Monitoring Heat Exchanger Leaks

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Series e-2000 Stratos

- Multi-parameter
- Alarm set points
- Dual output

Barben Analyzer Technologies Axial Ion Path pH Sensor

- Long life pH sensor
- Resilient to internal plugging and leaking
- 2 to 6 times KCl electrolyte
- Compatible with all chemistries

Barben Analyzer Technologies 4-electrode Conductivity Sensor

- High Performance
- Wetted Materials: Kynar, Teflon, 316SST, CPVC, EPM, Kalrez, Titanium, Hastelloy
- Self-compensating for corrosion and scale build-up

Leaks within heat exchangers can cause problems in various areas. Heat exchangers are used throughout a refinery to capture waste heat for reuse. A best practice for extending the performance and lifecycle of a heat transfer system is to minimize corrosion and realize leaks and fix them as soon as possible.

Locations

A. Desalting process

B. Waste water treatment

C. Desulphurization process

D. Boiler water

Corrosion

The bare carbon steel tubes found in heat exchangers, condensers and other heat transfer equipment can easily be corroded. Microorganisms draw nutrients from cooling water causing bacterial build-up and fouling. Each corrosion cell creates a pit for further bacterial to build and cause blockage. In addition, activated sulfide or manganese coating films can have a differential potential and cause galvanic reaction resulting in pitting.

General Understanding

The idea is to maximize the energy efficiency of the heat exchanger while keeping the hot stream separate from the cooler stream. Leaks can cause a migration between the two streams causing problems; i.e. waste stream pollution, boiler damage, product mixtures etc…

Monitoring

Using a differential pH of one sensor at the inlet of the heat exchanger and a second pH sensor at the outlet of the heat exchanger we can measure process conditions via acid or base conditions and isolate possible leaks.

Using a conductivity sensor is viable in applications where condensate has low conductivity (under 10 uS/cm). A small leak of process water can show an increase in reading.

Benefits of 4-electrodes

The first set of electrodes provide a potential through the aqueous solution while the second set of electrodes are used to monitor the conductivity. Because these are separated, the sensor does not suffer from polarization and allows for a wide range of sensing.

Features

- **Controller:** Two selectable and configurable parameter sets for different applicatons
- Four floating relay contacts
- SensoCheck sensor monitoring
- Optical alarm signaling by red LED
- Comprehensive service functions
- **pH Sensor:** most rugged in the industry
- Low maintenance and high reliability
- Axial Ion Path technology
- **Conductivity Sensor:** wide range of sensing
- Great chemical compatibility
- Rugged against solids

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