- Simultaneous measurement of O, T, C, and soluble Al in molten steel
- High precision carbon results (accurate up to 0.15% C)
- Accurate soluble aluminum determination (10% relative accuracy)
- Enables "Quick-Tap practice", shortening tap time and boosting productivity
- Immediate calculation of necessary Aluminum additions for deoxidation
- Robust sensor integrity (electrochemical cell/PtRh thermocouple)
- High reproducibility (EMF standard deviation typically <1.2 mV)

Why DKKI

- Proven success for over three decades
- ISO 9001:2015 certified quality
- In-house testing under real operating conditions
- Free expert support and comprehensive training
- On-site consulting and troubleshooting
- Fast order processing with flexible logistics
- Standard products, customizable options
- Transparent partnerships that build trust
- Proactive customer engagement

Application Areas

- Converter/EAF Decarburization (Quick-Tap, Pre-Deoxidation checks)
- Degassing Stations for tight O/C control and reproducible ULC targets
- Ladle Treatment Deoxidation (Single-step additions, steel cleanliness)
- Billet Casting Quality Control (Pinhole/Nozzle Clogging prevention)
- Desulphurization Control (maintaining low O activity for agent effectiveness)

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Monitoring & Conformity Assessment Iran
CERTIFIED
ISO 9001:2015
Certificate No. IR0190126055

Technical Specifications

Parameter	Details
Oxygen Sensor Options	
High-Level Type	50 - 2000 ppm
Low-Level Type	1 - 2000 ppm Enhanced Accuracy at Low ppm
Low-Temperature Type	1 - 2000 ppm Optimized for Low Temperature
Measurement Principle	ZrO_2-based solid electrolyte (Nernst cell)
Measurement Range	1 - 2000 ppm
Accuracy of Low Level Cell	5 mV
Accuracy of Low Temperature Cell	5 mV
Accuracy of High Level Cell	10 mV
Signal Output	millivolt (mV)
Response Time	≤10 seconds
Shock Shield Material	Steel
Thermocouple Options and Range	
Probe Type S	PtRh10-Pt up to 1760°C
Probe Type R	PtRh13-Pt up to 1760°C
Probe Type B	PtRh30-PtRh6 up to 1820°C
Accuracy	±1.0°C
Thermocouple Signal Output	microvolt (µV)
Mechanical Features	
Protection Cap Material	Steel and Reinforced Paper
Tube Length	900–1700 mm for ladle/ tundish or furnace applications
Internal Tube Diameter (manual)	3/8" for 16 mm lance
Internal Tube Diameter (automatic)	3/4" for 28 mm lance
Compliance & Certifications	ISO 9001:2015/ ASTM E230/ IEC 60584/ IT S90
Storage Conditions	Dry environment avoid direct sunlight or corrosive fumes
Shelf Life	2 years under proper storage conditions

Packaging Information

Probe Length	Probes per Pack	Packs per Pallet	Probes per Pallet
900 mm	25	20	500
1200 mm	25	20	500
1500 mm	25	20	500
1700 mm	25	20	500

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