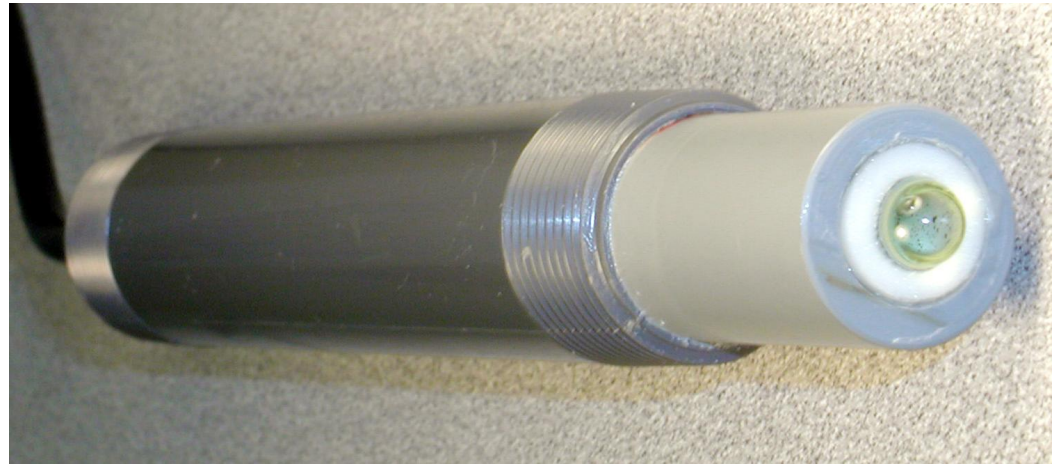


#### Features

- 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 °C (-22 to +302 °F) can be supported for continuous use



#### Case Study No. 14 – pH & ORP Measurement in Wastewater

Competitively Priced High Performance pH & ORP Sensors that can retrofit to almost any existing pH/ORP Transmitter and Controller and Installation Style

- ✚ Virtually Maintenance Free conductive polymer solid state reference system minimizes cleaning requirements, and allows for aggressive chemical and mechanical cleaning
- ✚ Thick Wall pH glass elements are nearly impossible to break during normal process operation, cleaning and calibration
- ✚ Flat Wall pH Elements offer excellent “maintenance free” operation for slurry solutions
- ✚ Multiple sensor body configurations allows sensors to retrofit to nearly any installation
- ✚ Embedded temperature compensation elements, stainless steel solution (liquid earth) grounds, and conventional & differential high impedance CMOS operational amplifiers (preamplifiers) allow connection to almost any existing pH/ORP transmitter or controller

#### The Problem

A waste water treatment company wanted to reduce the maintenance time on their wastewater sensors and standardize on one pH vendor, in spite of having pH and ORP transmitters from a variety of vendors. The build up of calcium hydroxide on the reference and pH elements from the neutralization process required rigorous mechanical cleaning (resulting in sensor breakage), because the previously used sensors could not handle the use of strong acid solutions to remove the calcium deposits without significantly shortening its lifetime. The previously used multi-component re-buildable sensors required significant maintenance (refilling salt bridges, etc.), reducing the wastewater crew's efficiency. pH and ORP transmitters from various manufacturers meant purchasing pH and ORP sensors from many vendors, causing stock levels to be high.

#### The Solution

Integrated, sealed, “maintenance free” pH and ORP sensors that could retrofit to all of the existing pH and ORP transmitters were required. Low impedance pH glass elements were chosen for pH meters with poor internal mV amplification (such as Johnson Yokogawa). Flat pH elements were chosen for processes where this would minimize the build-up from inline caustic service. The non-porous conductive polymer solid state reference junction reduced the cleaning requirements and also made the sensors more resilient to occasional periods dehydration. The customer was able to use strong (half-dilute) hydrochloric acid to remove the calcium deposits and thus minimized breakage by reducing the frequency of mechanical cleaning. Service lifetime improved up to one to two years, with little change in the unit price of the individual sensors. Faulty transmitters were replaced with simple menu driven two or four wire transmitters. The new transmitters were configured such that the currently stocked sensors could interface to the new pH and ORP meters.

### Features

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- 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
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- 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
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### The pH Sensor Used:

**Model:** PN 6011-3000JYC-25 pH “Conventional” Sensor

**Description:** ¾”- ¾” MNPT Immersion CPVC/PVC Bodied Low Impedance Conventional pH Sensor with integrated 3000 Ohm Balco Temperature Compensator & Solution Ground; 25 feet of cable; tinned lead wires only to connect directly to most Johnson Yokogawa pH Transmitters

### The Alternate pH Sensor used for more Rugged Service:

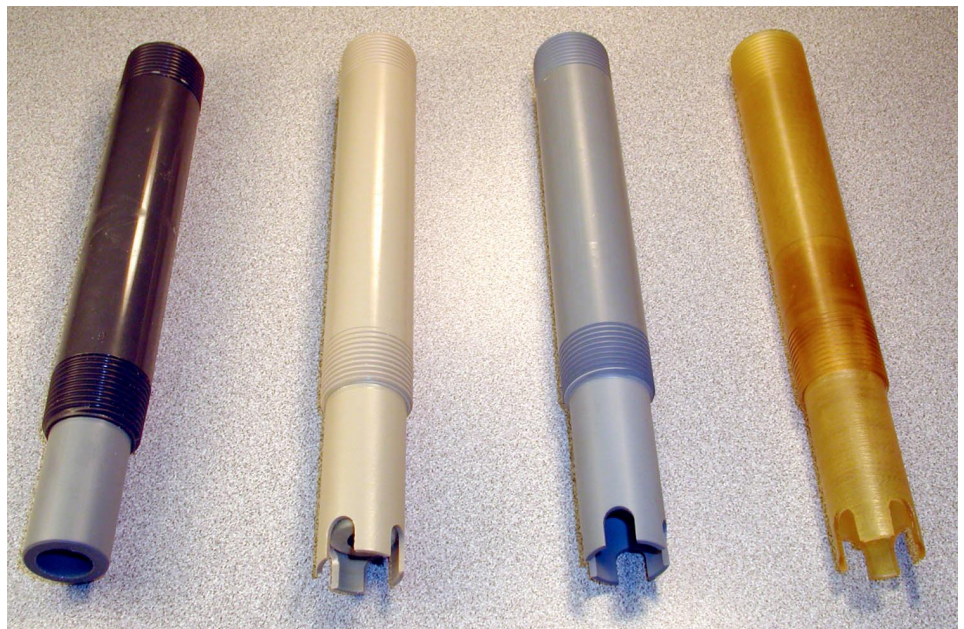
**Model:** PN 6331-GLI5-10 “Differential” pH Sensor

**Description:** ¾”- 1” MNPT Immersion ULTEM Slurry/Viscous Material Resistant pH Sensor; Integrated 301 Ohm Thermistor TC, SS Solution Ground & GLI Compatible 5-wire differential preamp.; 10 feet cable; to connect directly to most Great Lakes pH Transmitters & Controllers

### The ORP Sensor Used:

**Model:** PN 6811-0000-25 ORP “Conventional” Sensor

**Description:** ¾”- ¾” MNPT Immersion CPVC/PVC Bodied General Purpose Conventional ORP Sensor with No TC Assembly; 25 feet cable; to connect to any ORP Transmitter or Controller that can accept BNC or tinned lead wire connections (All Major Manufacturers supported)



### 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.