Measurement made easy

The ABB Coriolis mass flowmeter improves reliability in the production of silicon electronic components.

The need

The industry producing silicon for microprocessors, integrated circuits, photovoltaic panels and other electronic components, needs extremely pure nitrogen to protect the product from impurities during the various phases of the process. An air separation plant installed inside or near the production plants is used to obtain nitrogen gas. Measuring the flow of nitrogen in the gaseous and liquid state precisely is essential to obtain a high quality product and keep track of consumption.

ABB has long been collaborating with the producers of technical gases and the relevant processing plants, and traditionally in the past, flow was measured using a Vortex/Swirl flowmeter installed in line and temperature and pressure sensors connected to a flow computer unit, with pressure and temperature compensation. These systems, while based on reliable technology, did suffer from an inherent flow instrument “rangeability” limit, which in some cases wasn’t suitable for measuring very low flow rates.
The solution
When these plants, managed by Air Liquide Italia, a company producing technical gas in the north of Italy, were refurbished, ABB helped improve the process in terms of reliability by supplying a CoriolisMaster flow meter to directly measure the nitrogen gas flow in Nm³/h. The ABB CoriolisMaster flow meters are characterized by a low pressure drop and a notable measuring range. Therefore, they can provide precise measurements, while guaranteeing significant savings in terms of pumping, maintenance and installation costs.

The instrument supplied is one of the new FCB3xx series used to measure liquids, gases, and multiphase fluids. ABB produces this series of CoriolisMaster flowmeters in various diameters for several nominal pressures, certified for classified areas and flow and/or density accuracy levels for a wide range of industrial applications.

The main features of the instrument installed:
— Compact version with DN50, PN40 primary measuring connection
— Measuring accuracy: 0.15 % liquid, 0.5 % gas
— Greater measuring range than with traditional technology
— 2 analog outputs for mass flow, standardized volumetric flow, fluid temperature, plus other I/O for exchanging information with the control system

Furthermore, as the new instrument doesn’t have any limits in terms of pipeline length upstream and downstream, it can be installed in a short straight section, with notable length savings for the cables connecting the regulation system. These features make Coriolis technology the preferential choice in industrial processes: high accuracy, simplicity and low maintenance.