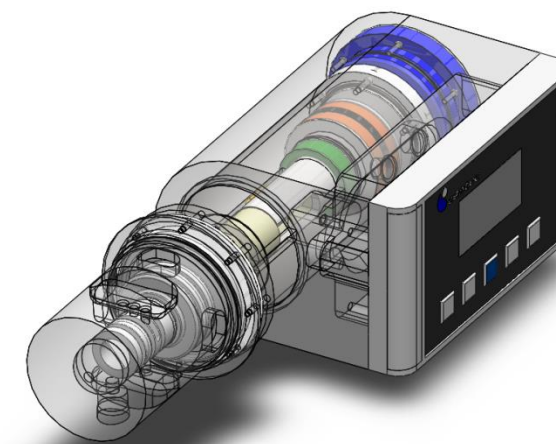


CO₂ Measurement in Food and Beverage Manufacturing

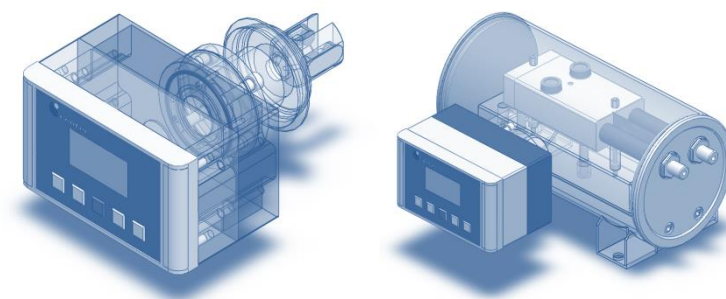
Application Report



Automated
process skids
and high precision
sensors from a
single source.
Centec.

The Centec Group

Centec is a privately owned group of companies. With a focus on the processing industries, we are rapidly growing in the major world markets. We have a global sales and service structure, with our own subsidiaries and a network of qualified distributors. Our international operations include mechanical, electrical and process automation engineering, with skid manufacture and pipework fabrication; as well as our own switch cabinet production. This infrastructure allows efficient logistics, short lead times and strict adherence to delivery deadlines. The quality of our products is excellent, so is the price-performance ratio.



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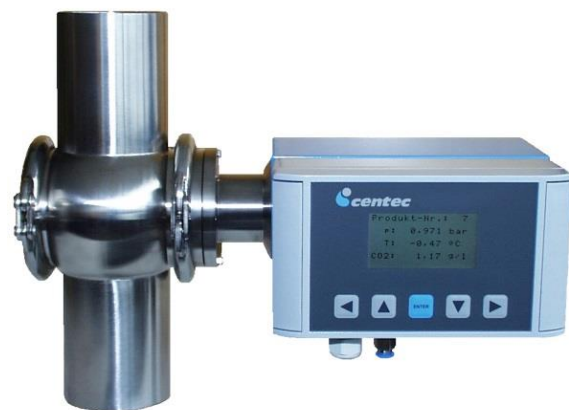
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CARBOTEC

Application and Measurement Principle

The content of carbon dioxide (CO₂) has a strong influence on the quality and taste of beer, sparkling wine, soft drinks, mineral water and various other carbonated products. Therefore, breweries and other beverage and food companies continuously measure and control CO₂ concentrations with highest precision throughout the entire manufacturing process.

CARBOTEC TR-PT: The carbonated liquid flows through a measurement chamber. By increasing the volume of the chamber, a gas phase is generated. The partial pressure difference of CO₂ forces the CO₂ out of the liquid into the gas. This changes the pressure inside the chamber. By pressure measurement, the CO₂ content is calculated. **CARBOTEC NIR:** While transmitting a sapphire crystal, infrared light is reflected at the crystal surface which is in contact to the carbonated liquid. The CO₂ molecules absorb the light and decrease the intensity. By intensity measurement, "true" CO₂ content is determined. CARBOTEC NIR can be used to detect carbon dioxide even when CO₂ is not the only gas in the liquid. Without any moving parts in the sensor head, the new generation of CO₂ sensors is virtually maintenance free.



CARBOTEC TR-PT
Transmitter Version



CARBOTEC NIR
Transmitter Version n

- Available as Transmitter Version with Local Display
- Highly Precise and Fast Measurement of Dissolved CO₂
- Proven Pressure-Temperature-Measurement (CARBOTEC TR-PT)
- Optical Measurement for "True" CO₂ Content (CARBOTEC NIR)
- Short Response Time and Excellent Long-Term Stability
- Hygienic Execution, Full CIP Capability, Almost Maintenance Free
- Outstanding Price-Performance-Ratio

Technical Data	CARBOTEC TR-PT	CARBOTEC NIR
Measuring Range	0 - 10 g/l	0 - 10 g/l
Accuracy	± 0,05 g/l	± 0,1 g/l
Repeatability	± 0,01 g/l	± 0,02 g/l
Response Time	≤ 20 s	≤ 3 s
Pressure of Operation	max. 10 bar	max. 10 bar
Temperature of Operation	- 10 - + 100 °C	- 10 - + 90 °C
Temperature Compensation	Pt100	Pt100
Material	1.4404/AISI 316L, EPDM (FDA), PTFE (FDA)	1.4404/AISI 316L, sapphire glass, EPDM (FDA), PTFE (FDA)
Connections	compatible to Varivent® Inline-Housings DN65 - DN150; others on request	compatible to Varivent® Inline-Housings DN65 - DN150; others on request
Input	6 x digital (24 VDC)	6 x digital (24 VDC)
Output	3 x digital (24 VDC) & 2 x analog (4 - 20 mA)	3 x digital (24 VDC) & 2 x analog (4 - 20 mA)
Profibus DP	option	option
Enclosure Rating	IP65	IP65
Power Supply	24 VDC	24 VDC