

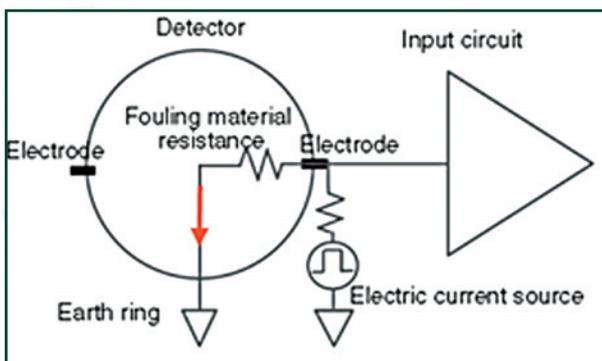
Advanced Diagnostic For Increased Process Visibility

Technology advances have made it easier to troubleshoot problems that occur in measurement. Utilizing advanced diagnostics, a better understanding of the process condition can be achieved without having to stop the process. Furthermore, it allows preventive measures to be taken before a problem actually occurs.

Adhesion diagnosis

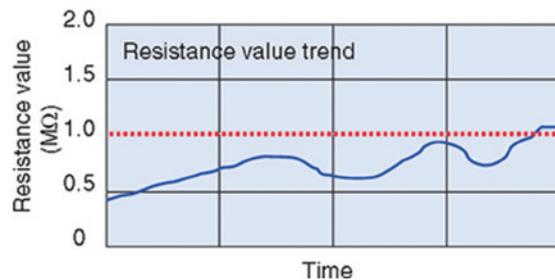
A common problem in magmeter measurement is electrode fouling. Deposits on the electrodes increase impedance, thus causing the flowmeter reading to become unreliable and erratic.

Experienced engineers who know the process well are able to guess that adhesion on the electrodes may be the cause of this problem. On the other hand periodic maintenance may be scheduled to regularly clean the electrode.



Yokogawa's magmeter measure the electrode impedance by sending a square wave signal from the electrode to the grounding ring. The square wave frequency is set so, that it has no influence on the flow rate measurement.

The impedance can be monitored and an alarm can be sent if the adhesion reaches a threshold level.



With this functionality, even inexperienced engineers can determine when adhesion occurs. Periodic maintenance is not necessary, as maintenance is only needed when impedance reaches the threshold level.

Applications where this diagnostic function is useful:

1. Slurries and dirty applications that create electrode adhesion over time.
2. Applications where scaling occurs due to changes in process conditions (such as drop of process temperature, or in batch processes).



Empty pipe detection

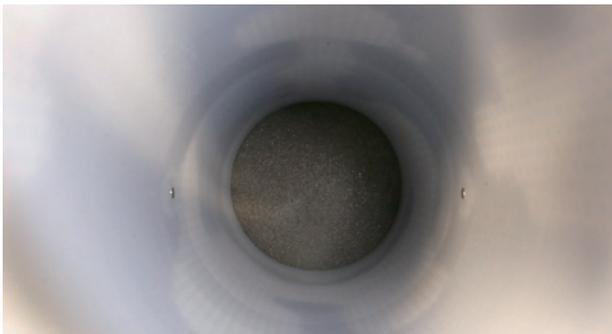
Any magmeter must be completely filled to function correctly. However, incorrect installation or a process problem (such as cavitation or a vacuum) may result in entrained gas inside the measuring tube. This will cause the flow reading to fluctuate and cause errors in measurement.

Yokogawa magmeters have an empty pipe detection function. This detects this condition by utilizing the two measuring electrodes. No additional electrode is necessary. This guarantees flow tube integrity and ensures leaks do not go

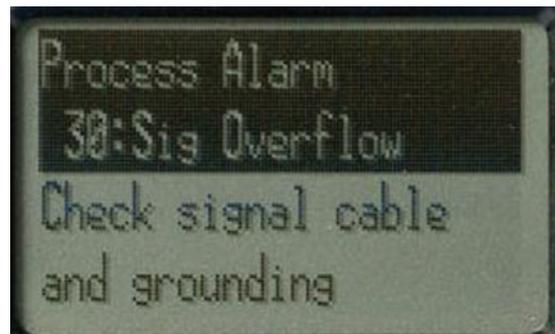
undetected. Other suppliers utilize additional electrodes to provide empty pipe detection. Empty pipe detection ensures stable and accurate measurements.

Interactive indicator

The parameter menu is interactive and easy to use. The display also shows warning or error messages as well as error countermeasures. Problems can be quickly identified and resolved.



Yokogawa's two electrode type

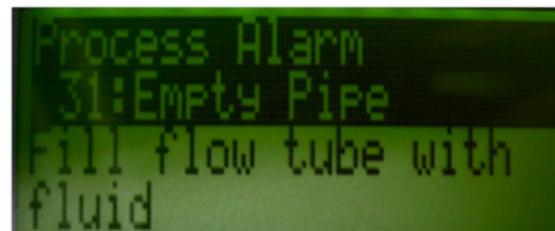
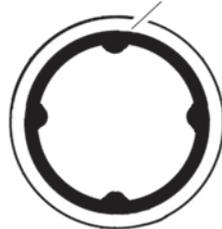


Warning Display



Other suppliers' multi-electrode type

Empty pipe Electrode



Error and countermeasure display

Warning Display:

Even for first-time users, parameter setting is easy with all Yokogawa magmeters.