

Overview

1. Flow Sensor and it's Application From AWS
2. Installation at Amalgamated Sugar
3. Modifications for Calibration
4. List of Recommendations

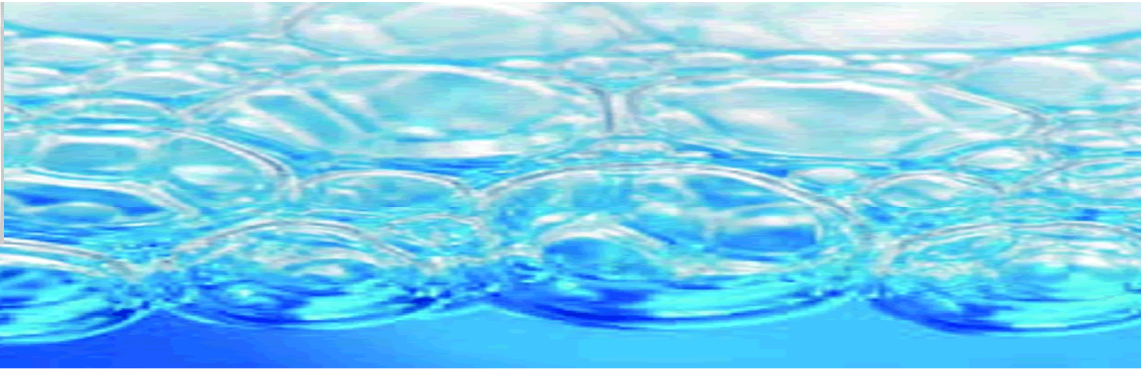
Hydrite Chemical Co.

Flow Sensor and its application from AWS

Flow Sensor and it's Application From AWS Flow Sensor

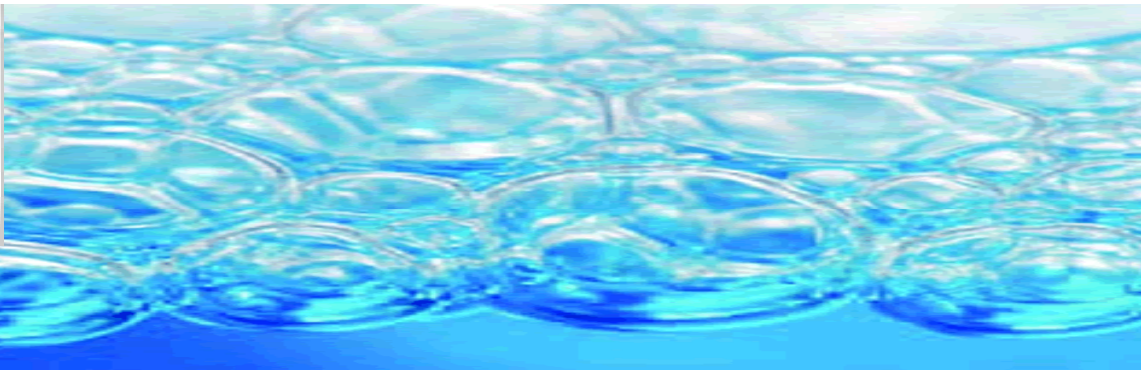


The flow sensors are manufactured in a 2 piece stainless steel configuration. The solid state sensor is mounted in epoxy in a stainless steel threaded bushing. The sensor is threaded into the stainless steel tee. This makes for easy installation and replacement.



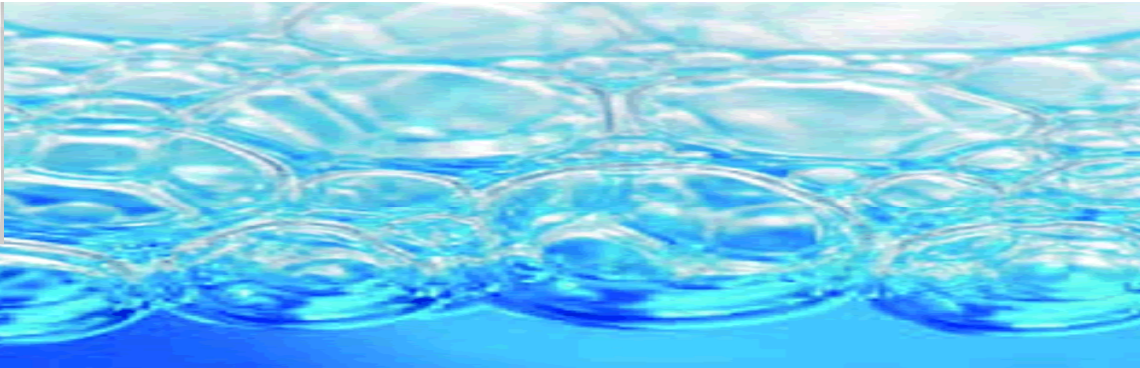
Flow Sensor and it's Application From AWS Control Panel



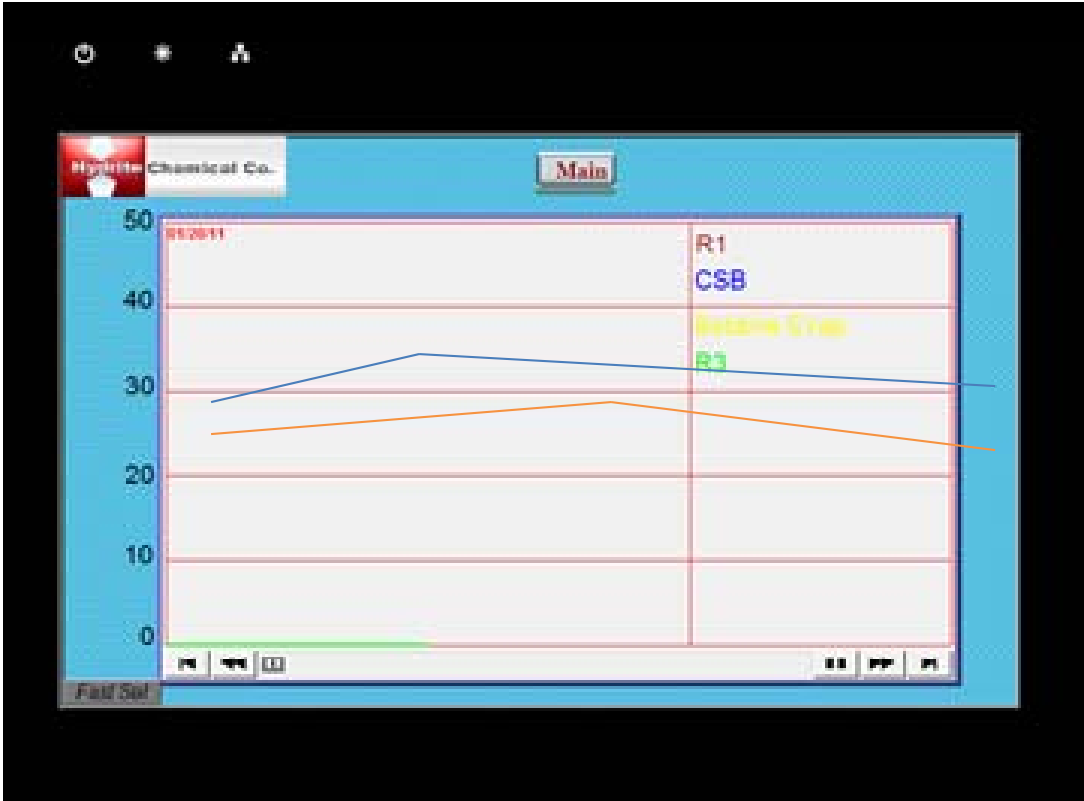


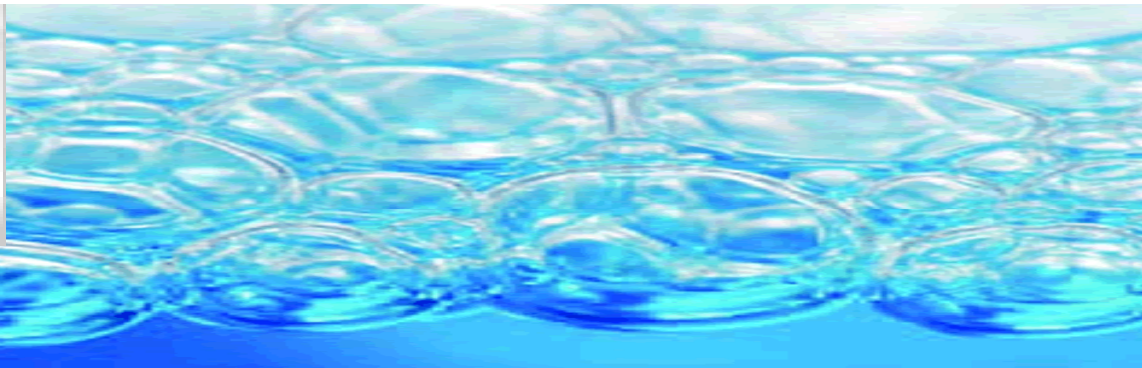
Flow Sensor and it's Application From AWS Overview Screen

The screenshot shows a web-based control interface for Hydrite Chemical Co. The interface has a light blue background and a dark blue header bar. In the top left corner of the header, there are three small icons: a power button, a star, and a user profile icon. The Hydrite Chemical Co. logo is positioned in the top left of the main content area. In the center, a white box contains the text 'AmalSugar Corporation Nampa, Idaho'. Below this, there are two rows of four digital readouts (R1, CSB, Betaine Evap, R3 in the first row; Betaine Conc., Upgrade Supply in the second row), each displaying the number '0'. On the right side, there is a vertical menu with buttons for 'Trends', 'Flow 1-4', 'Flow 5-8', 'Pages', 'Alarms', 'Calibrate', 'Alarms', and 'Reset'. A 'Fast Set' button is located in the bottom left corner of the main content area.

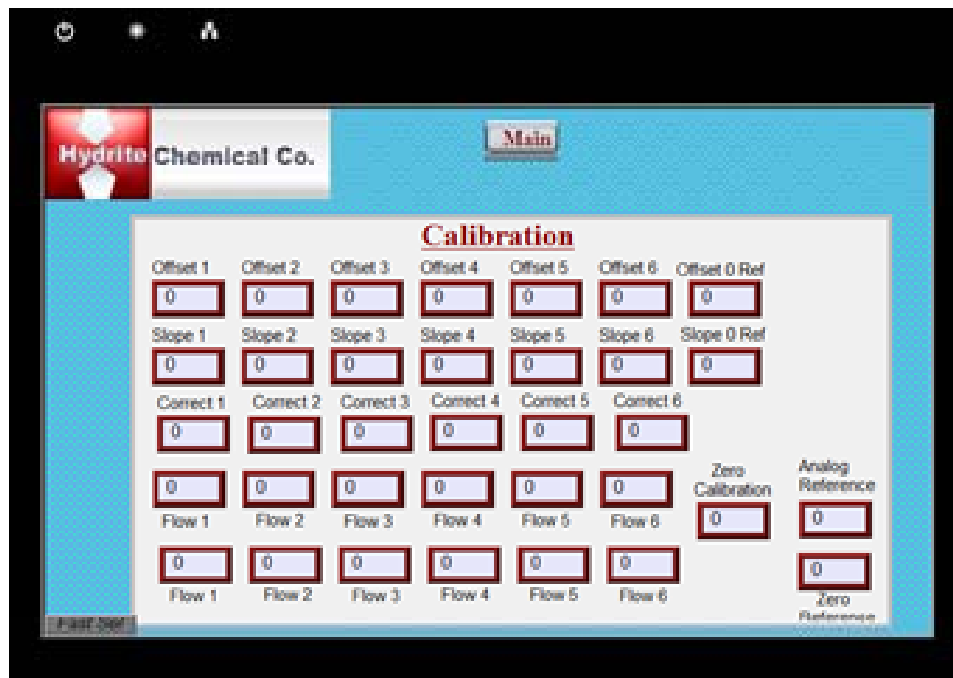


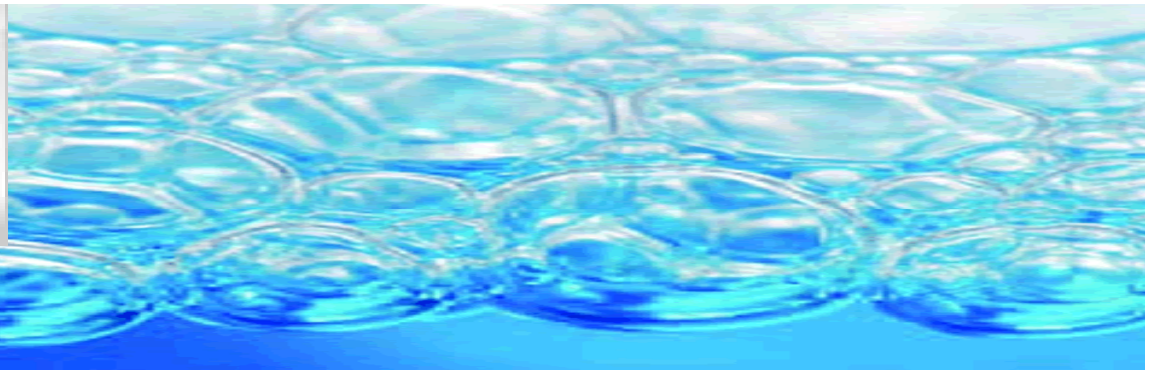
Flow Sensor and it's Application From AWS Trend Screens



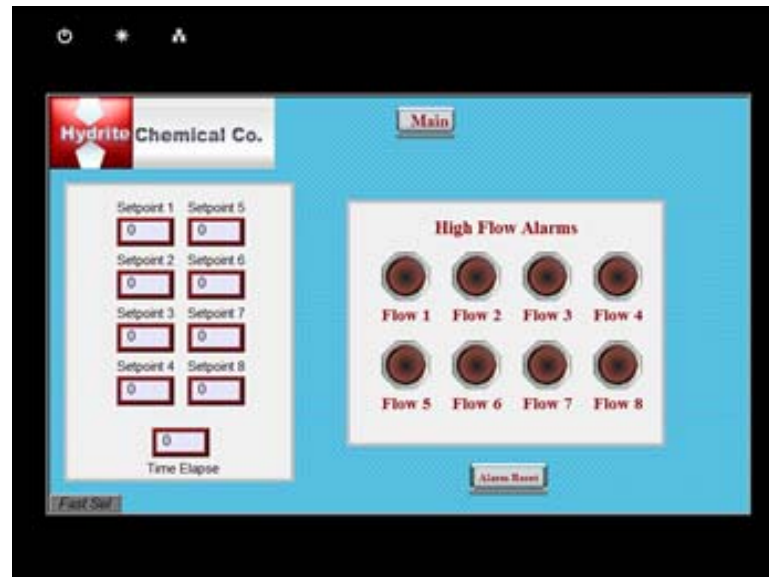


Flow Sensor and it's Application From AWS Calibration Screen





Flow Sensor and it's Application From AWS Alarm Screen



Set points can be configured with time limits to notify the plant that the flows have been set to high for too long and that their attention is needed. These alarms can be sent via text messaging or emails

Hydrite Chemical Co.

Flow Sensors installed on A-N-F Pump

Installation at Amalgamated Sugar
Flow Sensors Installed on A-N-F Pump Heads





Hydrite Chemical Co.

Installation at Amalgamated Sugar Flow Sensors Installed on A-N-F Pump Heads



Modifications for Calibration

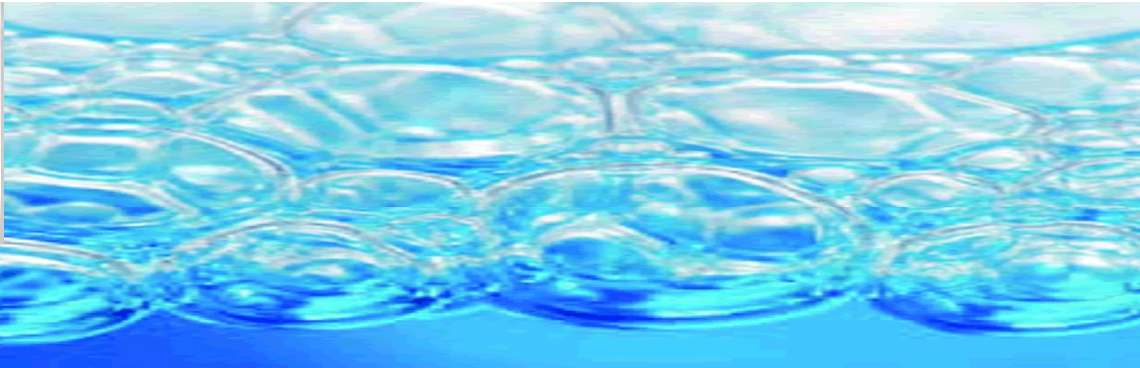


(Use Digital Calipers to Set Pump Rates)

Example: 5mls- 1.144

15mls- 1.002

30mls- .665



Modifications for Calibration Calibration Manifold Installed on A-N-F Pump



Hydrite Chemical Co.

Modifications for Calibration Calibration Manifold Installed on A-N-F Pumps



American Water Solutions Flow Sensor List!

Before installing the flow sensors into service the following items will need to be addressed!

- **Product (Defoamer) to be monitored.**

- Viscosity cart for product
- Corrosion if any of product to sensor
- One cabinet for each product (at this time)

- **Type of pump and its associated equipment.**

- Amount of flow for each application point, Minimum to highest output in mls.
- PSI of each product line
- Outlet size of pump and type of fitting (NPT, Hose Barb, other)
- Size and type of distribution tubing from pump to application point.
- Inlet Manifold with calibrated draw down tube. (very critical to be able to check flow rate of each pump for calibrating probe without interrupting the process)
- Tee on inlet manifold for temperature probe.

- **Cabinet**

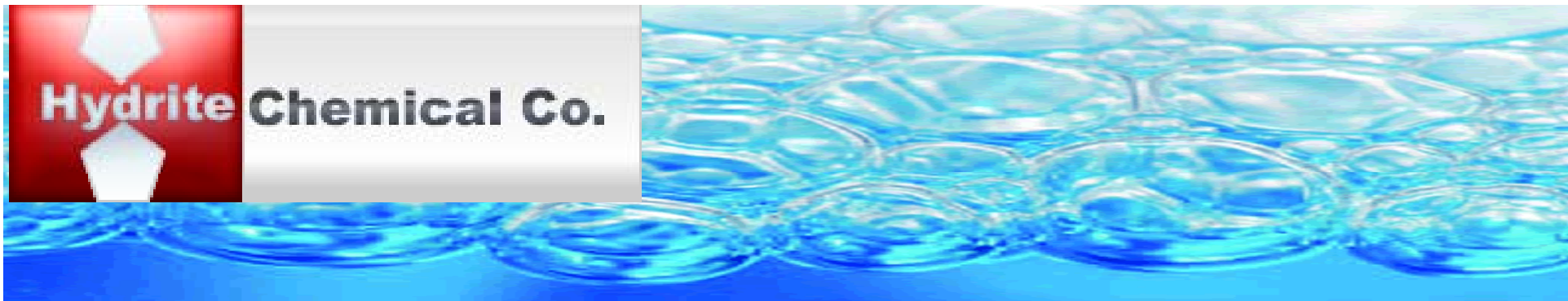
- 110 Volt power outlet
- Dry location
- Proper location of cabinet for easy access
- Monitor screen on cabinet to be seen without having to open cabinet. (AWS)

- **Flow Sensor Probes**

- Number of application points (this will determine the size of cabinet)
- Location and proper position of flow and temperature probes to eliminate entrained air issues.
- Distance of probes from cabinet
- Probe tee holders to have quick disconnects(AWS)
- Temperature probe on inlet manifold with quick disconnect

- **Wireless connection**

- Local carrier (with the strongest signal)
- Strength of signal at cabinet location



Questions?

The End