Linde’s SOLVOCARB product line has been developed as a reliable and safe solution to meet neutralisation and remineralisation needs across a broad application spectrum from wastewater to drinking water.


Getting ahead through innovation.

With its innovative concepts, Linde is playing a pioneering role in the global market. As a technology leader, it is our task to constantly raise the bar. Traditionally driven by entrepreneurship, we are working steadily on new high-quality products and innovative processes.

Linde offers more. We create added value, clearly discernible competitive advantages, and greater profitability. Each concept is tailored specifically to meet our customers’ requirements – offering standardised as well as customised solutions. This applies to all industries and all companies regardless of their size.

If you want to keep pace with tomorrow’s competition, you need a partner by your side for whom top quality, process optimisation, and enhanced productivity are part of daily business. However, we define partnership not merely as being there for you but being with you. After all, joint activities form the core of commercial success.

Linde – ideas become solutions.

SOLVOCARB® venturi.

Overcoming pH control challenges in textile wastewater.
Customer.

Established in 1931, Bossa is one of the largest textile corporations in Turkey, specialising in denim fabrics. At its facilities in Adana, around 300 m³/h of alkali wastewater needs to be regulated for pH control before it can be discharged into the local municipal treatment facility.

Overcoming pH control challenges in textile wastewater.

Challenge.

Textile wastewater is characterised by high pH values, which need to be brought down to acceptable levels before the water can be discharged into the municipal wastewater treatment (WWT) plant. In the past, Bossa used a sulfuric acid dosing system to do this, which would sometimes overshoot the final effluent pH setpoint and reduce the pH to around 4.0. Given that the consent limit set by the municipal WWT plant was between 10.0 and 6.0, the occasional instance of non-compliance was creating difficulties with local authorities. In addition, non-compliance can prove costly as it pushes up the tariffs that operators have to pay. This is a familiar issue for plant managers using mineral acids as the neutralisation agent. Safety was no longer a major concern as, compared with mineral acids, CO₂ is less corrosive to infrastructure and has no handling issues.

Solution.

Linde’s global and local water treatment experts teamed up and worked closely with Bossa’s technical team to design a new pH control system capable of addressing the customer’s pH control, corrosion, safety and capacity challenges. This joint team came to the conclusion that the best way to meet these challenges was to replace the mineral acids in use with carbon dioxide (CO₂) as the neutralisation agent.

Due to its capacity to handle a wide variation in pH values (from 10.0 to 12.5) and flow rates (from 250 to 300 m³/h), SOLVOCARB® venturi was a key element in the new plant design, developed by Linde and validated by Bossa experts. The final solution involved jointly designing and building a new gravity-fed treatment plant extension, with an increased retention time of over 5 hours. The existing treatment plant became an effective balance tank, helping to reduce some of the pH variations going forward to the new plant extension. A series of SOLVOCARB tubular hose mats were installed along with two SOLVOCARB venturi 250 units, complete with gas dosing equipment and a programme logic control (PLC) system. The whole system is cascade-controlled, using the pH signal from the outlet of the plant. The whole system is cascade-controlled,

Technology.

Linde’s SOLVOCARB® product line has been developed as a reliable and safe solution to meet neutralisation and remineralisation needs across a broad range of applications, from wastewater treatment to drinking water. The SOLVOCARB venturi is a low pressure drop gas-liquid venturi contactor that provides excellent contact, dosing efficiency and effective gas dissolution. The spacing of the injection holes in the venturi nozzle has been specifically engineered to reduce the occurrence of localized pH variations. Available in a range of sizes to fit different pipe diameters, it is made from a chemically inert thermoplastic, with good resistance to solvents, alkali solutions and demineralised water. Linde’s SOLVOCARB product line has been developed as a reliable and safe solution to meet neutralisation and remineralisation needs across a broad range of applications, from wastewater treatment to drinking water. The SOLVOCARB venturi is a low pressure drop gas-liquid venturi contactor that provides excellent contact, dosing efficiency and effective gas dissolution. The spacing of the injection holes in the venturi nozzle has been specifically engineered to reduce the occurrence of localized pH variations. Available in a range of sizes to fit different pipe diameters, it is made from a chemically inert thermoplastic, with good resistance to solvents, alkali solutions and demineralised water.

Benefits at a glance.

- Accurate pH control
- Even bubble distribution for the avoidance of localized pH variations
- Non-corrosive, with positive impact on safety and infrastructure
- Handling of variances in inlet pH and flow rates
- Good chemical resistance to solvents, alkali solutions and demineralised water
- Can be retrofitted to existing plants for capacity increases

SOLVOCARB® venturi. Efficient and safe neutralisation.

“Our plant extension using SOLVOCARB® venturi gives us the flexibility we need to handle future increases in loading with much greater control over the pH value of the water we release to the local treatment plant. This helps to reduce our tariffs and gives us a wider pH handling envelope. What’s more, the replacement of mineral acids with environmentally friendly carbon dioxide as the neutralisation agent improves safety and helps prevent corrosion in our infrastructure.”

Mustafa Deniz, Manager of Engineering Department, Bossa

 Darren Gurney, Senior Process & Business Development Manager (left), and Omer Saray, Applications Engineer (right), go over the details of the CO₂ dosing system.

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