

Green-Friendly Lime-Based Carbon Capture (CO₂) System Utilizes SIL-2 Rated FS10i Flow Meter To Help Clean-Up the Air

Rugged, Go Anywhere Thermal Flow Meter Performs in Gases or Air

San Marcos, CA — The versatile SIL-2 rated [FS10i Flow Meter Series](#) from [Fluid Components International \(FCI\)](#) with its highly accurate, next-gen thermal sensors provides both precision natural gas burner fuel control and oxygen (O₂) measurement critical to the support of advanced carbon capture (CO₂) systems designed to reduce the presence of the green-house gases considered largely responsible for the global warming phenomenon.



The rugged and reliable FS10i Flow Meter is ideal in high-temperature on site quarry lime-based carbon capture processes, where it provides both precision fuel gas and O₂ measurement. The mineral lime has many well-known uses such as in cement, steel manufacturing, soil enhancements and filters for water. High grade fine lime also reacts with CO₂ and can capture and store the carbon molecules permanently underground that makes CO₂ gas an environmental pollutant.

This CO₂ carbon capture process all begins, however, with the mining of raw limestone, which is a sedimentary rock composed of calcium and/or magnesium carbonate and/or dolomite (calcium and magnesium carbonate) as well as other miscellaneous minerals. Deposits of limestone are found naturally in the earth and are thought to be the remnants of fossilized shell fragments, bones and other fossilized debris deposited thousands of years ago.

Once crushed and sized, the limestone is fed into a furnace where it is calcined, cooked well done and dry at super high temperatures of up to 1093°C (2000°F). During this progression the extreme heat causes the limestone also to release CO₂. The end result is a high-quality super fine grade of lime that can be used to absorb this process's generated CO₂ gas, the waste gas from other industrial processes and general air pollution to clean up the environment.

FCI's FS10i Flow Meters are now installed in systems that utilize unique, proven oxy-combustion and flash calcination processes for lime production. In such systems, the FS10i Flow Meter is used to control the fuel gas and O₂ levels flowing to the calcine furnaces for high efficiency heating. The resulting fine grade lime is suitable for general air pollution carbon removal using a contactor via multiple pathways such as direct air capture (DAC) systems. The captured polluting gas from whatever source is injected underground and stored permanently.

FCI's thermal FS10i Flow Meter is a universal flow meter and flow monitor designed for DN25 (25.4 mm, 1 inch) or larger diameter pipes and square ducts for air/gas service with excellent repeatability ($\pm 0.5\%$ of reading). Whenever detecting a flow rate of fuel gas, air or O₂ in furnaces that is either too high or too low is required, the FS10i Meter is the solution.

The FS10i is a compact, economical solution to air and gas flow metering. Utilizing application proven thermal dispersion technology, the FS10i meter provides a highly accurate and repeatable linearized 4-20 mA output of flow rate.

This versatile FCI flow meter 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 ingress protection rating to IP67. It is the only thermal mass flow meter in its price range to carry a SIL 2 compliance rating on the 4-20mA flow calibrated 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 mechanical-type flow meters.

To ensure best performance and installation ease, the FS10i Meter is available in a choice of flow element lengths (insertion depth) and process connections: an inline tee (process connection NPT-F) for 25.4- or 50.8-mm (1- or 2-inch) line sizes or an insertion flow meter with an 152.4 mm (6 inch) or 304.8 mm (12 inch) length, variable depth, with 12.7-mm (0.5-inch) NPT-M compression fitting with either a Teflon® or metal ferrule.

The FS10i Flow Meter 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 60+ 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.