

Pi Technical Note 40

Probe Fouling

Introduction

Many different sites ranging across the whole water industry have a daily struggle to keep instrumentation functioning correctly due to fouling. To combat this, self cleaning and self flushing systems are now available from Process Instruments (Pi) for most types of sensors that can extend the sensor's life and drastically reduce maintenance regimes. These systems are affordable and have been designed to be simple to use and trouble free.

Sensor Fouling

Whatever the process being monitored is, there is often something in the sample water capable of fouling a sensor, as shown in Figure 1, and therefore causing erroneous results. The obvious solution to this problem is to clean the sensor, but how regular should inspection and cleaning programs be for each piece of instrumentation? Too regular and the inspection and cleaning regime is time consuming and unnecessarily costly. Not often enough and the instrumentation will give false results and probably fail prematurely.



Fig 1: Sensor Fouling

Process Instruments' Autoclean and Autoflush Systems

Simple, reliable and easy to maintain, Pi's Autoclean/Autoflush systems are an alternative to mechanical cleaning mechanisms which can clog and break. By regularly spraying the sensor/probe with clean water or air, the sensor remains clean and free from fouling for extended periods of time. The sensor cleaning cycle is activated by Pi's controller for a user selectable length of time and frequency so that no matter how dirty the application, the probe remains clean. With no moving parts in the sensor body or in the cleaning attachment there is nothing to replace or check other than a simple valve positioned in an easy to reach location.

Pi's Autoclean and Autoflush systems can give trouble free and fouling free functioning of sensors for weeks, if not months, at a time.

A solution for each application

Autoclean - This option can be added to our pH, ORP, Turbidity, Suspended Solids and Dissolved Oxygen (DO) sensors as shown in Figure 2. Consisting of an end cap to direct the flow of clean water (or air for a DO sensor) across the face of the sensor blasting any dirt away. The cleaning is controlled by a single valve positioned in an easily accessible location.

Autoverify - If using air to clean a DO sensor the system can also automatically verify that the sensor is still responding correctly, removing any need to remove the sensor from the sample for months at a time.

Autoflush - For sensors that require flow cell mounting like Chlorine, Ozone and Chlorine Dioxide, an Autoflush system has inbuilt valves which automatically start/stop the sample flow and control the flow of clean water past the probe as shown in Figure 3. The user can set the flushing interval and duration to keep the flow cell and sensor clear from fouling. For particularly dirty or stubborn contaminants, warm water can be used as the flush water to aid cleaning.

With the above options, whatever the application or parameter being measured, Pi will be able to provide a monitoring system that will not only be accurate, precise and long lasting but that will also remain free from fouling and save the operator both time and money.



Fig 2: Sensor with Autoclean Cap



Fig 3: Autoflush System