

ST75V Hydrogen (H₂) Cooling Thermal Flow Meter Supports Gas Safety for Power Plant Generators

Safety of a No-Moving Parts Design With Built-In Flow Conditioner for Accuracy

San Marcos, CA — The advanced, compact [ST75V air/gas flow meter](#) from Fluid Components International (FCI) is the perfect solution to monitor the potentially volatile, hydrogen (H₂) gas necessary to help large electric plant power generators keep their cool as they produce electricity serving customers large and small across the power grid.

Power generation is a high-temperature, hazardous process. At the front-end, there are natural gas fueled steam boilers that drive power turbines. At the back end of the process, where the electric current is generated, there is a large amount of heat that must be managed in order to keep the generator's wire coils cool enough to avoid degradation or failure.

Depending on the MVA size of the power generator, hydrogen (H₂), air or water is typically used to provide generator coil cooling. In all electric power generators, the wire coils will otherwise quickly overheat and degrade if they are not continuously cooled during operation.

H₂ is the industry's most efficient coolant, particularly for large generators (over 100 mW); because hydrogen has a 15 times higher heat/thermal conductivity efficiency compared to air. The downside of using H₂ as a coolant is that it's potentially dangerously combustible, and its flow must be monitored closely to detect and prevent gas leak conditions.

FCI's ST75V flow meter with its built-in Vortab flow conditioner is equally well suited for both H₂ low flow and high flow measurement in the monitoring of electric power generator chambers. It operates over a wide flow range, from 0.01 to SCFM 559 SCFM [0.01 NCMH to 950 NCMH] depending on line size. For variable process conditions, the ST75V is factory preset to a wide turndown range at 10:1 to 100:1.

With built-in temperature compensation, the ST75V flow meter maintains consistent performance in rugged, hot electric power plant generation environments. The basic ST75 model features accuracy to $\pm 2\%$ of reading with $\pm 0.5\%$ repeatability over varying process temperatures in line sizes from 0.25 inches to 2 inches [6 mm to 51 mm]. With the integral Vortab flow conditioner added as a built-in spool piece, Models ST75V or ST75AV are ideal for installations with limited straight-run such as crowded power plant generator areas and/or for operating in transitional flow ranges with accuracy of $\pm 1\%$ reading, $\pm 0.5\%$ full scale.



The ST75V flow meter's precision flow element has a no-moving parts flow sensor design that employs platinum RTD sensors embedded in equal mass thermowells with microprocessor electronics calibrated to laboratory standards for a wide range of gases. The no-moving parts construction makes the ST75V meter the safe choice for combustible gases.

Ideal for demanding, rugged power plant environments, the ST75V flow meter features remote mounting capabilities for hazardous or crowded plant environments. The remote mount transmitter, which includes a full digital display, can be mounted up to 50 feet [15 meters] away from its thermal mass flow sensor in the process piping and connected via two 0.50-inch FNPT or M conduit connections.

The ST75V flow meter's fully scalable dual 4-20 mA standard outputs are user assignable to flow rate and/or temperature and a 0-1kHz pulse output of total flow. The instrument can be ordered for input power with either 18 Vdc to 36 Vdc or 85 Vac to 265 Vac, with or without a built-in LCD digital display.

Offering direct-flow measurement for higher performance at a lower cost with proven thermal dispersion technology, the ST75V flow meter eliminates the need for additional pressure and temperature sensors, flow computers, or other devices that are required with orifice plates, Venturis, Vortex shedding, and other volumetric meters. The ST75V flow meter also requires virtually no maintenance for both a low installed and low life-cycle cost.

The FM and CSA approved ST75V flow meter is enclosed in a rugged, all-metal, dust and water resistant NEMA Type 4X (IP66/67) rated package designed for Class 1, Div 1 hazardous area installations and includes a rugged sensing element constructed with all welded 316 stainless steel and Hastelloy-C22 tips. ATEX/IECEX approvals include: Zone 1, II 2 G Ex db IIC T6 . . . T1 and Zone 21, II 2 D Ex tb IIIC, IP66/67 T85°C . . . T300.

FCI solves flow and level measurement applications with advanced thermal dispersion technologies. With 50+ 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.