



QuiK-Tap® Drop System for BOF Process Control

QuiK-Tap®

QuiK-Tap® Drop System

Introduction

Exclusively for the BOF-shops Heraeus Electro-Nite developed the **QuiK-Tap® Drop system** for temperature and oxygen activity measurement. Using this system, costly reblows, overblows, waiting times and converter turn-downs are reduced drastically.

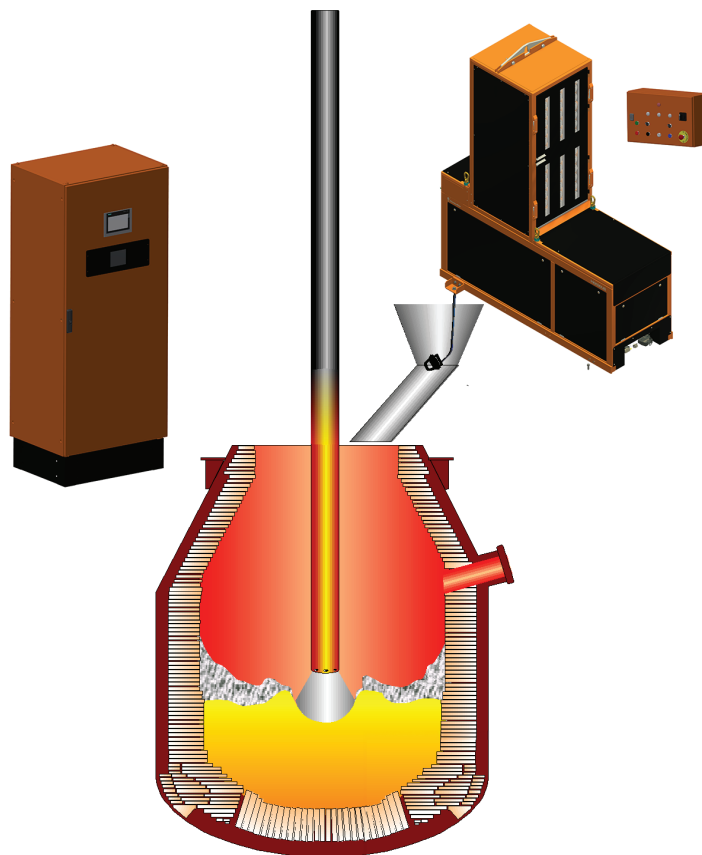
The QuiK-Tap® Drop System suites those steel plants going for direct tapping or requiring a stand-by system for their existing sub lance installation.

Its compact construction allows easy installation and maintenance.

Standard Features

Using the QuiK-Tap® Drop System, the QuiK-Tap® Sensor becomes an integral part of the BOF process control.

- During full oxygen blow the **T-probe** measures only the bath temperature
- The **TO-probe** is used to measure the bath temperature and oxygen activity after the oxygen blow, to determine the carbon content and the primary deoxidant additions during tap.



QuiK-Tap® Sensor

QuiK-Tap® measures the temperature and oxygen activity by fully penetrating into the molten metal.

It features excellent accuracy with high reliability. The sensor is equipped with a heat resistant cable, which is tightly wound inside a paper support tube.

Its plug-in system is designed for use on standard Heraeus Electro-Nite hardware and instrumentation. The sensor is built with type B-ITS 90 thermocouple wire.

QuiK-Tap® sensors are available in two types:

- T: for temperature measurement only
- TO: for temperature/oxygen activity readings

Features

- Designed to penetrate into the molten metal
- Measurement results within seconds
- Long survival for best success rates
- Compatible with existing hardware



Technical data

- Thermocouple type B, calibration ITS 90
- Thermocouple accuracy 0/+4°C at 1554 °C
- Celox® oxygen cell accuracy +_2mV

Sensor size (standard version):

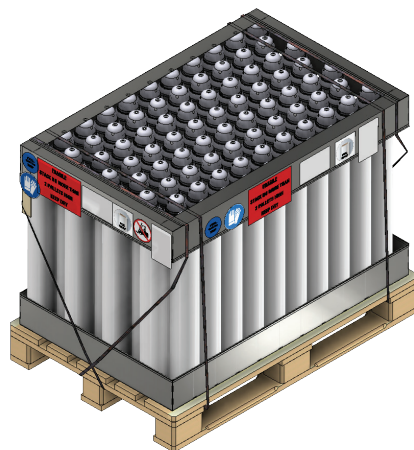
Length:	750mm
Outer diameter	104mm
Cable lengths:	25.3m and 35m

Weight (per sensor)

Length 25.3m	T/TO: 7.12kg
Length 35m	T/TO: 7.98kg

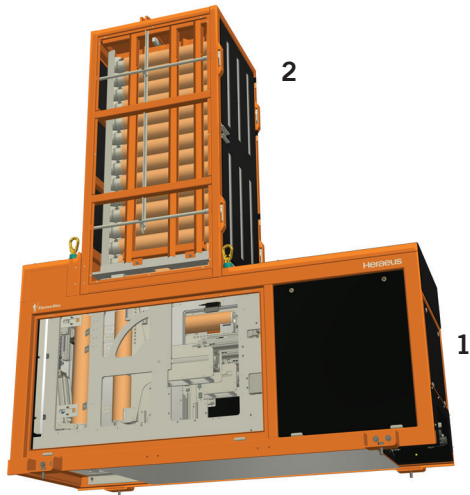
Weight (per pack)

Length 25.3m	T/TO: 613kg
Length 35m	T/TO: 738kg



QuiK-Tap®

QuiK-Tap® Drop System



(1) Manipulator (2) Removable sensor cassette

Manipulator

- The manipulator section includes 3 identical modules for automatic loading of the sensors from the removable cassette to the vertical drop position
- All movements are done by pneumatic cylinders
- Control valves and switching electronics are situated in a separate part of the total housing.

Removable sensor cassette

The removable sensor cassette contains 3 vertical rows of each 15 sensors (T or TO).

All precautions are taken to ensure safe and reliable locking of the cassette to the manipulator section.

Control unit

A separate dust-proof box contains the controlling PLC including the necessary interfaces to the manipulator, *iM* Sensor Lab and the customer computer. Connection from the manipulator to the PLC is done by PROFIBUS.

Remote control unit

The remote control unit is situated close to the manipulator and displays the operational status of the manipulator via brightly lit LED's.

In addition, some command buttons are included to enable maintenance personnel to operate the manipulator locally.

iM Sensor Lab

iM Sensor Lab evaluates the QuiK-Tap® measurements. The *iM*² Sensor Lab® instrument is a versatile and precise measuring instrument with a wide range of uses, depending on the sensor attached.

Measuring traces, results and other information are clearly shown on a LCD-display. More than 3000 measurements are memorised and can be recalled to the screen and sent to the plant via remote client software.



Technical Data

QuiK-Tap® Manipulator		
Design, sizes (h,w,d) and weight	Metal housing, powder coated	Size: 1000, 600, 1800mm. Weight: 575 kg
Connection for QuiK-Tap® Manipulator Control Unit	16 Pole industrial plug-in connector 4 Pole industrial plug-in connector 6 Pole industrial plug-in connector 24 Pole industrial plug-in connector	Measuring signals Profibus Power supplies Control signals
Connection for pneumatic cylinders	Air or Nitrogen min. 6 Bar Pressure, max 10 Bar	Plug-in quick coupling 1/2 inch.
Connection for flush air	Air or Nitrogen min. 6 Bar Pressure, max 10 Bar	Plug-in quick coupling 1/4 inch.
Dropping mechanism	3 dropping positions	Magnetic valve controlled pneumatic cylinders.
Operating data	Ambient temperature	0 to +50°C as Standard (-25°C +50°C optional)
QuiK-Tap® Manipulator Sensor cassette		
Design, sizes (h,w,d) and weight	Metal housing, powder coated. Lifting eye (DIN 15 401)	Type: 3;15 Size: 1700, 600, 800mm Capacity: 45 pcs Weight: 480 kg (loaded) 880 kg
Safety data	Controlled by the QuiK-Tap® Manipulator	Interlocking by means of a contact free safety switch (safety category 4 according EN 1050)
QuiK-Tap® Manipulator Control unit		
Design, sizes (h,w,d) and weight	Wall cabinet made of 1,5mm coated steel plate housing, protection IP54.	Size: h=2000mm, w=800mm, d=600mm Weight 150 kg
Controller	PLC Siemens S7 as standard	
Control functions	Siemens Operating panel	Call a probe, set up the Sensor cassette configuration, and invoke an additional sensor test, reset functions. Display all messages, operating steps, system statuses. Control functions, process conditions and program sequence steps are presented on the display.
Interfacing Level 2 client	All control functions and operation data.	PROFINET
Operating data	Power supply Power consumption Ambient temperature	230 VAC + PE 50-60HZ 4600 VA 0 to +50°C as standard (-25°C to +50°C optional)
QuiK-Tap® Manipulator Remote Control unit		
Design, sizes (h,w,d) and weight	Wall cabinet made of 1,5mm coated steel plate housing, protection IP 54.	Size: h=380mm, w=600mm, d=270mm Weight 14 kg
Connections	Screw terminal connections	
Control functions	Multi-colour LED, internal switch and push buttons	Signalling the manipulator and row status. Main power supply interruption, slide operations, on/off setting, reset and shutdown functions.
Operating data	Ambient temperature	-25°C to +50°C

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