

Process Automation

Removing CO₂ through indirect mineral carbonation

Neustark, Switzerland

Swiss company neustark selected Process Automation solutions by GF Piping Systems for a carbon capture project with the future goal of absorbing as much CO₂ as 100,000 trees per year.

A strong partnership enables the permanent storage of CO₂ in paper ash

Within industrial applications, there are certain emissions that simply cannot be avoided or reduced. Because of this, Swiss company Neustark, which is based in the city of Bern, is continually developing methods to capture and store emissions permanently with the goal of removing one million tons of CO₂ in 2030. In addition to mineralization in demolished concrete, Neustark is also testing indirect mineral carbonation using ash left over from paper incineration. GF Piping Systems supplied a comprehensive Process Automation solution for the project.

Project background

To source CO₂, the company collaborates with biogas plants that separate CO₂ from methane during biogas processing, which would otherwise be released into the atmosphere as a waste product. The captured biogenic CO₂ is then fed into a carbonation reactor to let the CO₂ react with calcium in the ash sludge. This process forms calcium carbonate, also known as limestone. After the carbonation process, the limestone is filtered out of the solvent and can be used in different industrial applications such as paper or PVC production, or the cement industry. In the future, a large-scale plant of this type will be able to produce 12,000 tons of limestone per year, which will be used as filler in concrete production. In the process, 5,000 tons of CO₂ will be permanently bound – as much as 100,000 trees would absorb.

Selected technical solution

Due to the harsh environment in the reactor, Neustark chose to implement solutions for Process Automation from GF Piping Systems, consisting of conductivity and flow sensors, pH electrodes, as well as the 9950 Six-Channel Transmitter. All components are designed to ensure long-lasting and accurate operation, including the pH electrodes, which feature a patented DryLoc® connector with corrosion-resistant, gold-plated contacts. At the same time, the 9950 Six-Channel Transmitter offers flexible data transfer thanks to modular sensor input and output options.

Achieved improvement

As pH values are one of the crucial parameters, Neustark now benefits from the durability of the pH electrodes which last up to twice as long compared to competitor products. The 9950 Six-Channel Transmitter is a central element within the application, displaying and outputting data via Modbus RTU to the local PLC. In addition, GF Piping Systems assisted with the selection and implementation of the different sensors, as well as optimizing the measurements.

Where next?



The carbonation process requires durable automation solutions for parameters such as pH values.



GF measurement solutions offer state-of-the-art solutions for pH measurement and a long lifetime even in harsh environments.

Customer benefits

- **Experience:** GF Piping Systems has been providing measurement solutions for 37 years and can support customers with extensive experience throughout the automation loop.
- **Durability:** The pH electrodes feature an extremely durable construction designed for reliable accuracy.
- **Flexibility:** The 9950 Six-Channel Transmitter supports a wide range of sensor types and can meet the demands of cutting-edge applications thanks to a modular design.



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