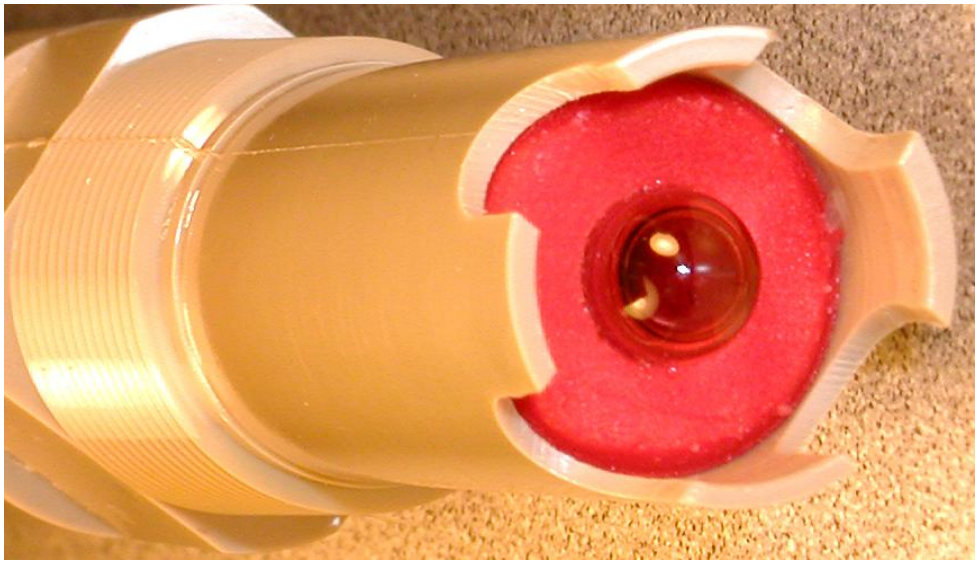
Features

- Guaranteed Longest Lasting Sensors Available with performance guarantee *
- Sensors are compatible with most existing pH/ORP Meters, Transmitters & Analyzers **
- Application Specific Engineering results in optimum Lifetime & Performance ***
- Integrated Temperature Compensation, Preamplifiers & Solution Ground Elements
- Solid State Reference System offers superior resistance to Fouling & Dehydration
- Applications such as Acid/Fluoride, Hi-Temp, Saturated Sodium and Sulfide Resistant are available as standard options
- Custom Applications are available, often at no additional charge
- Most Installation Styles are Supported Including: Immersion, Twist Lock, Valve Retractable & Sanitary
- Available in a wide range of plastics, from cost effective CPVC to thermally & chemically resilient ULTEM® and PEEK thermoplastic
- High Pressure Applications up to 100 psi for Valve Retractable & 150 psi for Inline Installations can be supported for continuous use
- Operating Temperatures from $^{-}30$ to $^{+}150$ ºC ($^{-}22$ to $^{+}302$ ºF) can be supported for continuous use



Case Study No. 16 – Sugar Refining (Extraction) from Cane Sugar Syrup

High Temperature Evaporation and Boiling Processes for pure sugar recrystallization

- High and Ultra High Temperature Resistant inline process pH sensors
- Excellent accuracy over repeated temperature cycling from batch process
- Specially engineered custom high temperature conductive polymer reference
- Minimum cleaning and calibration through non-porous solid state reference technology and rugged thick-wall hemispherical hysteresis resistant pH glass

The Problem

A sugar refining company in Venezuela wanted to reduce the cleaning and recalibration frequency for their high temperature pH control system in their evaporation and boiling sugar refining processes. The frequent sensor deaths slowed down the production process efficiency due to the replacement sensor installation time. Milk of lime ($Ca(OH)_2$) is added at various stages of the process to optimize yield and minimize energy consumption in the refining process, making pH control a critical factor to plant efficiency. The previously used sensors functioned properly for only short periods of time before the high temperature conditions and deposits from various calcium derivatives and viscous sugar syrup necessitated an aggressive chemical and mechanical cleaning, followed by a time consuming recalibration to ensure that the online pH sensor would provide an accurate reading. A lower maintenance alternative was required.

The Solution

The combination of a rugged thick wall break and crack resistant high temperature MUGG pH glass sensing element and a specially engineered ultra high temperature resistant non-porous conductive polymer reference system. Because the expansion coefficients of the plastics and other components are well matched with the solid state components employed, temperature cycling does not result in sensor failure.

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A temperature compensation element was embedded in the sensor (compatible with the existing pH analyzer) in a sealed design that avoids temperature compensator failure during operation (a common mode of failure for many pH sensors). A high impedance CMOS operational amplifier (preamplifier) converts the high impedance pH signal input to low impedance mV output. Such a preamplifier can be readily embedded for most transmitters (compatible with the existing pH meter) ensuring optimum signal isolation from the surrounding equipment. The result was greatly lowered maintenance frequency and sensor failure, resulting in greater product yield and reduced operating costs.

The pH Sensors Used**:**
Model: PN 6131-1000-10 pH Sensor for Mettler Toledo 2100e Analyzers
Description: ¾”- 1” MNPT Immersion ULTEM Bodied High Temperature Resistant pH Sensor with integrated 1000 Ohm Platinum Temperature Element; 10 feet cable to connect directly to Metter-Toledo Transmitters (See Hook-Up Schematic for Details)
Rated for continuous inline use up to 135 degrees Celsius at 100 psi

Model: PN 6241-100-10 pH Sensor for Endress+Hauser Analyzers
Description: ¾”- 1” MNPT Immersion PEEK Bodied Ultra High Temperature Resistant pH Sensor with integrated 100 Ohm Platinum Temperature Element; 10 feet cable to connect directly to Foxboro Endress+Hauser pH Analyzer/Transmitter (See Hook-Up Schematic for Details)
Rated for continuous inline use up to 150 degrees Celsius at 150 psi

Choosing the Correct pH/ORP Sensor

1. Choose a sensor body type that suits the physical parameters of the installation (refer to the ***Configurations Portion of pH/ORP and Ion Selective webpages***).
2. Choose a sensor that suits the process application, temperature, chemistry, and physical parameters of the installation (refer to ***Sensor Selection Guides and call factory or local sales agent for support***)
3. Choose a sensor housing material that is compatible with the process chemistry, temperature & pressure (refer to ***Chemical Resistance Charts as posted under the Technical Documents portion of the website***).
4. Select suitable temperature compensation element, solution ground & integrated preamplifier based upon the mating pH/ORP Instrument (refer to ***Electrochemical Instrumentation Page & ask for factory support***).
5. Specify the required cable length based upon installation location (refer to ***Part Numbering Guide***).

* Subject to application qualification and review by an approved ASTI sales agent and/or factory. Performance guarantee is posted on the ASTI online application questionnaire page.
** See list of supported pH/ORP/ISE Instruments webpages as posted on the ASTI website.
*** Completion of Application Questionnaire form is required. Other restrictions may apply.

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