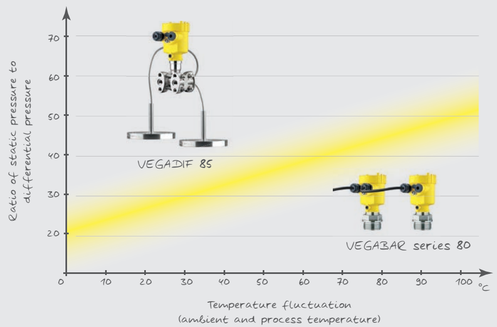
Comparison: electronic and conventional differential pressure

	Electronic differential pressure	Conventional differential pressure
Conditions		
High temperatures	+	+
Fluctuating process temperature	+	–
Fluctuating ambient temperature	+	–
Static pressure/differential pressure ratio: ≥ 20	–	+
Abrasive solids	+	–
Applications		
Vacuum	+	–
Level measurement in pressurized vessels	+	–
Flow measurement via a pitot tube device	–	+
Density measurement	+	–
Interface	+	+



The diagram above demonstrates which measuring technique is best suited to which areas. In situations with up to 20 times static to differential pressure, electronic differential pressure always has advantages. If the static pressure is more than 20 times higher than the differential pressure, then a classic differential pressure transmitter is recommended, as the static pressure doesn't influence the measurement. With large temperature fluctuations, the turndown reduces due to the temperature effects seen, particularly on capillary systems. So, in this instance, the advantages again lie with electronic differential pressure.

The differential pressure instruments from VEGA

VEGABAR series 80	Technical specifications
Application	Liquids and gases
Deviation	0.2 %; 0.1 %; 0.05 %
Process fitting	Flanges from DN 25, 1", hygienic fittings, thread from G½ of 316L, Duplex, PVDF, Alloy
Process temperature	-40 … +400 °C
Measuring range	±0.025 … ±1000 bar (±2500 … ±100000 kPa)
Overload resistance	up to 200-times measuring range
Signal output	4 … 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 82, wireless adjustment via Bluetooth with smartphone, tablet or PC
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), Overfill protection, Ship, SIL2

VEGADIF 85	Technical specifications
Application	Liquids and gases
Deviation	0.1 %; 0.065 %
Process fitting	¼-18 NPT, optional with chemical seal assembly, metallic of 316L, Alloy
Process temperature	-40 … +120 °C
Measuring range	from -10 … +10 mbar (-1 … +1 kPa) up to -40 … +40 bar (-4000 … +4000 kPa)
Overload resistance	up to 420 bar
Signal output	4 … 20 mA, 4 … 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82, wireless adjustment via Bluetooth with smartphone, tablet or PC
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), overfill protection, SIL2

Chemical seal with VEGADIF 85	Technical specifications
Application	Liquids and gases
Process fitting	Flanges from DN 40, 2" cells from DN 50, 2" of 316L, Alloy, Tantalum
Process temperature	-40 … +400 °C
Measuring range	from -100 … +100 mbar (-10 … +10 kPa) up to -40 … +40 bar (-4000 … +4000 kPa)
Overload resistance	up to 420 bar
Approvals	As per VEGADIF 85

51157-EN-180425

VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany

Phone +49 7836 50-0
Fax +49 7836 50-201
E-mail info.de@vega.com
www.vega.com

Looking Forward VEGA

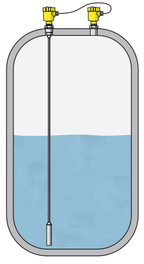
Electronic and conventional differential pressure measurement

Differential pressure

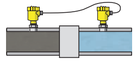
Looking Forward VEGA

Electronic differential pressure with VEGABAR series 80

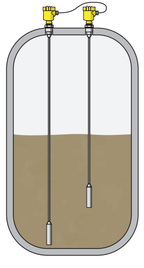
Conventional differential pressure with VEGADIF 85



Level:
Measuring the level in pressurized tanks



Differential pressure:
Measuring the differential pressure across the filter for cleaning control



Density:
Measuring the density of the medium in the tank

An innovative combination between software and hardware makes it possible to combine any two VEGABAR 80 series pressure transmitters into an electronic differential pressure system. Users benefit from the simple selection and efficient spares.

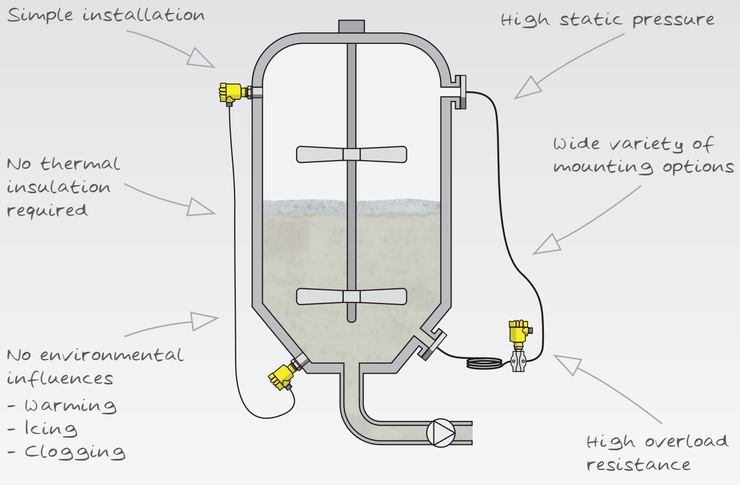
Besides differential pressure, level, density or flow, additional process parameters such as static overpressure or process temperature can be reliably measured with an electronic differential pressure system. The measured values can be easily transmitted to the control system digitally with HART, Profibus PA or Foundation Fieldbus.

Maximum security

As an option, the sensors are available with an additional gas-tight feedthrough, a Second Line of Defense. This ensures maximum operational safety when working with hazardous or toxic products in the chemical industry.

Reliable and stable measured values are the most important requirement for differential pressure measurement. The electronic differential pressure system of VEGABAR series 80 with SIL can be used up to SIL2 in a single-channel setup and up to SIL3 in a two-channel setup (homogeneous redundancy).

Electronic differential pressure **Conventional differential pressure**



Differential pressure measurement made to order

The standardized instrument platform plics® offers the best possible combination of sensor, process fitting, electronics and housing as well as an integrated adjustment concept. The result is an instrument that is reliable, economical and user friendly. Using menu-guided setup and commissioning, the measuring point is configured in four steps with the display and adjustment module PLICSCOM or a PC with PACTware.

The wide range of mounting options makes VEGADIF 85 extremely versatile. Besides differential pressure, it can be configured to measure other parameters such as flow, level, interface or density.

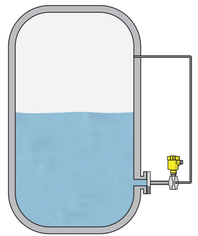
Different pressures act on the two sides of an oil-filled differential pressure measuring cell. This converts the pressure differential into an electronic signal. A piezo measuring cell serves as the actual pressure measuring sensor.

Versatile and reliable

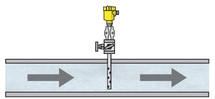
The VEGADIF 85 differential pressure transmitter has a wide application spectrum. Differential pressures of only a few mbar can be accurately measured, even with very high background or “static” pressure. The chemical seal systems used with VEGADIF 85 are designed to suit each individual application requirement, for example to enable measurement of media at extreme temperatures, with high viscosity or corrosive properties.

The static pressure is also measured via an integrated absolute pressure sensor. It provides self-compensation of the measuring cell for increased reliability and stability of the transmitter. This static pressure information can also be transmitted via a second current output or as a digital value to offer improved process control.

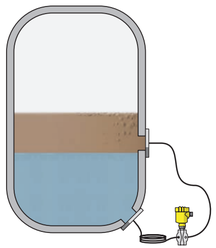
VEGADIF 85 was developed and certified according to IEC 61508 and can thus be used in single-channel mode up to SIL2 and in two-channel mode (homogeneous redundancy) up to SIL3.



Level:
Measuring the level with a single chemical seal assembly (CSS)



Flow:
Measuring flow with a pitot tube device



Interface:
Measuring the interface with a double chemical seal assembly (CSB)