FLUID COMPONENTS INTERNATIONAL LLC

Green Hydrogen (H2) Energy Proton Exchange Membrane (PEM) Electrolyzers Rely on SIL-2 Rated FCI FS10i Flow Switches

Next-Gen Versatile Thermal Flow Switch Performs in Liquids, Gases or Air

San Marcos, CA — The versatile SIL-2 rated FS10i Flow Switch Series from Fluid Components International (FCI) with its cutting-edge precision thermal sensors provides exceptional liquid trip point alarm output switching and flow monitoring designed to meet the demanding requirements of green hydrogen (H2) energy production.

The conversion of surplus wind and solar generated electric power into green H2 energy utilizing electrolyzers is becoming increasingly popular. Creating green H2 gas requires pure water, renewable energy and a proton exchange membrane (PEM) type electrolyzer. When H2 gas is produced with renewable power, it helps reduce the harmful carbon dioxide (CO2) emissions that result from conventional natural gas electric power generation and gasoline powered vehicles, which have been identified as causes of the global warming phenomenon.

Many countries have long term CO2 environmental reduction goals, which cannot be achieved with blue or grey hydrogen that are produced with fossil fuels. The preferred process technology to convert surplus renewable energy into green H2 is Proton Exchange Membrane (PEM) electrolysis because the electrolyzer can be operated at a dynamic partial load level to compensate for the power fluctuations of renewable electric power plants. Additionally, the PEM electrolysis method does not require aggressive chemicals or liquid electrolytes and produces high-purity H2, which also can be used directly for fuel cells.

Green H2 has many uses in a wide range of industries and technologies. For example, it can help balance the electric power grid when stored in tanks for use at times when renewable resources are insufficient to meet energy demand. Industrial production and processing of raw materials and goods requires large amounts energy and green hydrogen can improve the CO2 balance of these processes.

For green H2 production FCI's thermal FS10i Flow Switch is a universal flow switch and flow monitor designed for simple insertion into 13 mm (0.5-inch) or larger diameter pipes and square ducts for either liquid or air/gas service. Whenever detecting a flow rate that is either too high or too low is required, the FS10i Flow Switch is the solution. The FS10i is a flow sensing instrument that provides highly accurate, repeatable and fast-responding flow trip point or alarm setting.

The FS10i Switch's flow sensitivity (setpoint range) in liquids is from 0,003 to 0,15 MPS (0.01 to 0.5

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FPS) and in gases is from 0,076 to122 MPS (0.25 to 400 SFPS). Its standard 1A relay trip point is easily set in the field for low or high trip point and the trip and reset points can be further tuned with hysteresis and time delay adjustments.

Also provided standard with the FS10i Switch is a 4- 20mA trending output of the flow rate for connection to ancillary controls or alarm systems. The FS10i Switch includes a 10-LED array for both an indication that the trip point has been exceeded (LED flashes on/off) and of relative flow rate (10 percent increments) across the flow range.

This versatile switch provides best-in-class features for installation in rugged duty and long-life in industrial plants, processes and large buildings. Its flow sensor's thermowells are constructed of highly corrosion resistant Hastelloy C-22, and it will operate in fluid temperatures up to 121°C (250°F) with an IP protection rating to IP67. It is the only flow switch in its price range to carry a SIL 2 compliance rating on the 4-20mA flow monitoring output and SIL 1 compliance on the alarm relay. It has no moving parts to clog and requires no routine maintenance, which saves technician time and expense over any mechanical-technology based flow switch.

To ensure best performance and installation ease, the FS10i Switch is available in a choice of flow element lengths (insertion depth) and process connections: a 50 mm (2-inch) length with a 0.25-inch NPT fixed threaded connection or a 150 mm (6 inch) length, variable depth, with 0.5 inch NPT compression fitting with either a Teflon or metal ferrule.

The FS10i is the only product in its class to carry a SIL 2 compliance rating with a 90% Safe Failure Fraction (SFF). The FS10i also carries global approvals: ATEX, CE, CRN, FM, FMc, IECEx and EAC/TR CU. Optional global agency approvals are also available for installation in Division 2/Zone 2 locations.

FCI solves flow and level measurement applications with advanced thermal dispersion technologies. With 55+ years' experience and the largest installed base of thermal flow meters, flow switches and level switches, count on FCI to know your application and have the solutions.

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