

METTLER TOLEDO APPLICATION NOTE

pH Measurement In API Separators

BACKGROUND

API Separators are the first step in the treatment of refinery wastewater contaminated by oil and oil-bearing sludge. In addition to gross oil contamination, the wastewater also contains oil entrained as an emulsion. The API separator removes only non-emulsified oil and oil-bearing sludge from refinery wastewater by allowing it to float to the surface of the water, where it can be skimmed off (Figure 1).

Following this primary step, further treatment processes are used to more completely remove entrained oil in all forms, including emulsified oil, and to condition the water to meet the specifications for release into a stream or body of water. Treatment downstream of the API separators can include chemical flocculation to remove emulsified oil and special processes for the removal of phenols and sulfides.

THE PROCESS

pH control is used at the discharge from the API Separator to enhance the efficiency of secondary treatment processes such as flocculation. However, because the entrained oil is not completely removed by the separator, the pH sensor can become fouled by the oil remaining in the emulsion form. As a result, the pH sensor has to be removed and cleaned frequently. This creates the need for increased maintenance attention and increases the cost of having an accurate pH measurement at this point.

INSTRUMENTATION

The sensor of choice for this application is the InPro[®] 4200 Solid Polymer pH Electrode in conjunction with the InTrac[®] 787 Hot Tap Style Ball Valve Retractable Housing. The InPro 4200 features a Xerolyt[®] solid polymer reference, which has been formulated to maintain a stable potential for accurate and repeatable pH measurement and extended electrode lifetime. The Hot Tap Style Retractable Housing allows maintenance without process interruption. The housing's safety features have been specifically designed for the rugged environment found in refineries and chemical plants.

The transmitter recommended for this application is the Model 2100/2X pH Two-Wire Transmitter.

PRODUCTS

2100 pH Analyzer

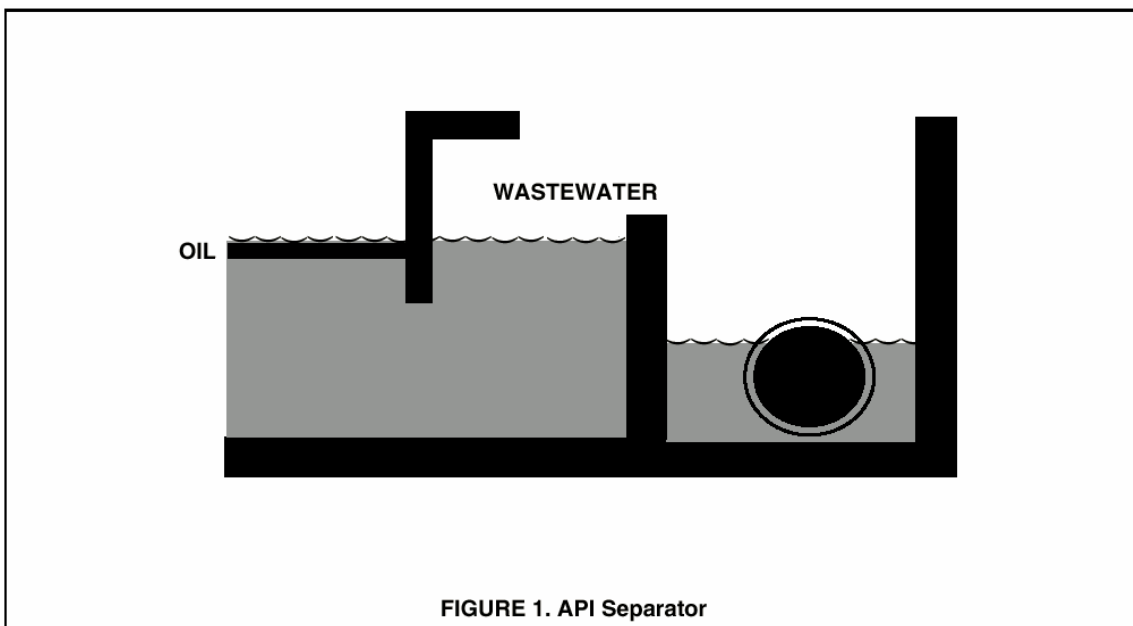
- Detachable front panel and plug-in terminals for ease of installation
- All functions accessible through the keypad for increased ease of use
- Continuous sensor and transmitter diagnostics to monitor performance
- FM certification for Class I, Div 1 & 2 Environments and CSA General Purpose Approval
- 3 year warranty

InPro[®] 4200 Solid Polymer pH Electrode

- Patented Xerolyt[®] solid polymer reference system maintains a stable potential for accurate and repeatable pH measurement and low maintenance
- Open junction eliminates reference clogging and extends sensor life
- High pressure resistance eliminates requirement for pressurizable housing
- Integral RTD for higher measurement accuracy
- Rugged IP67 rated quick connect VarioPin connector

InTrac[®] 787 Hot Tap Style Ball Valve Retractable Housing

- Fast and easy sensor maintenance or replacement without process interruption
- Double o-ring process seals
- Integrated blow-out protection
- Mechanical linkage ensures safe operation
- Self-wiping retractable tube reduces o-ring wear



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