



SOLVOX[®] reactor – oxygen for water. Low-turbulence diffusion for the oxygenation of raw water.



98%+ oxygen dissolution for raw water treatment

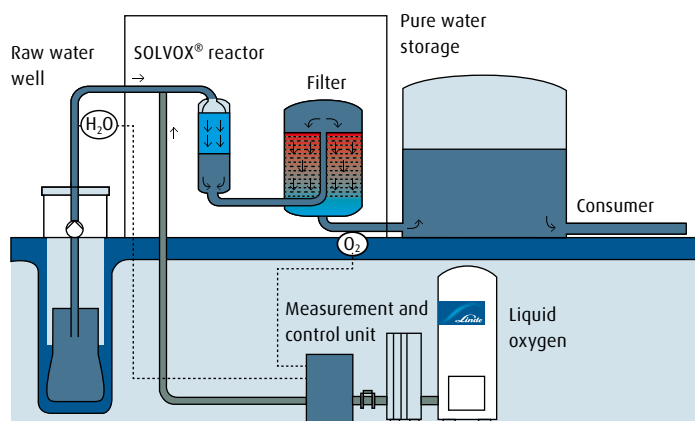
Linde's SOLVOX[®] Reactor is a versatile gas contacting system designed for efficient & effective dissolution of oxygen in clean water. Built to comply with prevailing pressure systems regulations it is safe and reliable, conforming to PED 2014/68/EU and ASME engineering codes. The controlled oxygenation takes place in a stainless-steel pressure vessel and can be carried out in an in-line or bypass configuration.

Available in eight standard sizes, the SOLVOX reactor has proven to be an extremely efficient method for adding dissolved oxygen to water, achieving up to 98% oxygen dissolution efficiency and high oxygen concentrations when required. Because the oxygen is added to the reactor at a rate that is slightly less than the maximum solubility, few to no bubbles are generated, making it an ideal technology for raw water treatment.

Operating at the partial pressure of pure oxygen reduces the need to handle large volumes of air, which, in turn reduces any potential foaming further downstream.

Installation & operation

The reactor can be inserted in the main or a sidestream flow. The water is pumped into the head of the reactor at a pre-designed pressure and flow rate, being then divided into individual streams by passing through a perforated plate. The oxygen is dissolved under pressure in a very short time and quickly equilibrates to the saturation value corresponding to the operating temperature of the water and pressure inside the reactor. The oxygen enriched water is momentarily retained in the lower part of the reactor from where it is transported virtually bubble-free to the required location.



SOLVOX[®] reactor installation. The metering of the oxygen is carried out in an automatic control unit, depending on the flow rate and the oxygen concentration of the raw water.

Benefits at a glance

- Very high dissolution efficiency of oxygen in the outlet water up to 98%
- Enriched oxygenated water with little or no bubbles
- No internal moving parts
- Installation upfront of settlement or sedimentation stages as very little turbulence is produced
- Suited to plastic, stainless steel and carbon steel pipework
- Low noise level
- Low pressure-drop
- Variable oxygen transfer rates and water flow
- CO₂ not stripped from raw water
- Improved filter operation

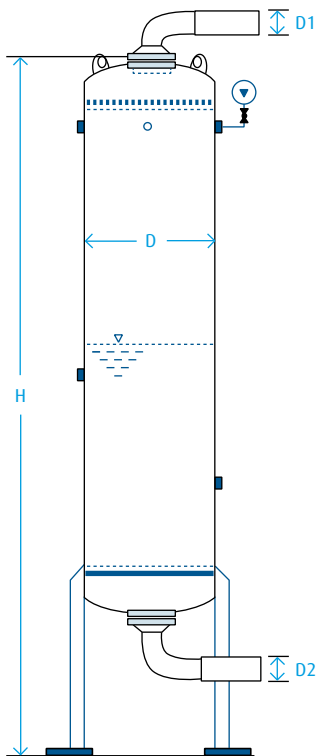
Applications in Drinking Water Treatment

- Oxidation of dissolved iron, manganese other reduced compounds in raw drinking water
- Oxidation of ground or well water
- Taste and odour improvement

Technical characteristics

Linde offers a portfolio of eight standard SOLVOX® reactors for the oxygen enrichment of water. For standard applications, there is normally no custom engineering required for the reactors. For flow rates between 15 and 1000 m³/h, the appropriate reactor is selected according to the nominal flow rate.

SOLVOX reactor dimensions and operating parameters



Reactor Type	Height (H)	Width (D)	Dia- meter top (D1)	Dia- meter 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	Oper- ating temper- ature	Con- nection inlet	Con- nection 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.

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