

Caviro of Italy benefits of Emerson solutions for biomethane measurement and analysis

RESULTS

- System redundancy and reliability
- Smooth integration of all systems and devices
- Ensure biomethane deliver, able to fuel up to 18,000 cars per year
- Full presence of Emerson personnel for a smooth startup



APPLICATION

Turn-key solution for Biomethane injection into the Italian National Grid, including gas analysis and flow measurement.

CUSTOMER

Caviro Group is the Italian leader in wine production; currently they supply the 10% of the total wine produced in Italy.

Caviro has been a well-known symbol of evolution and growth within the Italian wine industry for over forty years. In their plant in Faenza, together with the alcohol production and winemaking by-products valorization, they committed to the production of energy from renewable sources.

Their scope is the production of biomethane to inject into SNAM Natural Gas Transmission network, to be used in transport.

CHALLENGE

A biomethane injection station is composed by many devices; it is critical that the gas chromatograph, flow meter, automated valves and control system work together seamlessly to guarantee the quality of the gas produced and that the plant meets the operating challenges. For instance, biomethane quality analysis is decisive for the delivery to the national Transmission grid. Whilst non-bio solutions require simple measurements of calorific content or Wobbe index, in a complex installation that includes anaerobic digester, a more advanced solution is required, to keep under control the quality values of the gas. Also, quality measurements must be quickly realized, as they are used on feed-forward interaction of the digester.

Custody transfer measurement is very important as well, as it is necessary to know with high accuracy the quantity of biomethane that is injected into the grid.

“With Emerson, all start-up issues have been minimized, and we have had a great experience.”

Gabriele Bassi - Site Manager
Lorenzo Valtieri - Energy Manager



REMI Station internal view

The automation system will control all devices and instrumentation to make sure they work together without any issue. In addition, Caviro was not looking for standard skids, they had some specific requests that aimed to ensure redundancy and increase energy efficiency; a customized solution was required to meet their needs.

For example, the analysers would be able to measure at different values of pressure, independently from the inlet pressure value. This would ensure the possibility of performing setting optimization tests at low pressure, keeping energy consumption at a minimum.

Flow meters had to be doubled, to ensure uninterrupted service even in the case of a meter failure.

Another particularity is the gas recirculation system, done with a regulation loop realized with Fisher control valves and 3-way valves and handled by the PLC.

Caviro was looking for the one supplier that had all the main technologies in house, to minimize delivery time and ensure technical support, and could be able to integrate all the different products, to partner with them and find the correct solution to meet their goals.

SOLUTION

The large use of Emerson devices and systems in this application was a guarantee for Caviro. The company found in the Tartarini injection stations the right solution to solve their challenges. The stations have been specifically designed to grant full redundancy with double flow meters and gas analysis at different pressures, and seamlessly integrate all the instrumentation and devices required by the application; the requested quality measurement has been ensured, together with timely control of the digester.

The whole system is installed in dangerous area, and all the instrumentation is ATEX certified. The stations and the gas chromatographs are installed inside a concrete cabinet. As the control systems and all the electronic devices (Flow Computers, PLC, data logger power supply and interchange JB's) must be installed in safe area, a separate room has been created inside the cabinet, protected by REI120 certified walls.

After the start-up of the stations, the contract subscribed with the national grid owner has been improved by the high accuracy provided by Emerson solution.

Emerson solution also allows Caviro to engineer future developments of CO2 membrane separation technology and replicate the same modular concept in other plants.

“We produce gas to fuel up to 18,000 cars per year. With Emerson, we can deliver it.”

**Gabriele Bassi - Site Manager
Lorenzo Valtieri - Energy Manager**



Emerson's gas chromatographs

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