

Mass flowmeter especially for the chemical industry

Swiss chemical company uses Tantalum version of KROHNE OPTIMASS for highly aggressive medium

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In Switzerland, an OPTIMASS 7300 C Tantalum meter doses a highly aggressive liquid into a column in which a vitamin is manufactured. The meter measures the mass flow of Toco Toluol in a range of 0 – 7000 kg/h at a pressure of 1.8 bar. Toco Toluol is an aggressive, acidic solvent. The liquid has a density of 0.881 kg/l and a temperature of 78 degrees Celsius.



OPTIMASS 7300 C Tantalum doses highly aggressive liquid

The operator chose the Tantalum version because a mass flowmeter with extremely high chemical resistance was the only option considered for this application. A Tantalum meter from a different manufacturer had been used previously. However, due to problems with deposits in the device, the customer was looking for a replacement. He opted for the KROHNE OPTIMASS 7300 C Tantalum because it offers one crucial advantage: the OPTIMASS features one single, straight measuring tube, eliminating the need for a flow splitter. Thanks to the straight tube, the customer was able to select a significantly smaller diameter (DN 25 instead of the DN 50 used previously), thus achieving an increased flow rate. This prevents the product from being deposited on the inner wall of the measuring tube.

For a long time, there was no suitable measuring tube material available in the field of Coriolis meters for measuring highly aggressive or corrosive media. It has only been since Tantalum has been widely available that a few manufacturers have started manufacturing Coriolis meters for these applications. However, due to the twin U-tube format, the products were extremely costly, as in addition to the measuring tubes both the flange and the flow splitters were made of Tantalum.

It was only with the development of the straight single tube design for mass flowmeters by KROHNE that an efficient use of the material was made possible. With this design, only the measuring tube and the seal need to be made of Tantalum. That translates into considerable cost savings compared to the twin U-tube meters. However, developing the new design was not easy, as Tantalum does not have the same tensile strength as the traditionally employed Titanium.

Thanks to many years of experience in the development of Coriolis straight tube meters,

KROHNE was able to solve this problem and come up with the OPTIMASS 7300 C, the first straight tube measuring device with one single measuring tube in Tantalum. The Tantalum alloy employed is designated Ta10W and consists of 10% Wolfram and 90% Tantalum. The portion of Wolfram guarantees higher measuring tube stability, necessary for straight tube technology. The chemical resistance of Tantalum is comparable to that of glass.

In addition to Tantalum, KROHNE also supplies the OPTIMASS series in Hastelloy® C22, Duplex steel 318L, Titanium, and stainless steel 316L. KROHNE thus has a broad portfolio of mass flowmeters which are even suitable for use with the most aggressive media in the chemical industry, covering almost any application.

About KROHNE: Established in 1921, KROHNE is a family-owned business employing 2,510 people around the world with representatives on all continents. The company headquarters is in Duisburg, Germany. KROHNE is a market leader in the development and manufacture of innovative measurement technology and prides itself on exceeding customer expectations in terms of quality, performance capability, service and design.

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