Air Liquide creative oxygen | nexelia

pH Control

We deliver:

- Fine pH adjustment
- No hazardous saline residuals
- Minimum maintenance cost

The Industry Challenge

Cleaning–in-Place (CIP) in hygiene critical industries, such as Food, Beverage and Pharmaceutical leads many businesses to utilize strong alkali cleaners for process vessels and pipe work systems. There are also many processes which, as a consequence of routine operation, generate highly alkaline i.e. high pH wastewater.

Environment agency guidelines state that buffer storage or balancing tanks should normally be provided to cope with the general variability in flow and composition of wastewater, or to provide corrective treatment like pH control.

The Nexelia Solution

A comprehensive gas solution designed for and adapted to your specific needs, **Nexelia for pH Control** combines the best of our gases, application technologies and expert support. As with all solutions under the **Nexelia** label, we work closely with you to pre-define a concrete set of results, and we commit to delivering them.

Nexelia for pH Control is an all-in-one gas solution as well as an environmentally friendly option for pH control from Air Liquide which can solve the problems inherent with a mineral acid using process. It encompasses everything from gas to dissolution systems for use of carbon dioxide (CO_2) for pH control of wastewater.

Nexelia for pH Control is suitable for municipal or industrial wastewater treatment plants.

Your Advantages

• Natural safety net

Thanks to a natural buffering effect, CO_2 cannot reduce effluent pH far below 6, even if overdosing occurs.

• Improved process control

pH drop with CO_2 occurs more gradually than with mineral acids, making accurate control inherently easier.

• Environmentally friendly operation

CO_2 is a recycled product and does not produce saline residuals as sulphate and chlorine.

• Cost effective

CO_2 is typically about the same price as sulphuric acid and half that required for an equivalent dose of hydrochloric acid.

• Ease of handling

As CO_2 is supplied in a pressurized system (cylinder or bulk storage), it can be stored remotely from the dosage point. Also the product is completely enclosed until it is mixed with the effluent, removing handling issues of corrosive mineral acids.

Core Features

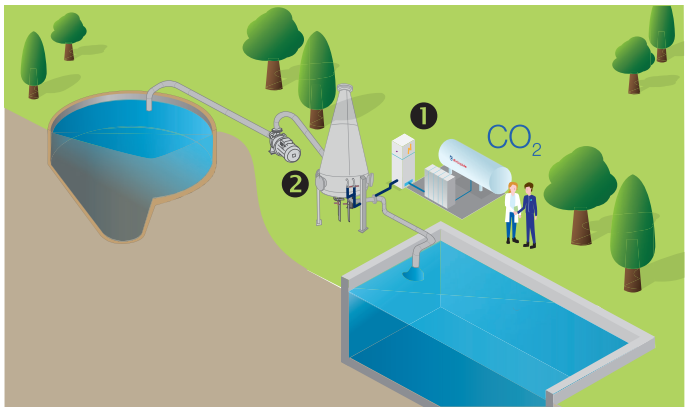
Nexelia for pH Control consists of:

• Carbon Dioxyde (CO_2) supply:
We provide a range of gas supply options from bulk storage vessels through cylinder supplies. In addition, we can supply liquid CO_2 vaporization and control equipment. Because CO_2 is supplied and stored at elevated pressures, it can be easily and safely distributed around a site in a designed pipe work distribution system to suit individual sites requirements. These installations will be professionally assessed by our engineers to ensure compliance with all of the latest safety standards and specifications.

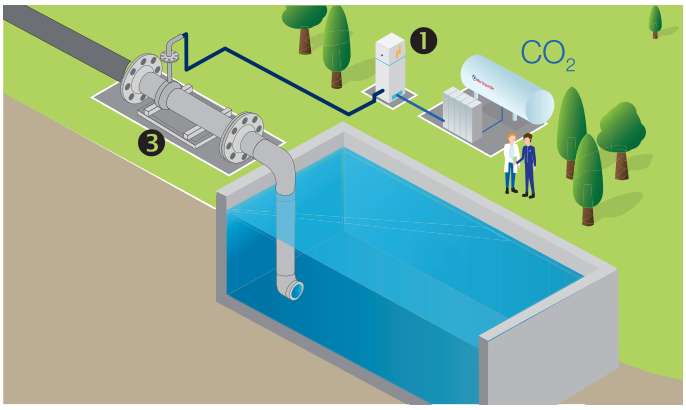
• Application technologies

- The **GAS CONTROL CABINET** (❶) is a valve train unit, which is suitable for gas injectors to control electrical motors up to 22 kW / 45 A when required and a dosing system to inject up to 200 kg/h.

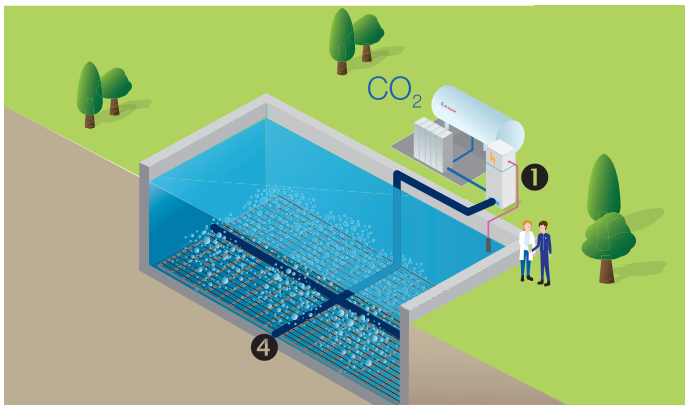
- The **INJECTOR-BICONE** (❷) is able to solubilize CO_2 into water at saturation limit. It is very efficient in process water where the gas solubility is limited by operating conditions (e.g. temperature > 40°C), and the best option when CO_2 has to be dissolved in a wastewater flow with high calcium content.



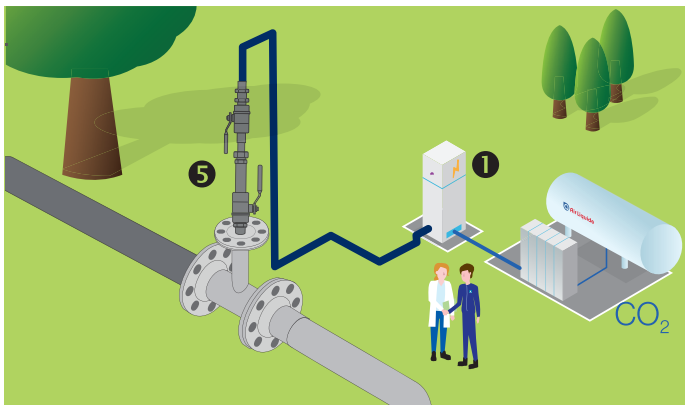
- The **CS-NOZZLE** (❸) is a CO_2 injection system based on a pressure drop from 0.5 to 1.2 bar which results in an expansion – dispersion effect to mix water and gaseous CO_2. It is a pipe-in-pipe equipment.



- The **INJECTOR-POROXAL** (❹) is a ground injection system made of perforated holes and immersed in biological basins for CO_2 injection. It works without electricity for gas injection or any other power source unless an impeller is added to enhance the medium circulation. The **INJECTOR-POROXAL** is the best option in static basins.



- The **CO_2 INJECTOR-LANCE** (❺) is designed for pressurized streams of water in pipelines. A nozzle is mounted at its tail end to generate small gas bubbles and dissolve CO_2 into the water



You benefit from full support of our water treatment experts, from the auditing of your current system capacity to the preliminary and detailed designs, as well as the complete implementation in just a few days, which includes commissioning, monitoring and maintenance.

Case Studies

Case study #1: Beverage industry

- **Customer need: fix corrosion of piping system and bad smell**
  - pH adjustment in washing water from plastic bottles recycling
  - Wastewater intake: 120 000 m^3/a
- **Our solution:**
  - Replacement of sulfuric acid by CO_2
- **Benefits:**
  - Reduction of sulfate load
  - Prevention of fines
  - No legal dispute with neighborhood

Case study #2: Chemical industry

- **Customer need: compliance with stronger regulation**
  - pH decrease from 12.8 down to a maximum value of 9.0
  - Wastewater intake: 200 000 m^3/a
- **Our solution:**
  - Pre-treatment of partial flow with CO_2
- **Benefit:**
  - Preservation of operation permit

Related Offers

- **Nexelia for Biological Treatment**
- **Nexelia for Tertiary Treatment**

Contact us

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