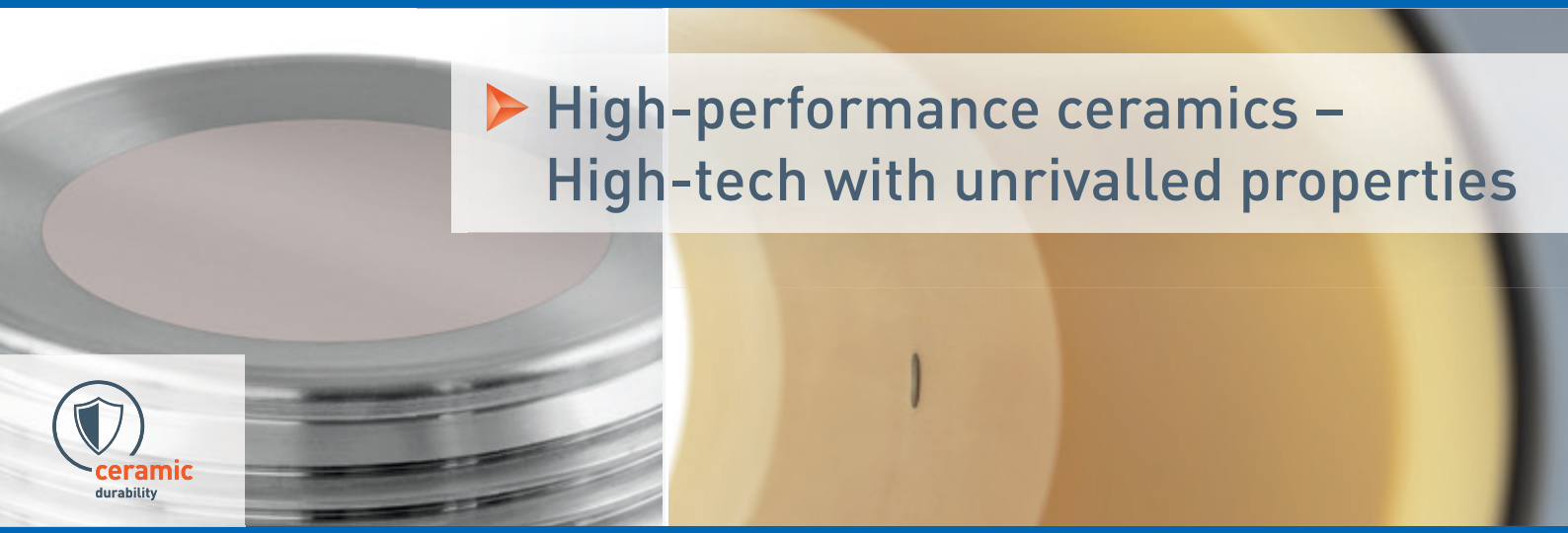
KROHNE
measure the facts



High-performance ceramics – High-tech with unrivalled properties

ceramic
durability

High-performance ceramics – High-tech with unrivalled properties

By implementing oxide ceramic sensors, KROHNE is using a technically superior material for electromagnetic flowmeters (EMF) and pressure measuring devices that is permanently resistant to corrosive and abrasive media. Additionally, ceramic is immune to temperature shocks and absolutely safe against gas discharge and leaks – all in all a unique combination for high-performance applications in all industrial sectors.

Flow and pressure measuring devices with ceramic liner

OPTIFLUX 5000
EMF with CERMET electrodes offer excellent long-term stability and accuracy for high-grade aggressive and abrasive media. Used by leading metrological institutes as a reference device.

OPTIFLUX 7000
EMF with capacitive electrodes that do not come in contact with the media are designed for applications that use adhering media and liquids with low conductivity levels. Stable measurements even in noisy applications.

BATCHFLUX 5500
EMF for volumetric filling systems

OPTIBAR PC 5060
Pressure transmitter with highly overload-proof ceramic membrane for pressure and level measurement.

OPTIBAR LC 1010
Submersible level probe for continuous level measurement.

Overview of KROHNE ceramic devices

	Flowmeters			
	Installation	Size / DN	Ceramic	Electrode / Electrode integration
OPTIFLUX 5000	Flange	15...300	FZM	CERMET, sintered-in
	Sandwich	2.5...15	FZM	CERMET, sintered-in
	Sandwich	25...100	FZT	Platinum pin electrode with plated head, pin sintered-in
BATCHFLUX 5500	Sandwich	2.5...40	FZM	CERMET, sintered-in
OPTIFLUX 7000	Flange	25...100	FZM	Capacitive, on ceramic tube
	Sandwich	25	FZM	Capacitive, on ceramic tube
		40...100	FZT	

	Pressure transmitter OPTIBAR PC 5060	Immersion probe OPTIBAR LC 1010
Measuring ranges	0.025...100 bar	0...1 to 0...100 mH_2O
Reference accuracy	<0.05 to 0.2% of URV	<±0.35% FSO
Process temperature	–40...+150°C	-40...+80°C
Process connections / material	Thread of more than ¼", ASME flange, EN, DIN, JIS from DN15 in 316L, C276, Duplex, PVDF	Thread R1", flange DN50, cable: TPE
Approvals	Ex ia, Ex d, SIL2/3	ATEX/IECEx Ex ia 1G, drinking water approvals (KTW, ACS)

FRIALIT® FZT: ZrO_2-stabilised Al_2O_3
Bending strength = 460 MPa*,
E-module = 360 GPa

FRIALIT® FZM: MgO partially stabilised ZrO_2
Bending strength = 500 MPa*,
E-module = 200 GPa

Sapphire: 99.96 % Al_2O_3 ceramic
Bending strength = 630 MPa,
E-module = 406 GPa

*1 MPa = 1 N/mm²

Ceramic from KROHNE for extreme process conditions

- High-resistance to abrasion
- Suited for pastes and sludges with very high solid content
- The helium leakage rate of ceramic including electrodes is less than 10^{-7} (hPa * l)/s, this means „gas-tight"
- Vacuum-resistant up to 0 hPa
- High mechanical strength and form stability
- 0 % porosity (important for aggressive outgassing or toxic media)
- Excellent surface quality and very low roughness (Ra < 0.8 µm)

OPTIFLUX 5000: measuring tube made of oxide ceramic when used in the chemical industry

OPTIBAR PC 5060: Integrated ceramic diaphragm used with abrasive media, as it is ten times harder than stainless steel

Special features of flowmeters with ceramic liner

- Oxide ceramic is very resistant to acids and lyes. (Nitric acid and nitrohydrochloric acid or even hot concentrated hydrochloric acid cannot damage the oxide ceramic)
- Adherence to the pressure equipment directive (DGLR)
- Long service life especially compared to plastic liners with abrasive wear
- Fully vacuum-resistant
- High resistance to temperature shocks of up to 120 K
- Very high burst pressure/overload resistance

Superior electrode design

Special features of the pressure measuring devices with ceramic diaphragm

- Suitable for pressure applications of up to 100 bar and 150 °C
- Overload-proof up to 200 times the nominal measurement range
- 100 % hydrogen resistance
- 100 % diaphragm breakage detection
- In the event of diaphragm breakage this is detected by the sensor electronics
- Ten times harder than stainless steel
- Absolutely vacuum-tight

The measuring cells can be built into the process flush and the radially recessed position of the gasket provides additional protection in abrasive media.

Contact

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