Application Note
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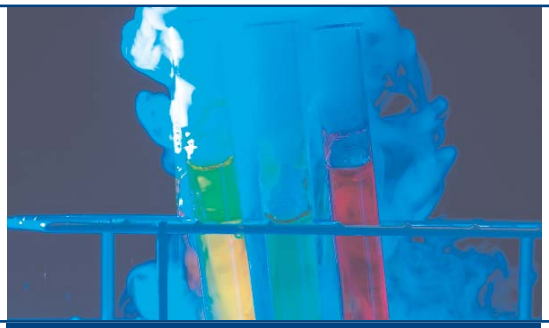
Life Sciences

Tighter Conductivity Control in chromatography & purification systems

RESULTS

- Higher Purity and Production Yields
- Improved Throughput Production
- Ensures Thorough Cleaning Validation
- Optimize Asset Utilization



"The Model 410 sensor has better low conductivity performance on rinse water phases, which improves my asset utilization."

BACKGROUND

Biopharmaceutical Chromatography Systems are designed for separating and purifying proteins and bio-engineered products. Flow systems are compact in design to maximize throughput. No dead legs in process pipe can exist since unswept areas are more challenging to completely clean, as well as delaying product throughput. The systems must maintain a hygienic design. Wetted surface finish must be < 20 µinch Ra and material traceability is important to maintain system integrity.

CHALLENGE

Conductivity measurement plays an important role in the purification process. Conductivity is one of the determinants of when to start and when to end the collection process. Tighter conductivity controls will increase purity yields. In addition, it may improve secondary collection processing.

Conductivity is a critical determining factor to determine cleanliness. Often, sensors that require tees or larger branches to be properly installed will create half filled process pipes, which leads to lower conductivity values. The conductivity sensors need to differentiate between CIP cleaning fluids and rinse water.

SOLUTIONS:

The PUR-SENSE™ Model 410 Four Electrode Conductivity Sensor from Rosemount Analytical can accurately monitor the protein purification process. The conductivity sensors are optimized to accurately measure both highly conductive solutions as well as less conductive rinse water during cleaning phases.

Throughput is maximized by using a sensor designed to minimize dead legs and unswept pipes. The Model 410 Conductivity Sensor installs directly into the process piping via Triclamp, G 1-1/4", or Varivent® process connections. The installation minimizes pressure drops so flow rates are not impeded. The compact design ensures that conductivity is accurately measured in CIP phases. This design also makes sure that the cleaning solutions make contact with all wetted components. Surface finish for end caps and liner are better than 16 µinch Ra.

The sensors can also differentiate between CIP solutions and rinse water. The sensor is made with FDA Compliant materials and wetted surfaces have a better than 16 µinch Ra finish. Temperature compensation is achieved with a highly accurate, fast responding internal RTD.

The Model 1056 Intelligent Transmitter works with the Model 410. The 1056 has improved signal conditioning to allow a wider conductivity range with one sensor. The 1056 allows up to two sensors inputs, reducing cost and minimizing panel space. The 1056 has an optional PROFIBUS® digital communications output that can integrate with either a DCS or PLC. Another digital option available is HART® Protocol that can optimize the sensor's performance when used with Asset Management Tools such as AMS™ Intelligent Device Manager.

INSTRUMENTATION

PUR-SENSE™ Model 410 Four Electrode Conductivity Sensor

- Highly accurate conductivity sensor
- Better than 16 micro inch Ra surface finish
- Compact design minimizes flow impedance
- Documented Lot traceability on wetted components available

Model 1056 Conductivity Transmitter

- Large local operator interface
- Easy to use menu structure
- Improved Signal conditioning
- PROFIBUS and HART Digital communications protocols available

PUR-SENSE is a trademark of Rosemount Analytical.

Emerson Process Management

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