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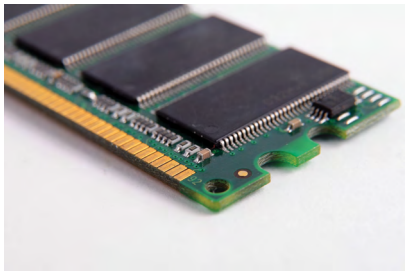
Application note

Gas clamp on measurement in the Semiconductor industry

Benefits:

- Zero contamination risks
- Proven good experience
- Easy to set up
- Easy to operate with no process interruption
- Wide turndown ratio
- No downtime and no periodic maintenance or calibration needed
- Low maintenance
- No pressure drop
- Long term stability and drift characteristics



Summary

The semiconductor industry is continually looking at higher yields to cope with increasing demand. A memory chip manufacturer in Japan, wanted to add pure nitrogen measurement points in its existing facility, ahead of an expansion. The Air Separation Unit (ASU) provider reached out to Panametrics to explore its flow measurement technology options.

Challenge

The ASU is contractually committed to supply nitrogen within a high degree of purity and must avoid any contamination risks. The semiconductor industry produces components in very high-level clean rooms as defined by ISO 14644-1 standard leading to this very high level of purity request. Therefore, avoiding any contamination risks is critical while achieving the required turndown ratio as nitrogen demand fluctuates. In addition, the customer required technology that was extremely reliable and readily available, given the plant operates 24/7, 365 days a year.

Considering the contamination risks, the accuracy and reliability of the flow measurement technology required and the prerequisite of no downtime, the ASU provider could not afford to select a supplier blindly. Instead it arranged a field test.

Applications

- Fluid: Pure nitrogen gas
- Pipe Size: DN100 and DN125 (4" and 5") for 6 and 1 units
- Pipe Material: AISI 316L stainless steel
- Temperature: ambient
- Pressure: 0.75 MPa (~ 108 psig)

Solution

Panametrics performed a successful demonstration using its PT878GC Clamp-On Ultrasonic Flowmeter with C-RV 310 on one of the seven nitrogen lines of the ASU. Despite COVID restrictions and the need for remote support via phone, the test results fully matched the customer's expectations.

As a result of the successful trial, the customer ordered seven GC868 with C-RV 310 with its preamplifier, clamping fixture and dampening material. Now receiving reliable and accurate nitrogen flow measurements across the seven measurement points, the customer is operating more efficiently and ready to expand its production.

The latest order strengthens Panametrics partnership with the customer in Japan and brings the total number of Panametrics products at the facility to almost 40. More than 30 GC868 gas clamp on meters were already on-site working reliably for more than a decade.

Panametrics, a Baker Hughes business, provides solutions in the toughest applications and environments for moisture, oxygen, liquid and gas flow measurement.

Experts in flare management, Panametrics technology also reduces flare emissions and optimizes performance.

With a reach that extends across the globe, Panametrics' critical measurement solutions and flare emissions management are enabling customers to drive efficiency and achieve carbon reduction targets across critical industries including: Oil & Gas; Energy; Healthcare; Water and Wastewater; Chemical Processing; Food & Beverage and many others.

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