SOLVOCARB® reactor – carbon dioxide for water.
Maximum performance for water treatment.

An environmentally friendly manner to add essential minerals to raw water

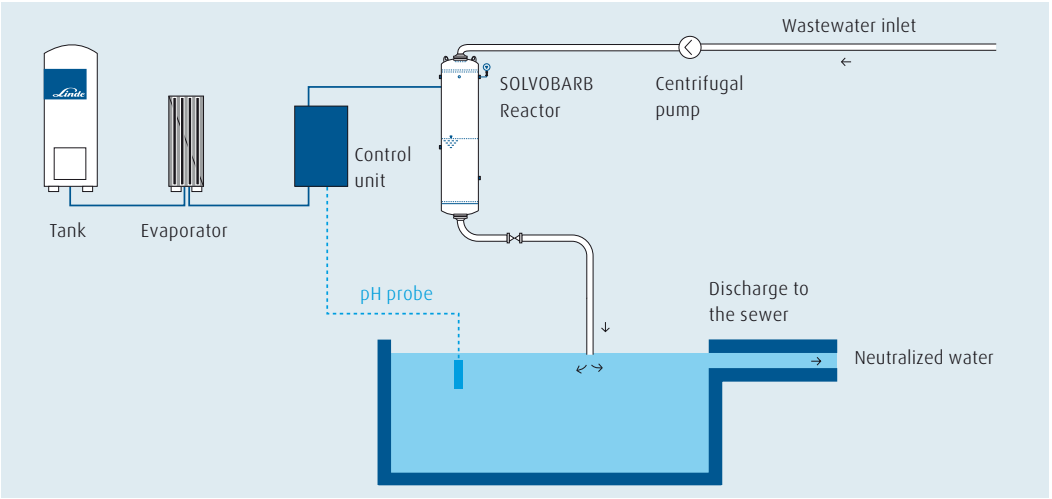
Linde SOLVOCARB® product line has been developed to meet neutralization and remineralization needs from water reuse to drinking water applications, in a reliable and safe manner. Compared to mineral acids, carbon dioxide has many advantages: it prevents the excessive accumulation of salts and makes over-acidification of wastewater almost impossible, due to its self-buffering properties. CO_2 is also much safer to handle than highly corrosive mineral acids, while being effective at neutralizing alkaline process water.

The SOLVOCARB reactor is suitable for numerous drinking water treatment applications and has proven to be an extremely efficient method for adding dissolved CO_2 to remineralize, recarbonate or control the pH of raw waters. It can work within a wide range of temperatures, flow rates and pressures.

Installation

In the SOLVOCARB reactor process, CO_2 dissolves in the water by means of a pressurized reactor. The reactor can be inserted in the main or a sidestream flow. It produces a gas saturated water stream that is in equilibrium with the temperature and pressure of the water flowing through the reactor. By pre-dissolving the CO_2 into the water, very high efficiency transfer rates can be achieved, and no large gas bubbles are present in the water leaving the reactor.

SOLVOCARB reactor process



SOLVOCARB reactor in-line installation

Benefits at a glance

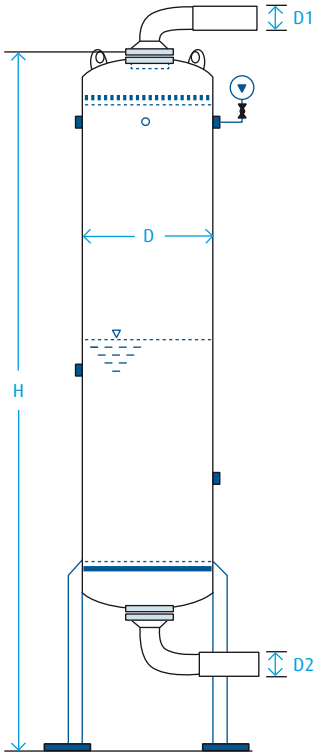
- → Ease of operation
- → Compact footprint
- → Proven accuracy and reliability in meeting pH, alkalinity and water hardness targets
- → Silent, environmentally friendly operation
- → Extremely high levels of CO_2 dissolution >95%
- → Carbonic acid solution with few or no bubbles
- → Low mechanical maintenance
- → Installation outside of basin for ease of maintenance
- → Compatible with in-line or sidestream modes
- → Suitable for internal or external installation
- → Introduction of carbonic acid solution for faster reaction times

Applications

- → pH control in the remineralization step after desalination
- → Recarbonation after water softening treatment
- → Water reuse projects, requiring pH balancing / water re-hardening
- → Raw water pH control
- → Improved coagulation effectiveness

Technical characteristics

Linde offers a portfolio of eight standard reactors for the injection of CO_2 in water. For standard applications, there is normally no custom engineering required for the reactors. For make-up or process flow rates between 15 and 1000 m^3/h, the appropriate reactor is selected according to the specific application requirements. Volumes of final treated water will vary according to pH, alkalinity temperature and operating pressure.



SOLVOCARB reactor dimensions and operating parameters

Reactor Type	Height (H)	Width (D)	Diameter top (D1)	Diameter bottom (D2)	Water flow range	Max. working pressure	*Max. O_2 dosing capacity at T = 10°C & 4.0 bar	*Max. O_2 dosing capacity at T = 20 °C & 4.0 bar	Operating temperature	Connection inlet	Connection outlet	Total Weight
Unit	mm	mm	mm	mm	m^3/h	bar (g)	kg/h	kg/h	°C			kg
SR 15	2570	273	50	65	10–20	10	2.0	1.6	100	DN50 PN16	DN65 PN16	100
SR 25	2650	356	65	80	17–35	10	3.4	2.7	100	DN65 PN16	DN80 PN16	140
SR 50	2770	450	80	100	35–65	10	6.8	5.5	100	DN80 PN16	DN100 PN16	180
SR 100	3030	600	125	150	70–130	10	13.6	11.0	100	DN125 PN16	DN150 PN16	225
SR 200	3200	800	200	200	140–260	10	27.0	22.0	60	DN200 PN16	DN200 PN16	500
SR 300	3380	1000	200	250	210–390	6	40.7	33.0	60	DN200 PN16	DN250 PN16	680
SR 500	4050	1300	250	300	350–650	6	68.0	55.0	60	DN250 PN16	DN300 PN16	1100
SR 1000	5000	1600	400	500	700–1300	6	135.8	110.0	60	DN400 PN16	DN500 PN16	1750

*Depending on water amount and temperature, as well as supply pressure of the pumps. Max demand calculated at 60% of saturation at approximately 4.0 barg operating pressure.

Linde AG
Gases Division, Carl-von-Linde-Strasse 25, 85716 Unterschleissheim, Germany
Phone: +49 89 31001-0, watertreatment@linde.com, www.linde-gas.com/watertreatment

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