SIEMENS

Outstanding flowmeter integration saves time and money in biogas applications

SITRANS FCS200 - SIFLOW FC070 Ex CT

At Processkontroll in Stenungsund, Sweden, SITRANS FCS200 sensors and SIFLOW FC070 Ex CT transmitters are now being installed in biogas-based bus refueling stations. This advanced flow technology can be integrated into SIMATIC automation systems, either directly or with distributed PROFINET/PROFIBUS stations, for enhanced flexibility, user-friendliness and customer service capabilities.

Background

Biogas, a substitute for compressed natural gas (CNG), continues to grow in popularity across the world as a cleaner-burning alternative to more traditional motor fuels such as gasoline and diesel. Vehicles that run on biogas produce significantly smaller amounts of carbon dioxide, carbon monoxide, nitrogen oxides, sulfur oxides, hydrocarbons and particulate matter, all of which detract from the quality of the air we breathe and are leading contributors to global warming. In fact, it is estimated that driving a biogas vehicle reduces the emission of harmful greenhouse gases by as much as 80 percent.

Biogas vehicles are garnering significant attention in Europe, where a European Union Commission Directive now requires that biogas and other biofuels total 20% of overall motor fuel consumption within the next 15 years. One country that has accepted this directive is Sweden, where approximately 1.4 TWh of biogas is produced annually. This total is expected to rise to 14 TWh/year over the next decade.

Answers for industry.

The case at a glance

Region: Sweden

Industry: Biogas bus filling stations

Customer: Processkontroll GT AB

Challenge: Reduce overall cost and improve flowmeter integration with the highest possible accuracy

Product: SITRANS FCS200 sensor and SIFLOW FC070 Ex CT transmitter

Main benefits:

- Enables direct integration into SIMATIC PLC system
- Straightforward installation saves time and money
- Remote access function ensures rapid customer service and reduced travel costs

The customer

Processkontroll GT AB is the largest supplier of biogas refueling stations in the Nordic area, having designed, built, supplied and commissioned a variety of these stations for more than a decade. Located within Sweden's petrochemical center, Stenungsund, the company has provided products, services and integrated solutions for electrical, control and automation technology since its founding in 1970. Processkontroll is growing at a steady rate, with an annual turnover of SEK 300 million and a workforce of approximately 160 employees.

The challenge

Processkontroll produces several different types of biogas refueling stations, including systems designed specifically for bus traffic. Each bus station is capable of refueling several buses at one time via a single pipe, which includes a flowmeter to measure the total volume of gas dispensed into the buses. The data received from the flowmeter must be as accurate as possible, as it is used by the station owner to monitor consumption and bill the bus operator.

Previously, Processkontroll refueling stations incorporated flowmeters based on a 4-20 mA analog mass flow signal. However, the company had become dissatisfied with these meters and desired a new solution that would require less mounting space and deliver a much higher level of performance. Specifically, they were looking for direct integration into an automation system, enhanced ease of use and improved customer service.

The solution

After considering several options, Processkontroll ultimately chose Coriolis mass flow technology from Siemens: the SITRANS FCS200 sensor combined with the SIFLOW FC070 Ex CT transmitter. Designed specifically for high-pressure gas applications, the SITRANS FCS200 features Hastelloy tube material for high accuracy even at high pressures (0.5% of flow rate up to 350 bar) and is capable of measuring flow up to 500 kg/min, which lowers the amount of time necessary for fueling. The SIFLOW FC070 Ex CT is capable of true multiparameter flow measurement and, when combined with the SITRANS FCS200, is custody transfer approved according to OIML R139 - Compressed gaseous fuel measuring systems for vehicles.

One of the most important factors driving Processkontroll's decision was the fact that the SIFLOW FC070 can be integrated seamlessly into the SIMATIC S7300 PLC system. The transmitter simply snaps into a SIMATIC rack, a single cable connects the transmitter to the sensor, and the meter is immediately ready for operation. This straightforward installation process and very small number of required components saves Processkontroll time and money. The Siemens solution is also flexible enough for integration into a distributed ET200 IO PROFINET/PROFIBUS station, which means that Processkontroll can successfully meet a wider range of customer requirements.

Equally crucial in the selection process was the user-friendliness demonstrated by the Siemens system. In the past, Processkontroll service engineers were obligated to program the flowmeters via laptop using HART communication. The new solution makes commissioning and monitoring much easier, with all application parameters, process values (including mass flow, volume flow, temperature and density) and even auto zero adjustment available from the SIMATIC touch screen.

Integration with SIMATIC also offers the company the ability to respond more rapidly to customer service needs, a necessity in today's globally connected and highly mobile business environment. From the Processkontroll office it is possible to connect to the customer's control cabinet and gain instant access to all necessary flowmeter data, minimizing response times and greatly reducing travel costs. The SIMATIC remote access function even allows service engineers to connect to the system from a Smartphone, regardless of their current location.

"Biogas will play an increasingly major role in public transportation across Europe and elsewhere in the coming years, which is why the production of biogas refueling stations for buses is such an important part of our business," said Jacob Holmdahl, design manager for electrical and control systems at Processkontroll. "Integrating Siemens flow technology into our refueling stations has ensured that they are as accurate, easy to use and cost-efficient as possible, which ultimately gives us a more competitive edge in the marketplace."

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