pH Control Maximizes Yield in Algin Production

BENEFITS

- Maximum pH Uptime
- Optimized Yields with Improved pH Control
- Predictive Diagnostics

APPLICATION

Kelp is harvested from the ocean as a source of protein for use in a variety of food intermediaries ranging from ice cream to mayonnaise to pet food. pH control is used to ensure that a maximum yield of protein (algin) is obtained from the kelp.

PROCESS

Algin is obtained from kelp in a two-step process. First, the kelp is digested at a pH of 12.5. The mixture is then acidified to a pH between 1.2 and 1.5. In that pH range, the algin is precipitated and can be separated from the reaction mixture. The acidification must be carefully controlled to produce the maximum yield. If the pH falls below approximately 0.9, the algin will be destroyed. If the pH is higher than approximately 2, not all of the algin will be precipitated.

INSTRUMENTATION

During the precipitation process, the mixture becomes a thick slurry and the algin tends to coat stationary objects, like pH sensors. However, pH can be measured successfully by using a coating-resistant pH sensor. The sensor should be installed in a line where the flow is maintained above five (5) gallons per minute. This will help keep the sensor clean and ensure proper operation. It is also recommended to install the sensor so the flow goes over the glass electrode for better self cleaning.

The TUpH™[1] Model 396 pH sensor was designed specifically for harsh, high-suspended-solids applications such as this. The reference junction has a high resistance to coating, due to its large surface area and small pore size. Therefore, maintenance costs and downtimes typically associated with cleaning sensors are reduced.

The TUpH Model 396 insertion/submersion sensor is available only without a preamplifier and is compatible with all Rosemount Analytical analyzers/transmitters, such as the Model 1056 microprocessor analyzer and the Model 6081 SMART wireless transmitter.

The retractable TUpH Model 396R sensor has a preamplifier inside and is also compatible with all Rosemount Analytical transmitters.

[1] TUpH is a trademark of Rosemount Analytical.

INSTRUMENTATION & SENSORS

Model 1056 Dual Input Intelligent Analyzer

- Dual configurable inputs and outputs enable cation conductivity measurement with a single analyzer
- Large, bright LCD display can be customized to show straight and cation conductivity simultaneously
- Intuitive menus with advanced diagnostics
- 4 alarm relays with timers
- Optional HART®[2] or Profibus®[3] DP

Model Xmt-P Two-Wire Transmitter

- NEMA 4X (IP65) weatherproof, corrosion-resistant enclosure
- Comprehensive pH glass and reference diagnostics
- Choice of communication protocol: HART or FOUNDATION®[4] fieldbus
- Automatic calibration

TUpH Model 396 pH Sensor

- Polypropylene reference junction
- Rugged stainless steel body
- Disposable tough design
- Suitable for flow-through, submersion, and insertion applications

Model 6081P pH/ORP Wireless Transmitter

- Large custom LCD display
- NEMA 4X (IP65) weatherproof, corrosion-resistant enclosure
- Comprehensive pH glass and reference diagnostics
- Wireless HART

TUpH Model 396R pH/ORP Sensor

- Rugged titanium and polypropylene construction
- Longer sensor life and reduced maintenance
- Retractable version for greater insertion depths

Model 54e pH Analyzer/Controller

- NEMA 4X (IP65) weatherproof, corrosion-resistant enclosure
- Comprehensive pH glass and reference diagnostics
- Fully descriptive diagnostic messages
- Two independent outputs
- Automatic calibration

[2] HART is a registered trademark of the Hart foundation
[3] Profibus is a registered trademark of Profibus & Profinet International
[4] FOUNDATION fieldbus is a registered trademark of the Fieldbus Foundation

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