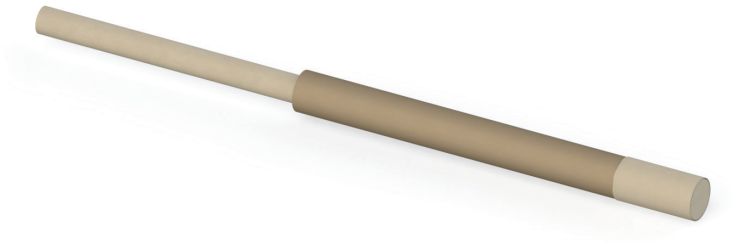
Hysen™

Hydrogen Measurement

ARRDY



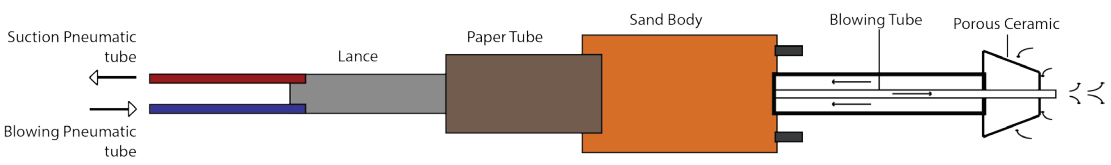
Hysen hydrogen measurement system comprises of disposable hydrogen sampling probes along with instrumentation to measure hydrogen activity in molten metal. It is primarily used in molten steel to rapidly determine hydrogen content in critical steel grades. Hysen probes are designed to provide accurate and reliable results for the hydrogen content in liquid steel by using an equilibrium principle. A carrier gas is blown through a central tube in the probe and is drawn back through suction via a porous ceramic body after passing through liquid metal. The carrier gas transports the hydrogen in the liquid metal and a thermal conductivity detector measures the hydrogen value. The gas is then bubbled back into the steel melt and the process is repeated until a stable hydrogen value is measured. This process takes roughly 45 seconds to complete.

Since the process is based on an in-situ measurement of hydrogen value, the Hysen probe provides a very reliable measurement of hydrogen content without the adverse oxidation effects usually associated with hydrogen content measurements.

The equilibrium principle is based on Sievert's Law which correlates to stable value of hydrogen in the liquid metal:

$$[H] = \frac{K}{f}\sqrt{P_{H_2}}$$

Where:
$[H]$ = concentration of hydrogen in liquid steel ;
K = Equilibrium constant
f = Hydrogen activity coefficient
P_{H_2} = Partial pressure of hydrogen in the gas mixture



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Technical Details

Probe Length : 900mm
Internal Diameter of Paper Tube : 22.5mm
Outer Diamter of Paper Tube : 40mm
Outer Diamter of Sand Body : 60mm
Range of Measurement : 0.3 to 11 ppm

Ordering Information

Hydrogen Probe; 900mm Length: HN32000109

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