

Electrode Construction For Uninterrupted Operation

Measuring Electrodes

The electrodes are one of the most important components in a magmeter: it efficiently detects the μV level electromotive force generated by a fluid flowing through a magnetic field. The electrode, a wetted part, is made of materials such as 316L, Hastelloy-C*, titanium, tantalum, or platinum that ensure sufficient corrosion resistance. While there are a variety of electrode types for different applications, Yokogawa's PFA-lined magmeters basically are either of the external or internal insertion type.

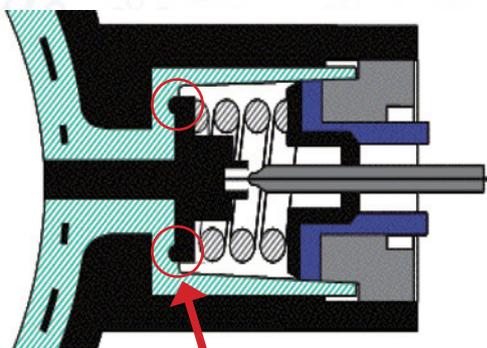
External and internal insertion type

External insertion electrodes

This type of electrode is inserted into the flow tube from the electrode housing side and is pushed into place by a spring. The spring applies an even pressure to maintain a seal and hold the electrode in place so that it can withstand pressure fluctuations. In addition, the integrated PFA liner into the electrode compartment enhances the sealing reliability. This design enables to have the electrodes flush with the pipe wall, as desired for mechanical abrasive applications.

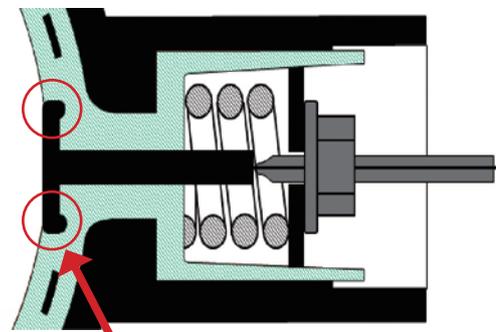
Internal insertion electrodes

This type of electrode is inserted into the electrode housing from the flow tube side and is pulled into place by a spring. The electrode seal is located on the surface of the liner inside the flow tube to minimize gaps. This electrode type is ideal for sanitary applications and provides an excellent self-sealing capability required for special high-pressure applications. And since the two-wire magmeter is using bigger diameter electrodes to reduce the flow noise, it also uses this type of electrode construction.



Sealing point

External insertion electrode assembly



Sealing point

Internal insertion electrode assembly

*Hastelloy is a registered trademark of Haynes International, Inc.



Testing with an Helium-leakage detector



Helium-leakage test

The electrodes are assembled by skilled workers using special tools, and their torque settings are strictly controlled. An Helium-leakage test is conducted to ensure the reliability of each electrode coming off the assembly line.

Replaceable electrodes

The adhesion diagnosis function is provided as a standard feature with all Yokogawa AXF series magmeter. With this function, the impedance of the wetted portion of the electrode is monitored and an alarm is issued when the adhesion of insulating material reaches a certain stage. Replaceable electrodes are a convenient solution: the fouled electrode can be easily removed with a special tool and after cleaning, it can be re-installed easily.



Replaceable "cassette" electrode

