

VARINLINE® Measurement and Control Technology

Keep an eye on your valuable product



Process Equipment

GEA Tuchenhagen

Matrix piping, now encountered increasingly in the process technology industry, converts plant equipment into closed systems that prevent the operator from looking into his production process.

Control instruments and sensors are integrated into the system to maintain transparency in the production process. CIP/SIP cleaning and sterilization are on an equal footing with the actual functionality of instrumentation for applications in the brewing and beverage industries, in the milk processing industry as well as in the chemical, pharmaceutical and cosmetic industries.

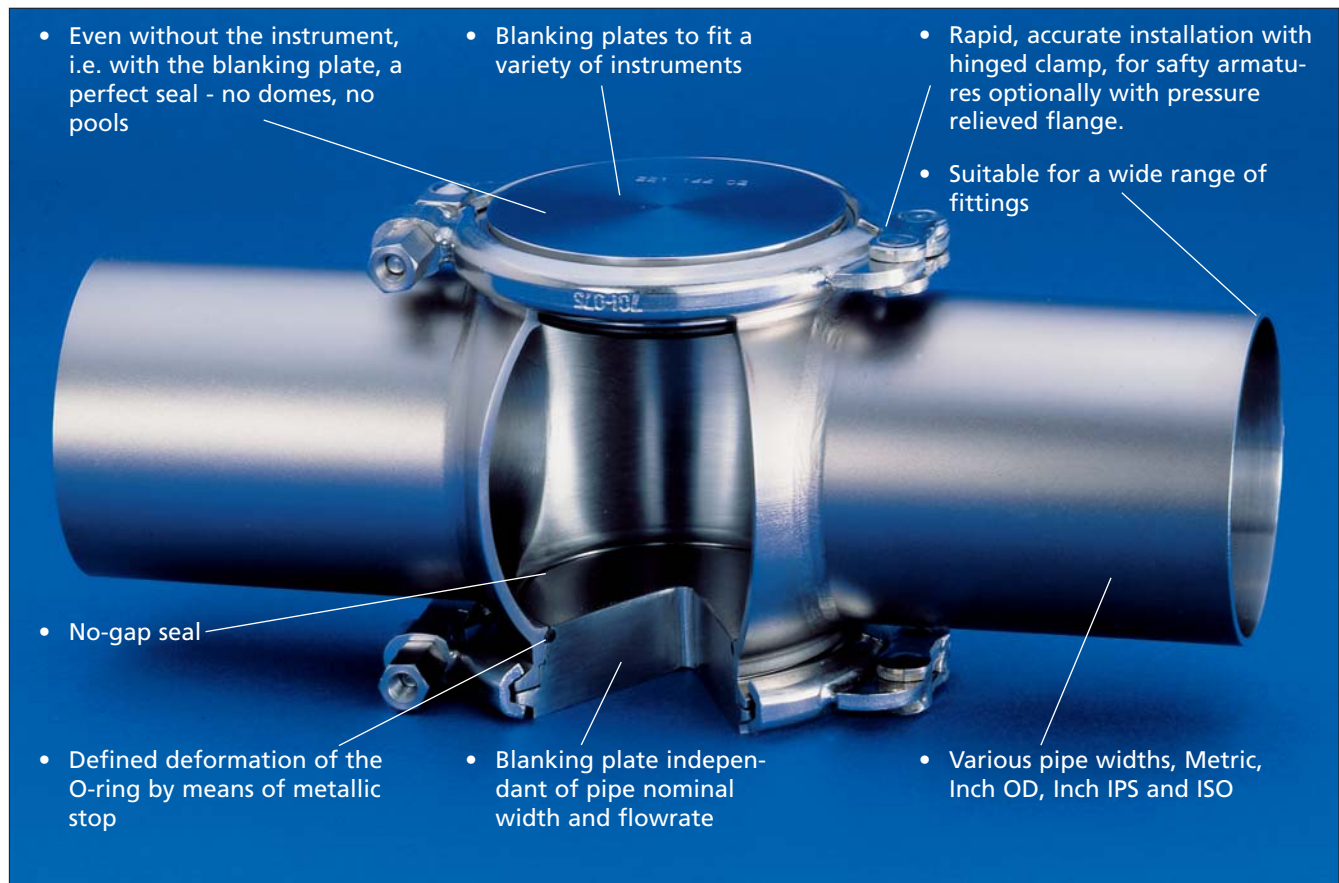
In-Line control and measurement

The trademark VARINLINE® covers a whole family of control and measuring instruments for meeting CIP and SIP specifications, i.e. cleanability and sterilizability without dismantling.

The instruments can be cleaned and sterilized without any residue in automatic cleaning and sterilizing process cycles.

The heart of in-line control and measurement is the in-line access unit, consisting of a through line with two sockets and two connections for instrumentation.

VARINLINE® access unit: the optimal connection for all types of measurement and control instruments.



Key features of the VARINLINE® access unit

- can be welded into the pipe circuit - no domes; no sumps
- sealed gap-free against the product by means of an O-ring
- connections for instrumentation independent of pipe diameters and process variables
- various pipe diameters in
Metric: Outside diameter acc. to DIN 11850, Row II, DIN 11866, Row A, 1.4404 / 316L
ISO: Outside diameter acc. to DIN EN ISO 1127, 1.4435 / 316L

Inch OD: Outside diameter to BS 4825 Part I, Outside diameter following ASME-BPE-a-2004, DIN 11866, Row C, 1.4404 / 316L
Inch IPS: Outside diameter acc. to IPS Sch. 5, 1.4404 / 316L

- access unit in CrNiMo steel
- rapid, accurate instrument fit using clamp ferrules
- possible to fit up to two different instruments on one in-line access unit

VARINLINE® measuring, inspection and monitoring devices for in-line use

Tuchenhagen specification for measuring and control devices:

- No dead corners
- CIP-able
- SIP-able



The VARINLINE® access unit and its use in matrix-piped systems.

The VARINLINE® access unit is the universal link connecting measuring, inspection and monitoring equipment with the process system.

Consistent use of the VARINLINE® access unit affords the following benefits:

- The VARINLINE® access unit has two different connection fittings. Thus two instruments can be installed.
- The installation of the VARINLINE® access units at critical points in a production line allows instruments or other control devices to be fitted at a later stage without welding.
- Fitted with a glass blanking plate the VARINLINE® access unit can also be used as a sight glass.

Technical Data

Material	1.4404 / 316L Material certificate DIN 10204, 3.1 available on request
Housing surface	Ra ≤ 0,8 µm
Sealing material	acc. to 21 CFR Part 177.2600 (FDA conform) EPDM, FKM, HNBR
Operating pressure	10 bar
Operating temp.	135° C (150° C short-time)

VARINLINE® access units have connection fittings for two instruments, e.g. Level Electrode and Sampling Valve.

Product Overview

Temperature

Pressure

Thermometer

Temperature Sensor

Manometer










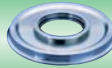

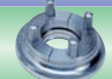
Pressure Transmitter

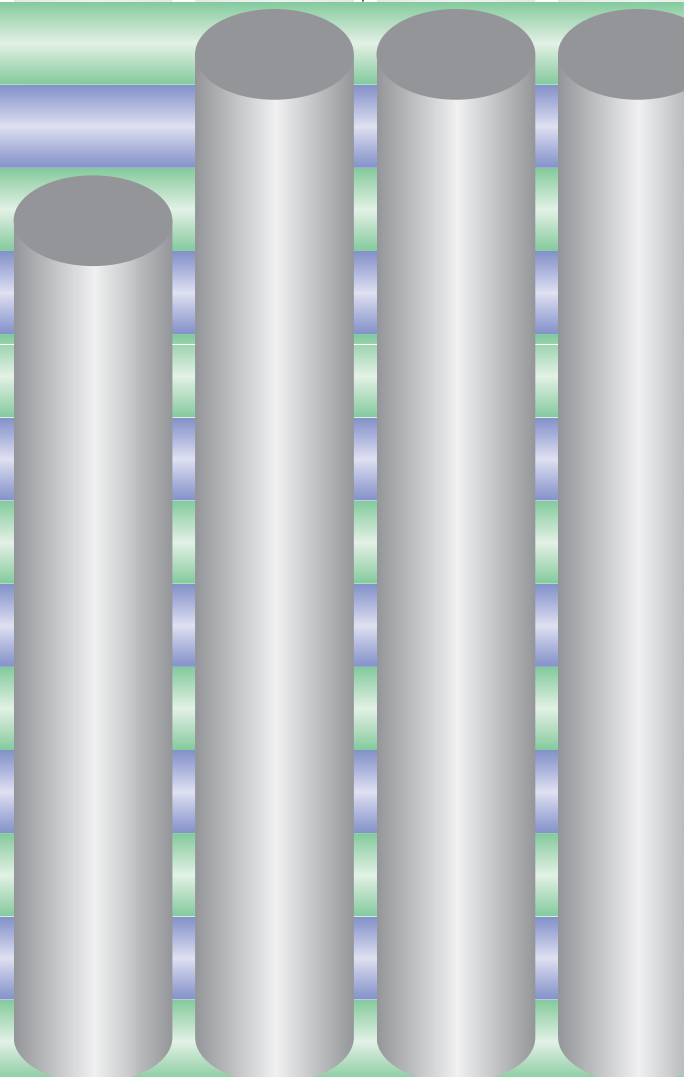


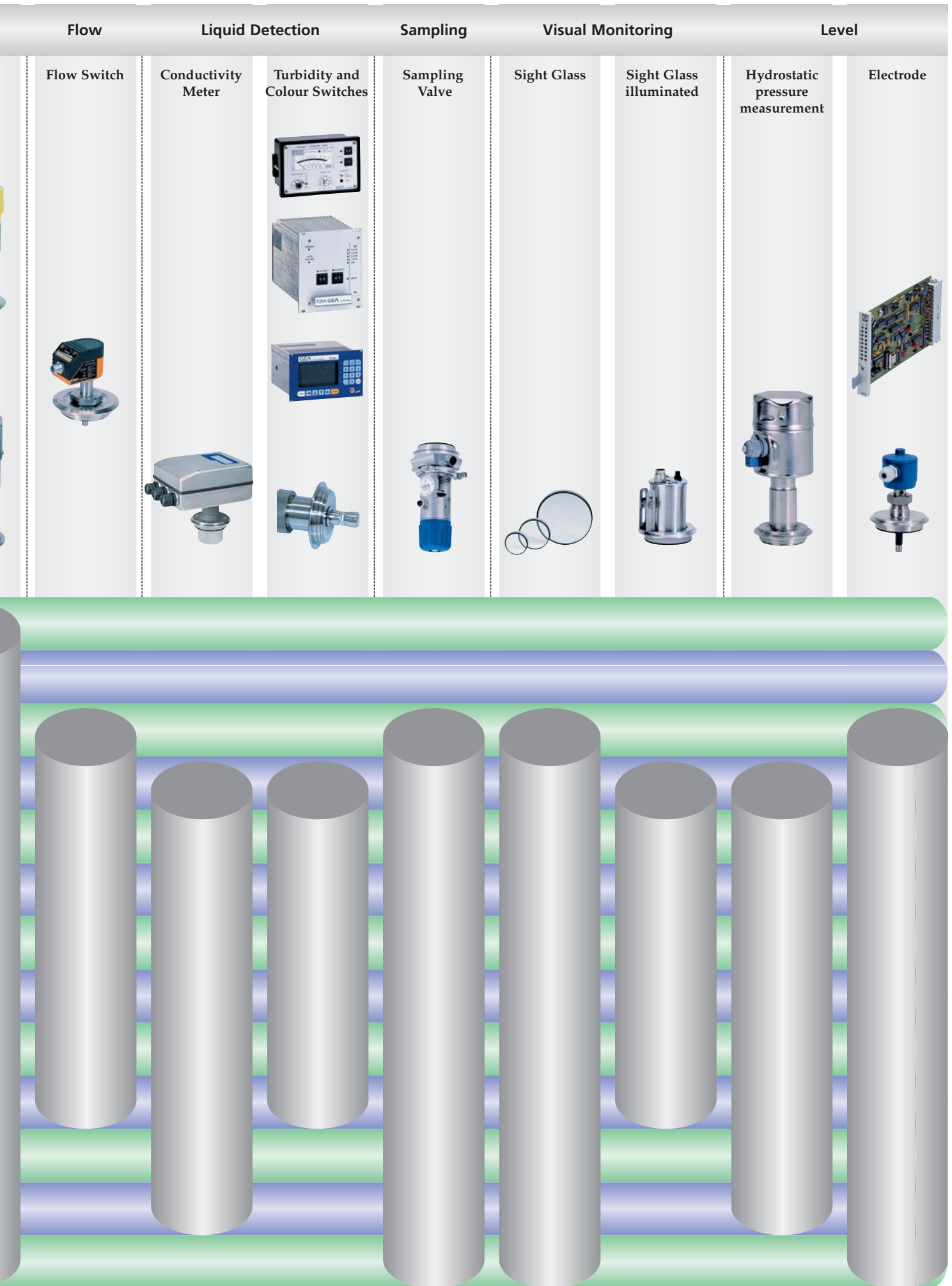
Process connections

Type	Size	Opening
B	15	31 mm
F	25	50 mm
N	50/40	68 mm
G	125/100	125 mm

Type	VARINLINE® Connection fittings	Pipe nominal widths			
		DN	Inch OD	Inch IPS	ISO

B		10			17,2
B		15			21,3
F		25	1"		33,7
N		40	1 1/2"		42,4 48,3
N		50	2"	2"	60,3
N		65	2 1/2"		
N		80	3"	3"	
N, G		100	4"	4"	
N, G		125			
N, G		150			6"
B, F, N, G					
F, N, G					
F, N					





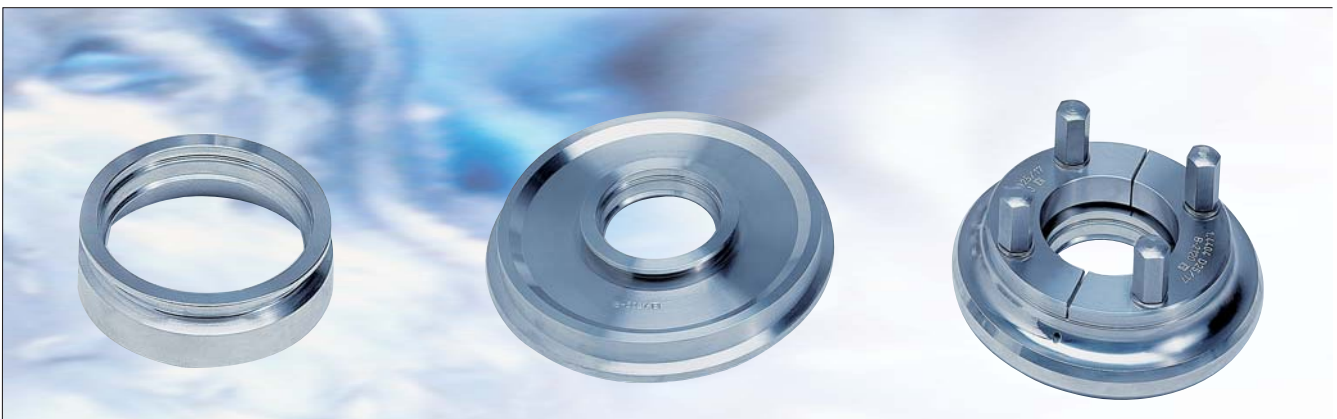
VARINLINE® access unit



The VARINLINE® access unit is used for the integration of control and measurement instruments into pipe systems of diameters designed for lowest liquid and gas volumes up to very large product volumes.

Two control and measurement instruments maximum can be incorporated into this type of process connection fitting.

The VARINLINE® connection flanges



U-flange

T-flange

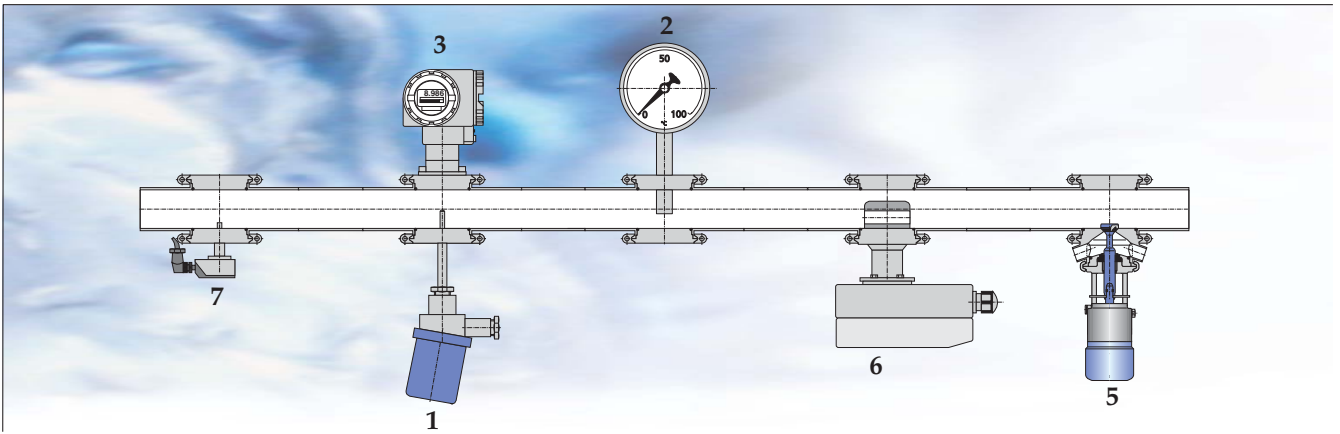
P-flange

The VARIVENT® connection flange allows the installation of control and measurement instruments also at tanks, using the proven VARINLINE® process connection as connection element.

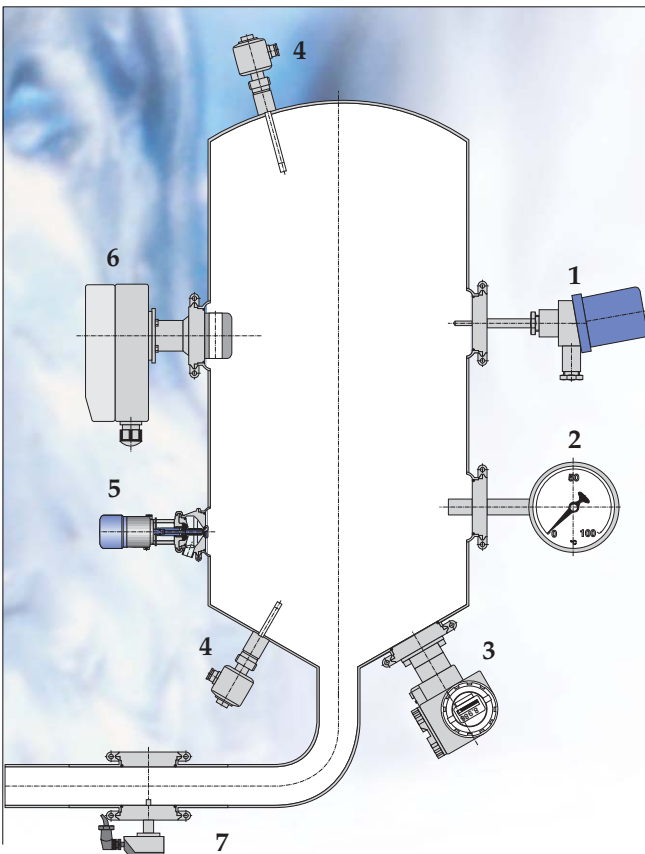
Different types are available to cover almost all applications in different industries. The connection flange type "P" combines highest hygienic requirements with high safety standards and allows its installation into tank walls of 20 mm thickness.

Examples of VARINLINE® Instrumentation

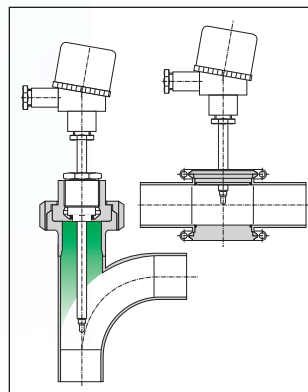
Pipe instrumentation



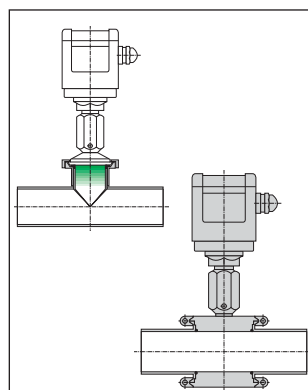
Tank instrumentation



- 1 Temperature sensor
- 2 Thermometer
- 3 Pressure transmitter (hydrostatic measurement)
- 4 Level electrode
- 5 Sampling valve
- 6 Conductivity measurement
- 7 Flow switch



Example Temperature sensor
left: dead corner in the thermometer elbow
right: no-gap, no dead corner installation as per the VARIVENT® principles



Example Pressure transmitter
top: installation with IDF union
below: no-gap installation as per the VARIVENT® principles



Process Equipment

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