

FISCHER Mess- u. Regeltechnik GmbH Bad Salzflen, Germany



RKG

Regulátory a kompenzátory spol. s r.o.
Severní 865
CZ-25064 Hovorčovice

Exklusivní distributor FISCHER pro ČR, SR, HU a AUT

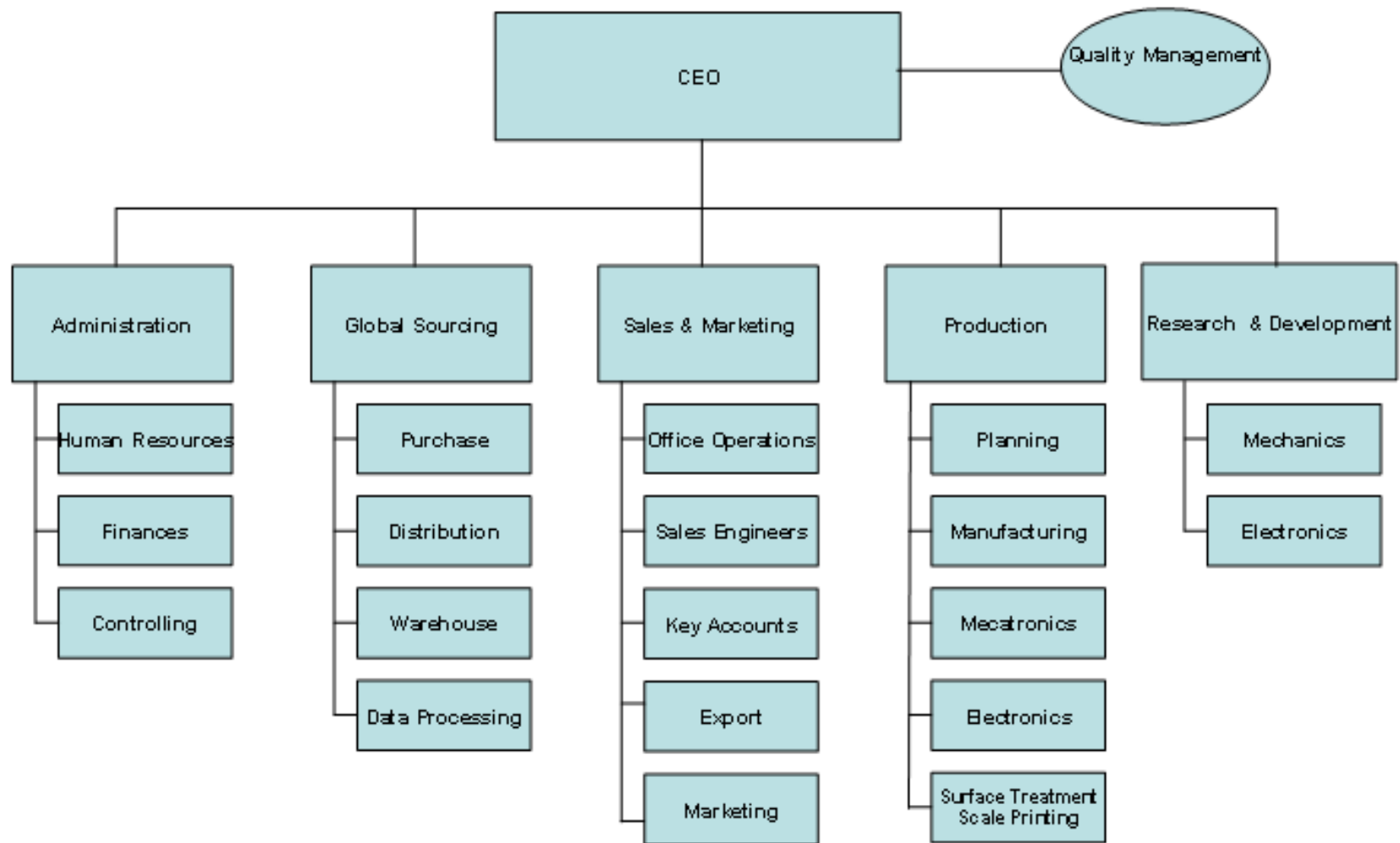
Presentation of FISCHER Company

Facts

- Established in 1950
- Family owned and managed company
- Budget 2014 – 18,8 Mill € turnover
- 135 employees
- 10% of annual turnover to R&D
- 60% customized solutions
- Distribution worldwide
- 14 Agencies abroad
- Sales area approx. 50 countries worldwide



Organization



Milestone

1950 **Established by Mr. Klaus FISCHER in Exter, small town of Bad Salzuflen**
Repair of contact manometers, reconstruction and improvement of contact devices

1952 **Relocation of company into a larger production site**
Extension of machinery and delivery program: dental measurement and X-ray testing instruments/ regulator, automatic solenoid valves and diaphragm valves



Milestone

1971 **New production facility, Bielefelder Strasse 37a, D-32107 Bad Salzuflen)**

Contact complete assemblies, development of electronic amplifiers, signal converters and switching devices



1975 **Co-operation with Hoechst AG**

Colouring lab instruments, instruments for colour fastness testing and dosing pumps for the textile-finishing sector, EX- valves solenoid and special products for hazardous areas ??????????????????????prüfen



Performance and Advantages

- Standard components for measuring and control technology
- Developing and production of customer specific components and special solutions
- Various approvals (DIN EN ISO 9001:2008 / KTA 1401 / GOST-R / ATEX / SIL) and certificates
- Comprehensive documentation (for e.g. data sheets / download center / parameterization software available at www.fischermesstechnik.de)

2.1 Performance and Advantages

OEM „Original Equipment Manufacturer“



Process Optimization

Reducing of operation costs by detection of leakages and reduction of losses



Why FISCHER

- ✓ More than 60 years experience
- ✓ Quality „Made in Germany“
- ✓ Modern manufacturing technologies
- ✓ Wide range of know how
- ✓ Specialised customer solutions
- ✓ Trained employees
- ✓ Excellent service
- ✓ On-schedule delivery
- ✓ International activities

FISCHER References

List of References

- Power Plants: RWE, E.ON, Alstom, Taprogge, Siemens, Vattenfall
- Boiler: HTT, HTI, Intec, Standard
- Combined Heat and Power (CHP): MWM, Haase, Jenbacher
- Plant Operator Clean rooms, Semiconductor: Heidenhain, Infineon, AMD, Solarworld, Q-Cells
- Engineering for Pharmaceuticals, Semiconductors, Clean Rooms, General Buildings: Siemens, JCI, Siegle + Epple, Caverion, Meissner + Wurst, Lufft, Wisag, ABB, Sauter, Intec
- Plant Engineers-Pharmaceuticals, Semiconductors, Clean Rooms, General Building: Meisner, LSMW, CRC, LUWA
- Filter Units: Mahle, Hydac, Boll & Kirch
- Industrial Gases: Messer Group, WIKON, TMG, Linde
- Finish / Coating: Dürr, Eisenmann, Heimer, Rippert, Langbein + Engelbracht
- Gear Manufacturer: Flender (Siemens)

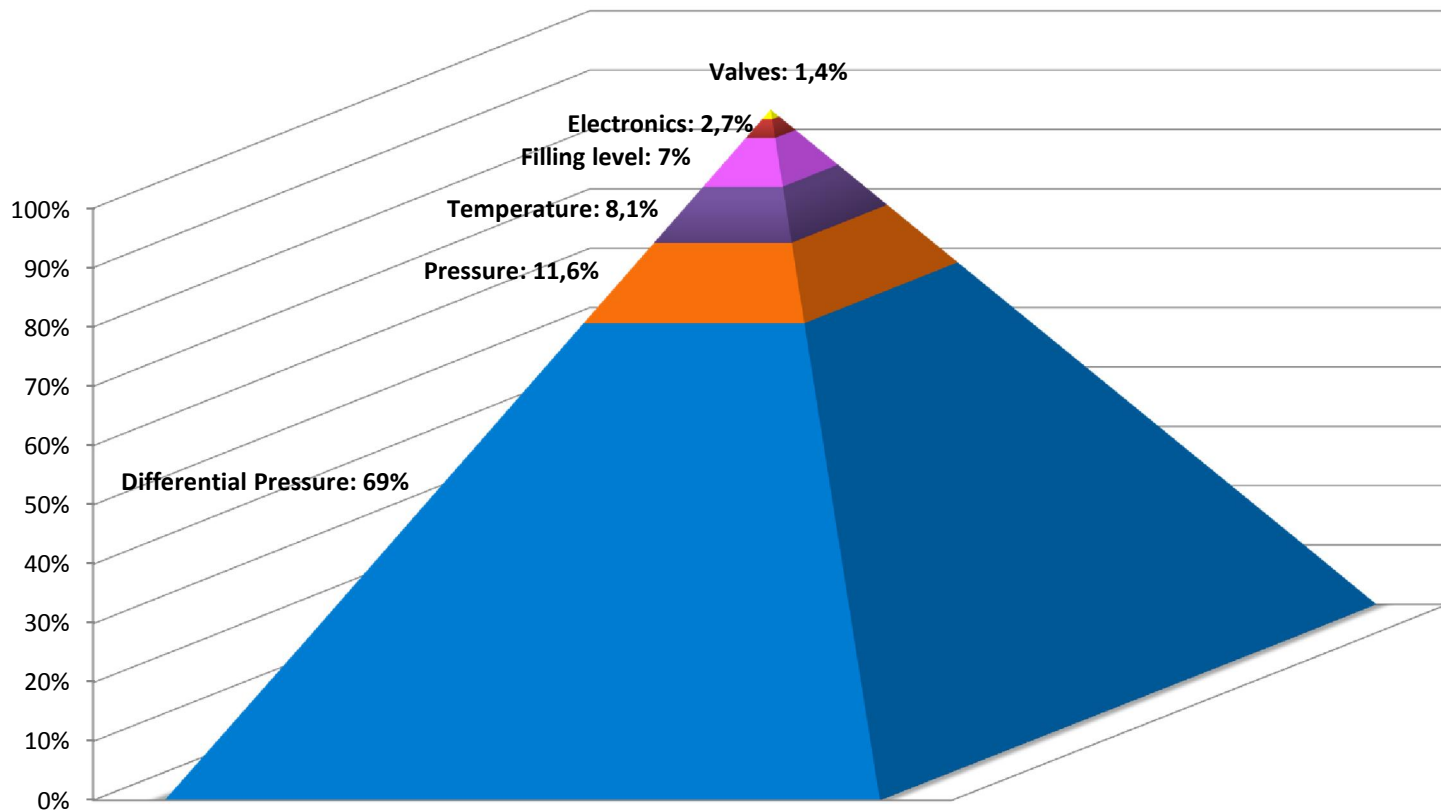
List of References

- Pumps: Wilo, KSB
- Extinguishing Equipment (Equipment Fire Fighting Vehicles): Ziegler, Iveco,
- Waste Water Treatment: Nowak, Siemens
- Food Technology: Humana, Müller Milch (Operator), Dr. Rauh
- General Machinery and Plant Construction
- Clean Room: Pfitzer, Infineon, AMD, Boehringer, La Roche, Siemens Building Technology, JCI, Sauter, Kieback + Peter, ELPRO, M+W Group, Schering, Schwabe, General: hospital and clinic centers, laboratories
- Automotive Building Technology: Audi, Porsche, Daimler Benz, VW AG, BMW
- Renewable Energy: GE Jenbacher, Deutz Power Systems, SES
- Large-Scale Production Plant: Uhde, Polysius
- Thermal Oil Systems: Single, Dr. Wobser LAUDA, HTT, HTI, INTEC, AURA, INPLAN

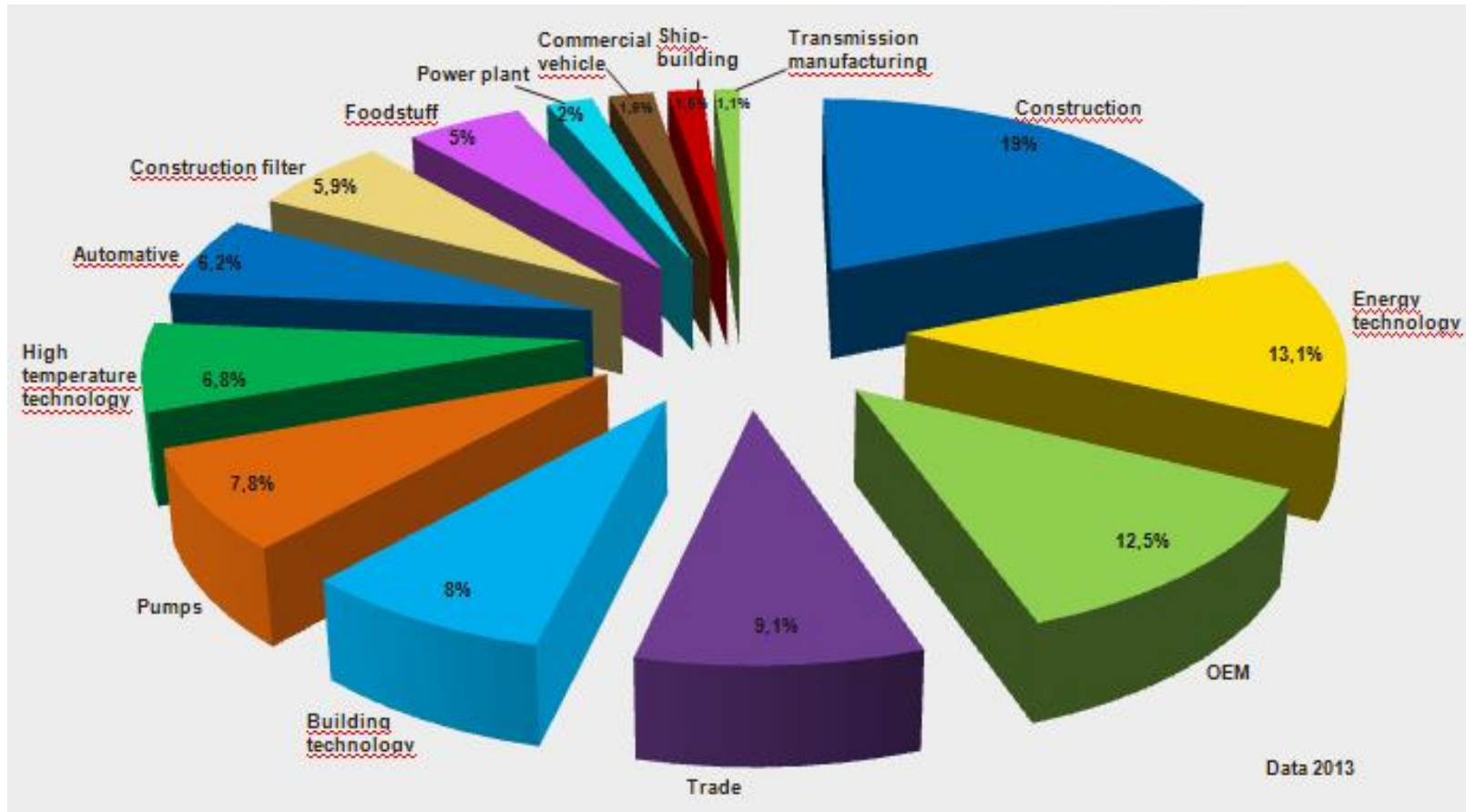
FISCHER Mess- und Regeltechnik GmbH

Product and Application Overview

Percentage of Product Sectors



Industries



Pressure measurement

Pressure gauges,
mechanically and electronically indicating
equipped with contacts ..

Pressure transmitter

Pressure switches

Remote seals,



Pressure

Pressure / MA / MD / ME / MS / MZ for example:

MA13



ME50



MA15



ME01



MA32



ME11



ME12



ME67



Pressure

Pressure	
MA11	Standard Bourdon-Tube Manometer
MA12	Pressure Gauge
MA13	Chemistry Bourdon-Tube Manometer
MA15	Diaphragm Pressure Gauge (for chemical use)
MA25	Hand-held Digital Pressure Gauge
MA27	Hand-held Digital Pressure Gauge
MA32	Transmitter-Manometer
MD03	Diaphragm Seals
MD26-36	Diaphragm Seals
MD28-38	Diaphragm Seals
ME01	Digital Pressure Gauge
ME11	Pressure Transmitter
ME12	Digital Pressure Transmitter with Remote Configuration Function
ME13	Pressure Transmitter
ME49	Pressure Transmitter for Hazardous Areas
ME49T	Electropneumatic Level Transmitter
ME50	Programmable Pressure Transducer / Pressure Switch
ME56T	Electropneumatic Level Transmitter
ME67	Pressure Transformer for Wastewater / Process Measuring Techniques
ME69	Pressure Transmitter for Water and Waste Water Treatment
ME71	Pressure Transmitter
MS10	Contact Pressure Vacuum Gauge
MS11	Contact Pressure Gauge (for heavy measuring conditions)
MS12	Digital Pressure Switch / Transmitter
MZ	Accessories for Measuring Instruments

Differential pressure measurement

Differential pressure, mechanically and electronically indicating equipped with contacts ..

Differential pressure transmitter

Differential pressure switches

Flow monitoring

Orifice plates



Differential Pressure

Differential Pressure / DA / DE / DS / DZ for example:

DS11



DA03



DE39_LCD



DA09



DA30



DE70??????????



Differential Pressure

Differential Pressure	
DA01	Differential Pressure Gauge
DA03	Differential Pressure Gauge
DA08	Differential Pressure Gauge
DA09	Differential Pressure Gauge
DA10	Differential Pressure Gauge
DA12	Differential Pressure Gauge
DA30	Differential Pressure Gauge
DE03	Differential Pressure Transmitter
DE13	Differential Pressure Transmitter
DE15	Configurable Differential Pressure Transmitter for Industrial Gases
DE16	Differential Pressure Transmitter
DE23	Differential Pressure Transmitter
DE25	Digital Differential Pressure Transmitter
DE28	Differential Pressure Transmitter
DE38	Digital Differential Pressure Transmitter / Switch
DE38	Digital Differential Pressure Transmitter / Switch with 4-Digit Colour Change LCD
DE39	Digital Differential Pressure Transmitter with Internal Pressure Sensors
DE39	Digital Differential Pressure Transmitter with 4-Digit Colour Change LCD
DE40	Differential Pressure Transmitter
DE43	Digital 2-Channel Transmitter - Direct Access to Bus-Compatible Automatic Device
DE44	Digital 2-Channel Differential Pressure Switch / Transmitter
DE44	Digital 2-Channel Differential Pressure Switch / Transmitter with 4-Digit Colour Change LCD
DE45	Digital Differential Pressure Switch / Transmitter
DE45	Digital Differential Pressure Switch / Transmitter with 4-Digit Colour Change LCD
DE46	Digital Differential Pressure Switch / Transmitter
DE46	Digital Differential Pressure Switch / Transmitter with 4-Digit Colour Change LCD

Differential Pressure

DE49_0	Digital Differential Pressure Transmitter for Explosion-Hazard Areas
DE49_A	Digital Differential Pressure Transmitter with External Sensor for Explosive Areas
DE50	Differential Pressure Transmitter
DE58	Digital Differential Pressure Transmitter / Switch
DE61	Differential Pressure Transmitter
DE70	Differential Pressure Transmitter
DS11	Differential Pressure Switch
DS13	Differential Pressure Switch
DS21/21D	Differential Pressure Switch
DS31	Differential Pressure Switch
DS35	Differential Pressure Switch
DZ23/24	3 + 4 Spindle Compensating and Shut-Off Valve
DZ93/94	Three-spindle Compensating and Shut-Off Valve
EA14D	Measuring Value Display for Panel Installation with 4-Digit Colour Change LCD
FD39_LCD	Digital Flow Transmitter / Switch with Colour-Change LCD
FD39	Digital Flow Transmitter / Switch with Pressure Sensors
KE07	Integrated Resistance Type Remote Sensor

Temperature measurement

Digital thermometer

Expansion type thermometer
also .. with contact devices

Temperature sensors

... with Pt 100 – measuring insert

... mit Thermocouple measuring insert

Flange type, screw type, welding sockets available



Temperature / Humidity

Temperature / humidity / TA / TE / TK / TS / TT / TW for example

TW30-39



TE01



TE41



TS61



Temperature / Humidity

Humidity / Temperature	
KE09	Integrated Capacitive Angle-of-Rotation Transducers KE09
TA	Expansion Thermometer
TE01	Digital Thermometer
TE41	Digital Temperature Transmitter
TE42	Digital Temperature Transmitter
TK	Long-Distance Expansion Thermometer
TS01	Temperature Switch
TS61	Temperature Switch
TT30	Screw-in Thermocouple
TT31	Screw-in Thermocouple
TT32	Screw-in Thermocouple
TT35	Screw-in Thermocouple
TT36	Screw-in Thermocouple
TT40	Weld-in Thermocouple
TT45	Weld-in Thermocouple
TT46	Weld-in Thermocouple
TT50	Flange Thermocouple
TT55	Flange Thermocouple
TT56	Flange Thermocouple
TW27	Immersion Resistance Thermometer
TW30	Screw-in Resistance Thermometer
TW31	Screw-in Resistance Thermometer
TW32	Screw-in Resistance Thermometer
TW35	Screw-in Resistance Thermometer
TW36	Screw-in Resistance Thermometer
TW40	Weld-in Resistance Thermometer
TW45	Weld-in Resistance Thermometer
TW46	Weld-in Resistance Thermometer
TW50	Flange Resistance Thermometer
TW55	Flange Resistance Thermometer
TW56	Flange Resistance Thermometer
TW68	Compact Resistance Thermometer
TW70-TW73	Resistance Thermometer
TW85	Resistance Thermometer for Assignment in Explosion-hazardous Areas
TW89	Resistance Thermometer for Assignment in Explosion-hazardous Areas

Temperature



TT3x/ TW3x
Screw in type



TT4x / TW4x
Weld in type



TT5x / TW5x
Flanged type



TW68
Miniature type



TW8x
Weld in type ATEX
approved

Temperature Sensors



Digital Temperature Transmitter TE41

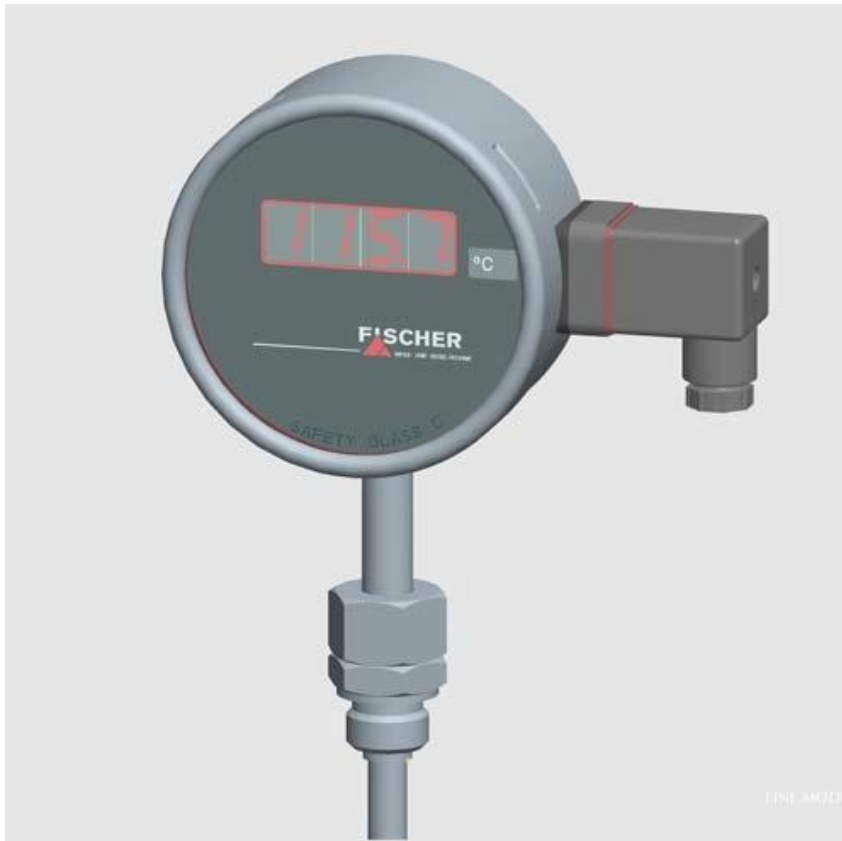
- 2-wire 4-20 mA output
- Compatible with thermocouples acc. to EN 60584
- Compatible with Pt-100 RTD sensors acc. to EN 60751 (IEC 751, DIN 43760)
- Unaffected by EMI
- Conform to EMC norms
- High accuracy
- Very low temperature coefficient
- PC programmable
- Sealed against moisture / humidity
- Sensor fault detection



Digital Temperature Transmitter TE42

- 2-wire 4-20 mA output
- Compatible with Pt-100 RTD sensors
- Acc. to EN 60751 (IEC 751, DIN 43760)
- Unaffected by EMI
- Conform to EMC norms
- High accuracy
- Very low temperature coefficient
- PC programmable
- Sealed against moisture / humidity
- Sensor fault detection

Temperature Sensors



Digital Temperature Gauge TE01

3-wire Pt-100 RTD acc. to EN 60751

0-10 V — 0-20 mA — 4-20 mA output

3 ½ digit LED display

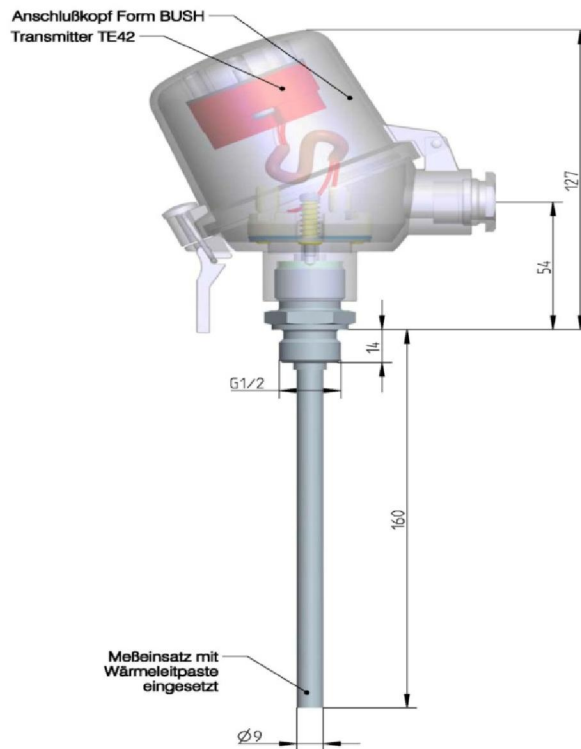
100 mm stainless steelhousing

½“ process connection

±1% accuracy

Temperature Sensors

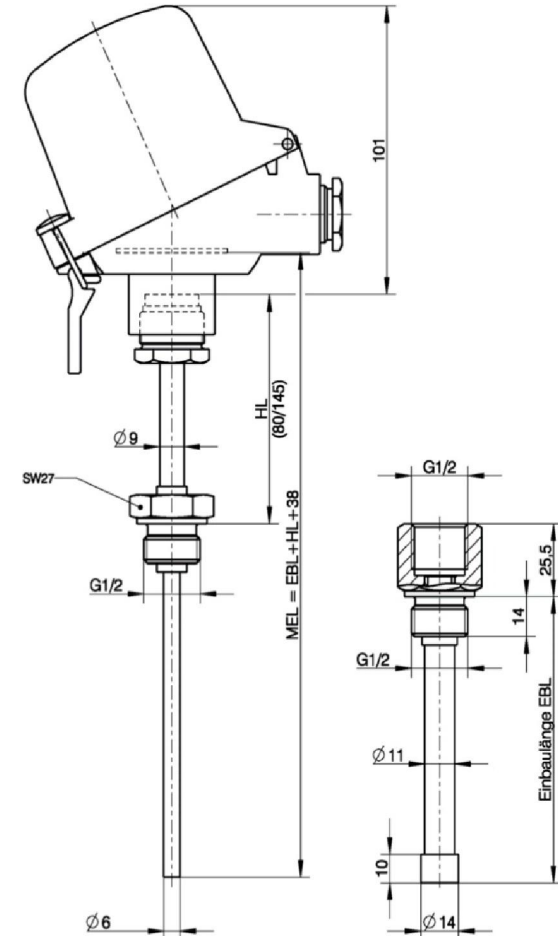
Customer specs.



TW36 — TT39

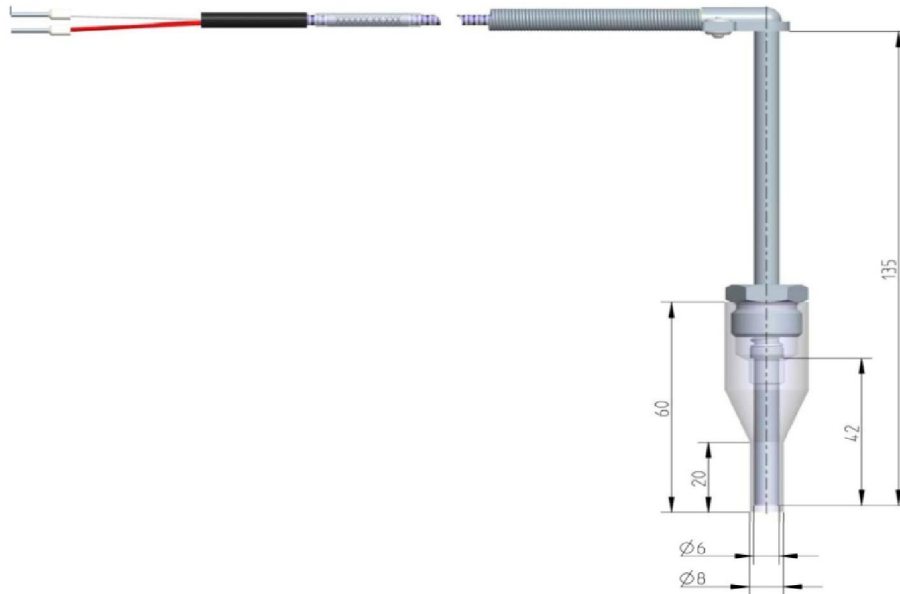
Cumbustion air intake — Exhaust gas outlet

Cogeneration unit motor management



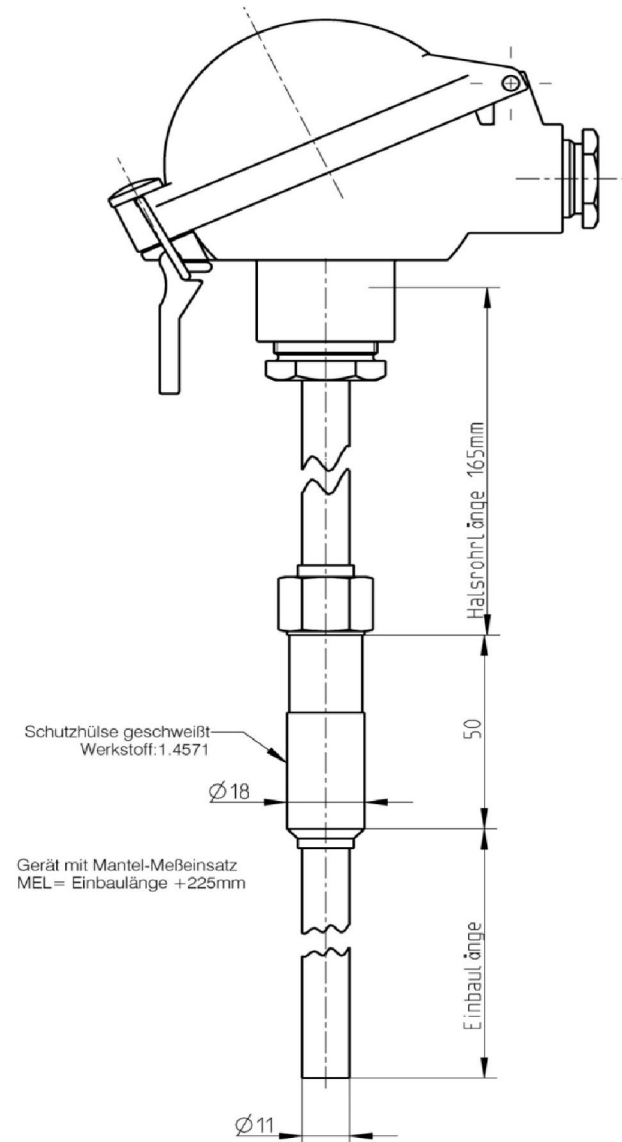
Temperature Sensor

- Customer specific range



TW49 - TW45

RTDs for thermal oil heat generator



Level measurement

Level switches – Level limiter
Probes for deep wells, conductive probes,
capacitive probes, float switches signal
conditioning instruments.



Level

Level / EA / ER / NB / NC / NK / NR / NS for example:

EA01



NK10



NC56



NC57



NK21



NB10



Level

Level	
EA01	Tank Display
EA14F	Level Indicator
ER76	Control Relay for Level Detector
NB10	Well Probe
NC56	Capacitive Filling Level Probe
NC57	Capacitive Level Sensor
NK06	Level Sensing Probe Unit: Conductivity Type - GL structural tested
NK10	Fill Level Limiter
NK21	Conductive Level Control Switch
NR56	Tank Level Encoder
NS01	Level Switch

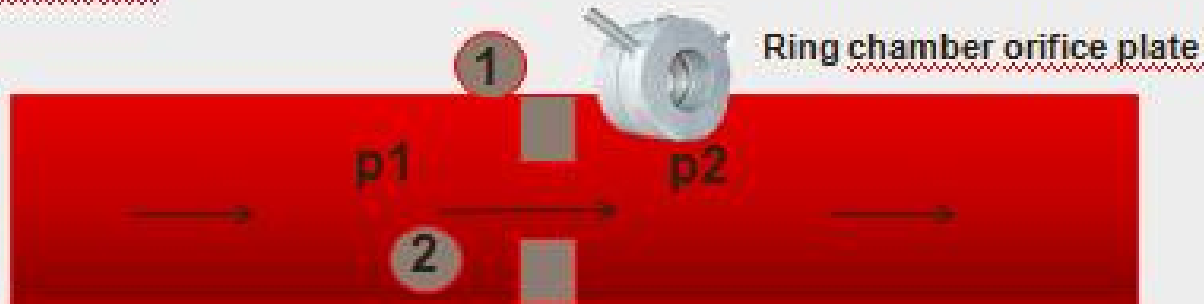
Flow measurements

Flow measurements with differential pressure transmitter and orifice plates and flow monitoring



Flow Measurement – via Differential Pressure

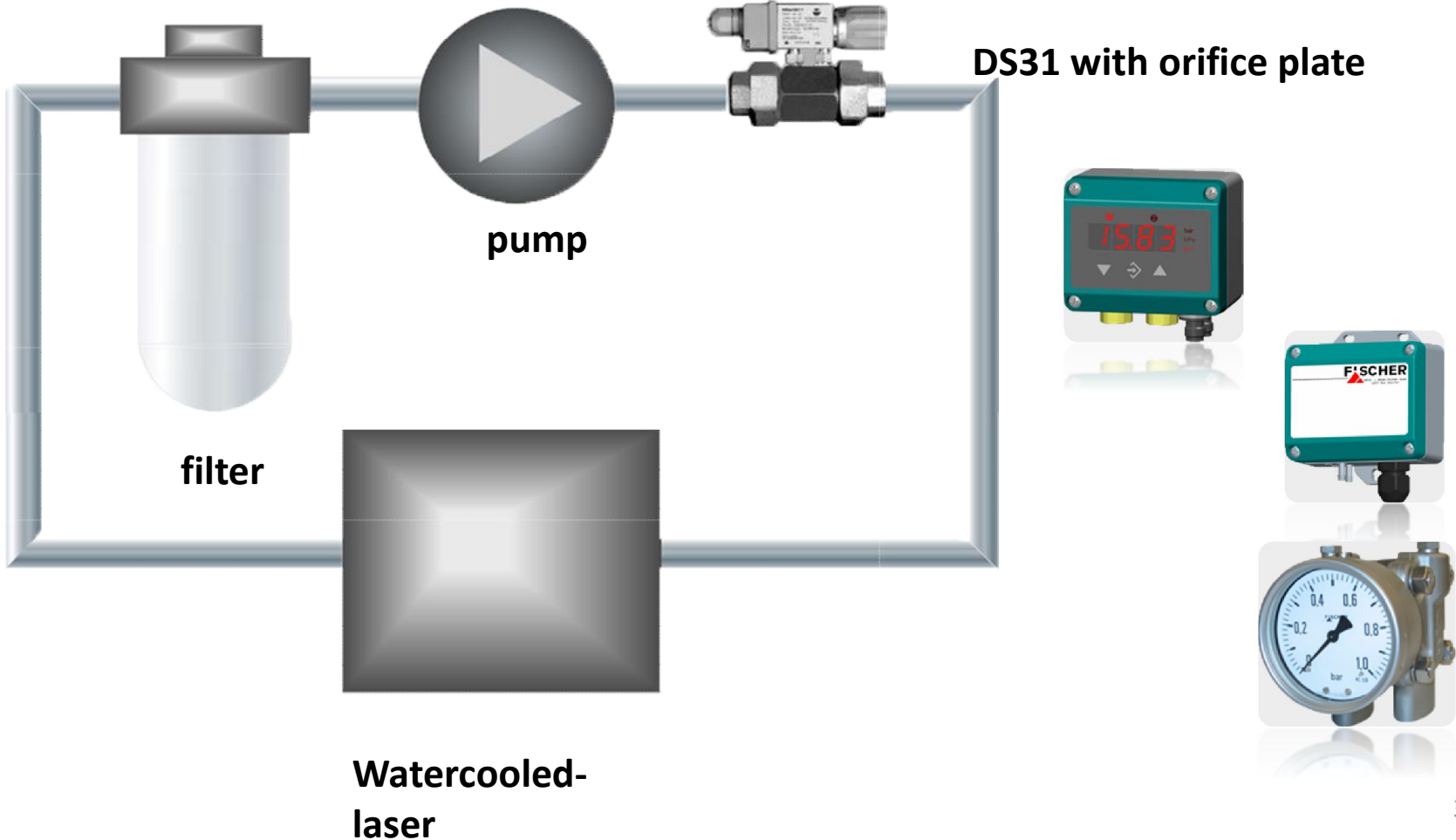
- 1 reduced diam.
- 2 flow speed up



$\Delta p = p_1 - p_2$



Flow Measurement – via Differential Pressure



Oil Flow Monitoring via Differential Pressure



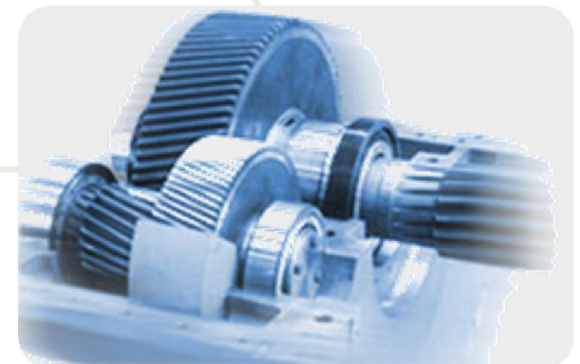
oil supply systems



DE38
indication e.g in
bar, l/min, m3/h



ST-DS11



gear

- Gears for**
- Cement mills**
- Wind crafts**
- Ship engines**
- Container cranes**
- Compressors for industrial use**

.....

Oil Flow – via Differential Pressure

- Application sample for tempering plants (thermal oil)



Flow Measurements

Flow measurements with differential pressure transmitter and orifice plates and flow monitoring



Accessories for pressure and differential pressure devices



ATEX

 Equipment		Gas zone		Dust zone		Type of protection
		1	2	21	22	
Pressure   	MA15	✓	✓	✓	✓	II 2GD c 95°C IP65
	ME49	✓	✓			II 2G EEx ib IIC T6
	ME49T	✓	✓			II 1/ 2G EEx ib IIC T6
Differential pressure      	DA01	✓	✓	✓	✓	II 2GD c 95°C IP65
	DA03	✓	✓	✓	✓	II 2GD c 95°C IP65
	DA10	✓	✓	✓	✓	II 2GD c 95°C IP65
	DS21	✓	✓	✓	✓	II 2G Ex ib c IIC T6 II 2D Ex tb c IIIC T70°C IP65
	DE49..A	✓	✓	✓	✓	II 1/2G Ex ia IIC T4 II 2D Ex iaD 21 T80°C
	DE49..0	✓	✓	✓	✓	II 1/2G Ex ia IIC T4 II 2D Ex iaD 21 T80°C

ATEX

Level		→ NK10	✓	✓	✓	II 2G Ex ib IIC T6 II 3D c Ex tD A22 IP55 T80°C
Temperature		→ TW85	✓	✓	✓	II 1/2G EEx ia IIC T6 II 1/2D IP65 Tx°C
		→ TW89	✓	✓	✓	II 2G EEx ia IIC T6 II 2D IP65 Tx°C

Signal Conditioning



Signal Conditioning

Signal conditioning DPM / EA / EN / EU for example

EA14D



EA14M



EA14F



EA10



Signal Conditioning

Signal Conditioning	
DPM	Digital Display
EA10	Electronic Display
EA11	Electronic Display
EA14D	Differential Pressure Indicator
EA14D_LCD	Differential Pressure Indicator
EA14F	Level Indicator
EA14M	Pressure Indicator
EN10	Power Supply Unit
EU41	Digital Temperature Transmitter

Branches

Branches



Building automation



Automotive



Energy



Power plants



Ship building industry



Clean room



Plant construction

Application examples

Building automation

Energy optimization of air handling systems



Target: Saving energy costs and reduction of emission of CO₂

The maintenance costs of a building consist of 41% of cost for the use of primary energy

Of which 85% is used for heating and cooling.

Approx. 60% of the total Energy costs arise in so-called "nonresidential" buildings.

920 TWh (terawatt hours) in Germany only

Our strength:

- Venting
- Cooling
- Heating
- Warm water

In flowing gases (e.g. air) it's just like with liquids:

Does the piping system creates resistances (e.g. caused by blocked filter, edges, pipe reductions e.tc.), the pump or the fan have to press stronger to carry the same amount of volume.

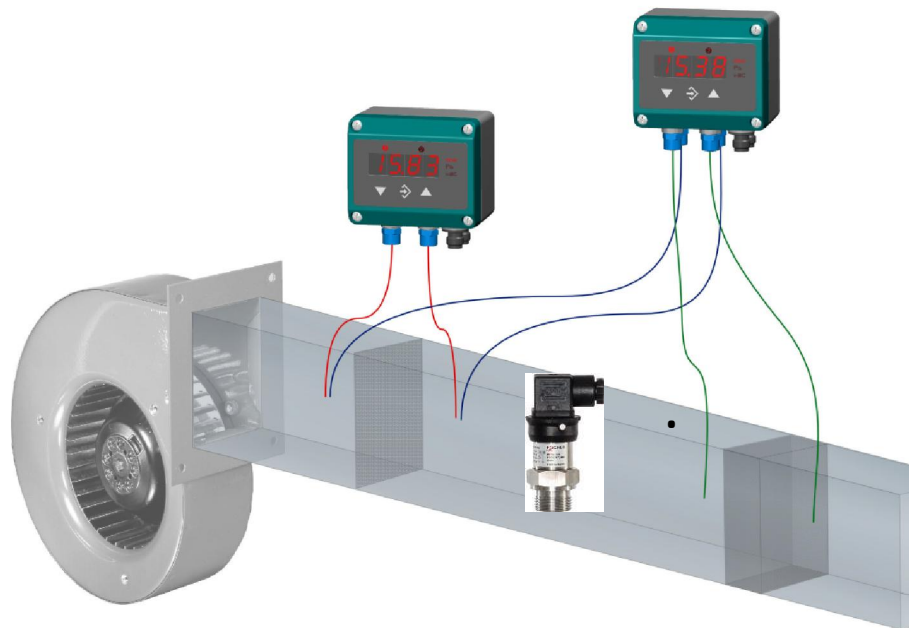
Therefore the fan consumes more power, when the filter or the ventilation grilles of the system are dirty or even blocked.

A simple filter monitoring hardly sufficient to achieve energy savings.

Many older ventilation systems do not have a frequency controlled fan regulation and thus can not be regulated energy efficient.

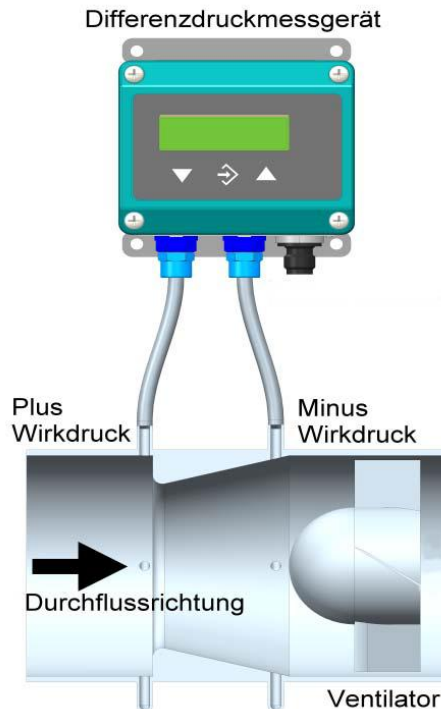
The majority of existing industrial ventilation systems are operating under uncontrolled full load.

The standard measurement is merely a filter monitoring or just a control loop to keep a constant pressure behind the filter

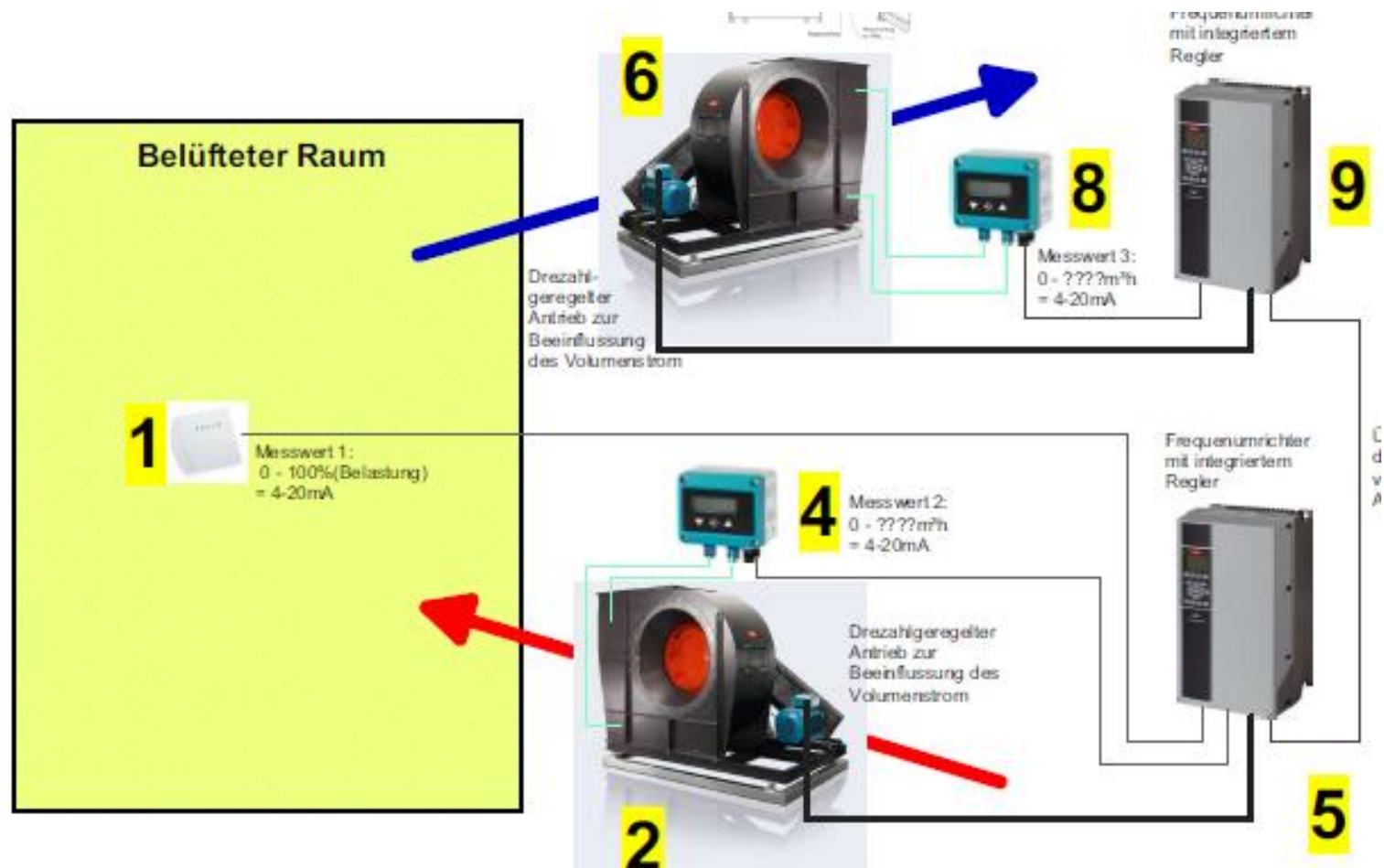


Considering the more and more upcoming general statutory requirements for energy savings it makes sense to implement instead of the unregulated operation of the air handling in a building a regulated use on the volume flow.

Only such a measurement makes it possible to consider the overall efficiency of the system.

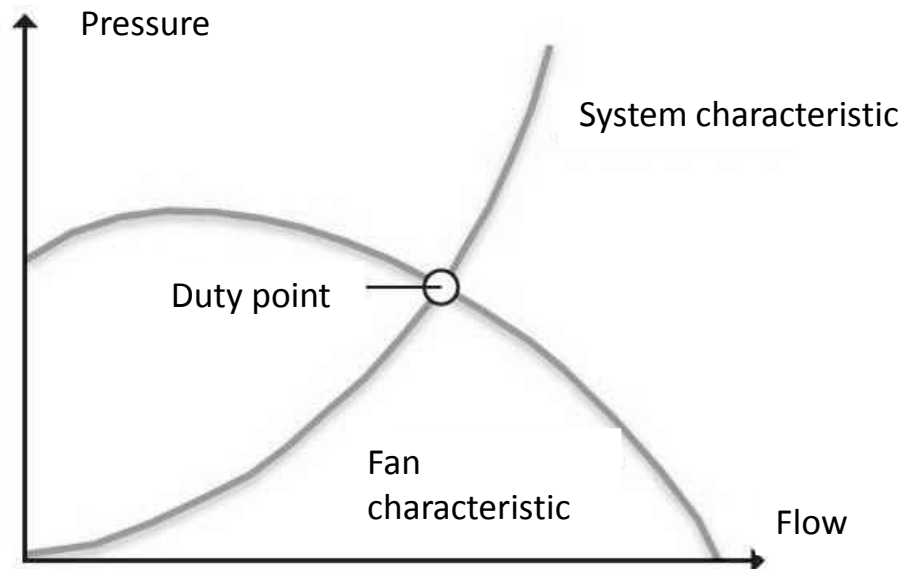


Regulated air flow with rectifier

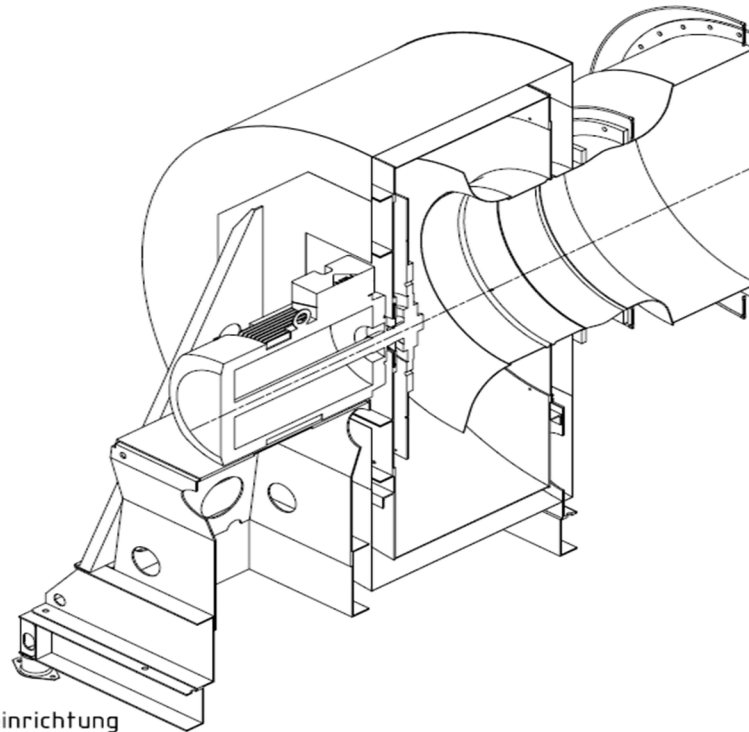


Why is it better to measure the volume flow as the pressure or differential pressure directly above the filter?

At a constant pressure control or a "simple filter controls" it may happen that the pressure in the channel is indeed optimal, but the fan power increases because the filter, the throttle valves or ventilation grills are dirty and thus shift the operating point of a system and thus energy is dissipated unnecessarily .

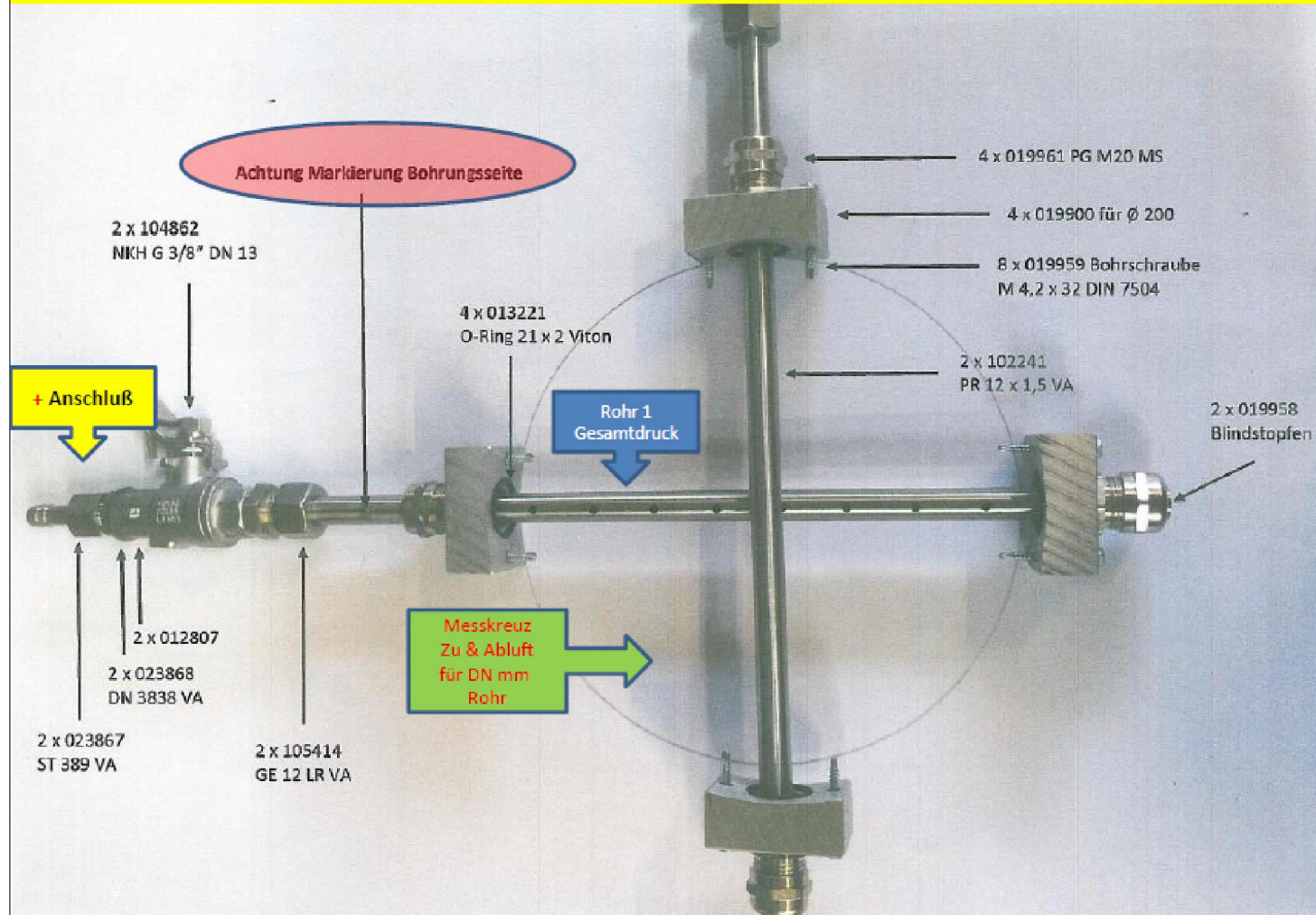


Air flow - Venturi Prinziple

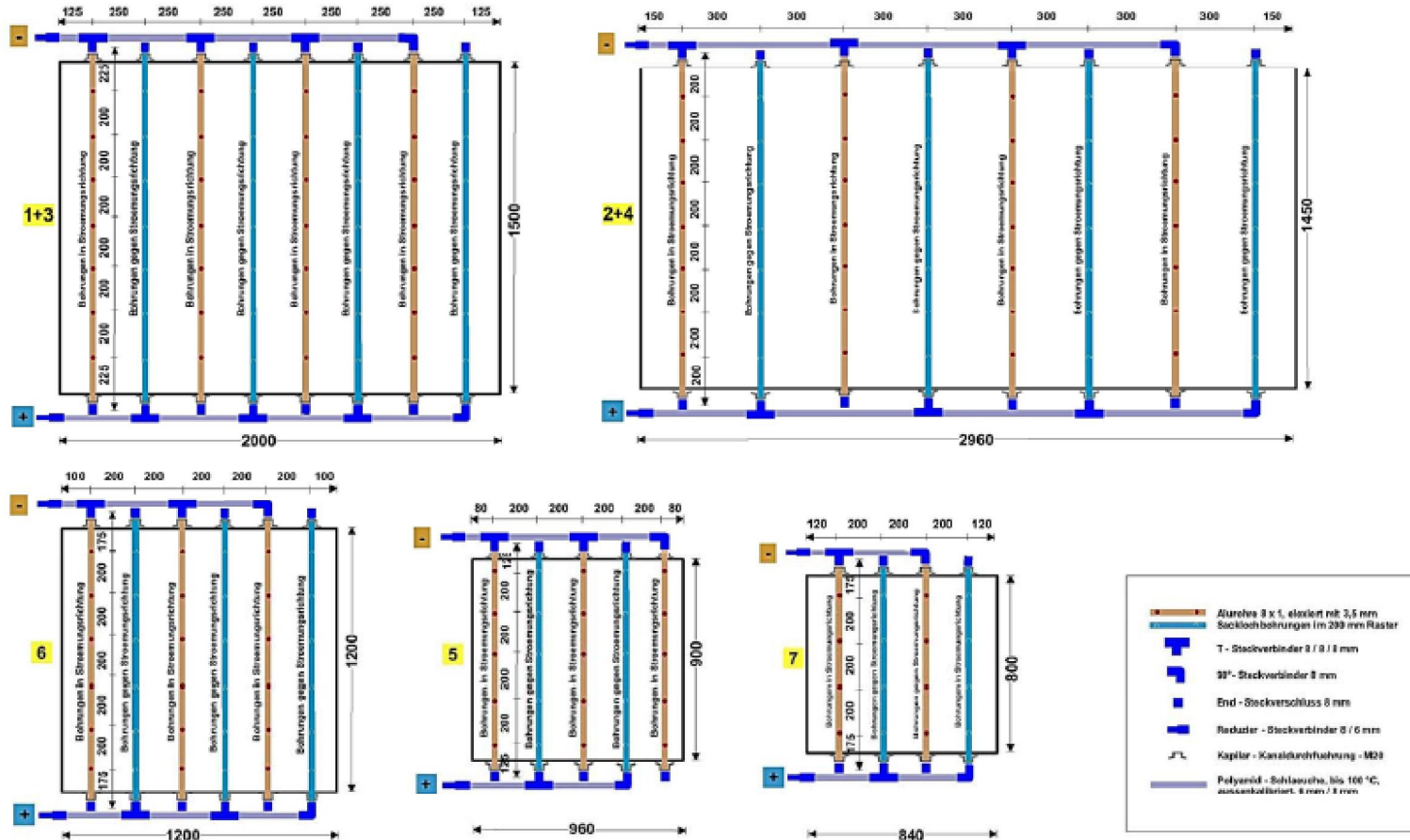


lesseinrichtung
a. 45kg

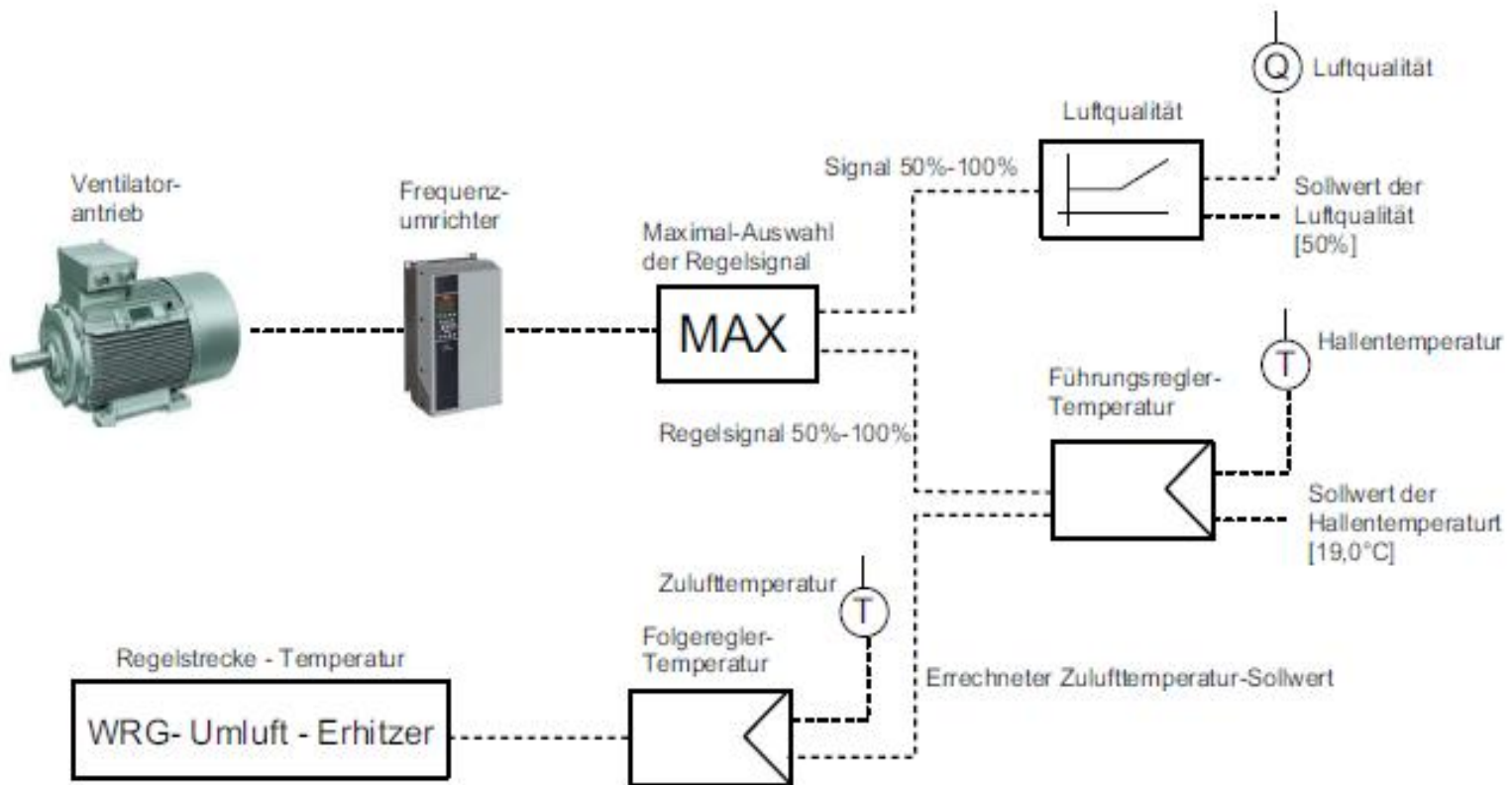
Cross measuring device for air chanals



Measurement grid for air chnals



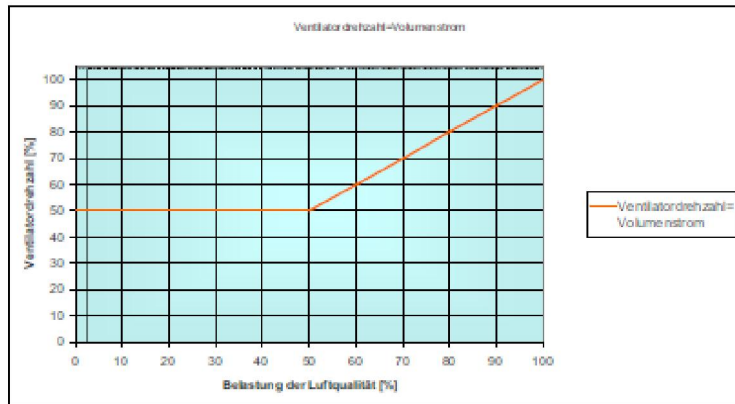
Air handling system with air quality and temperature control



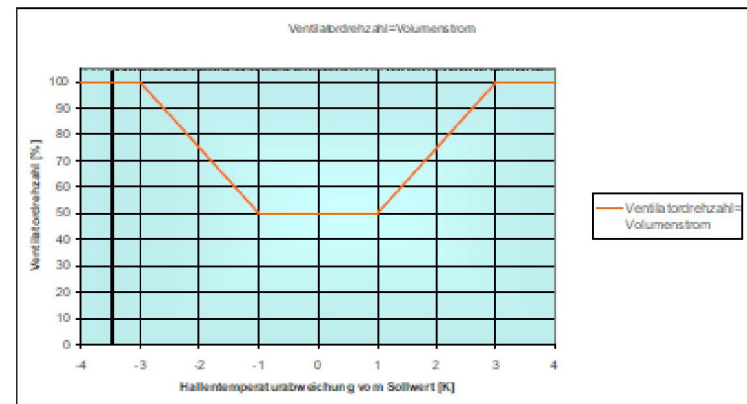
VOC = volatile organic compounds

Fan rpm and throttle control

depending on the air quality



depending on the hall temperature



the two schemes are working constantly and simultaneously. The larger control signal is exploited and passed through the inverter to the ventilation drives

Pay back calculation

- 50% **less** Energy costs
- 40320kg **less** Immission CO² per year

Useful Instruments



DE 45



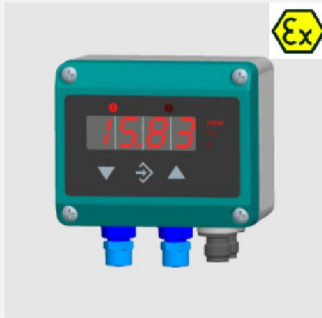
DE 49



DE 44



DE 44



DE 46

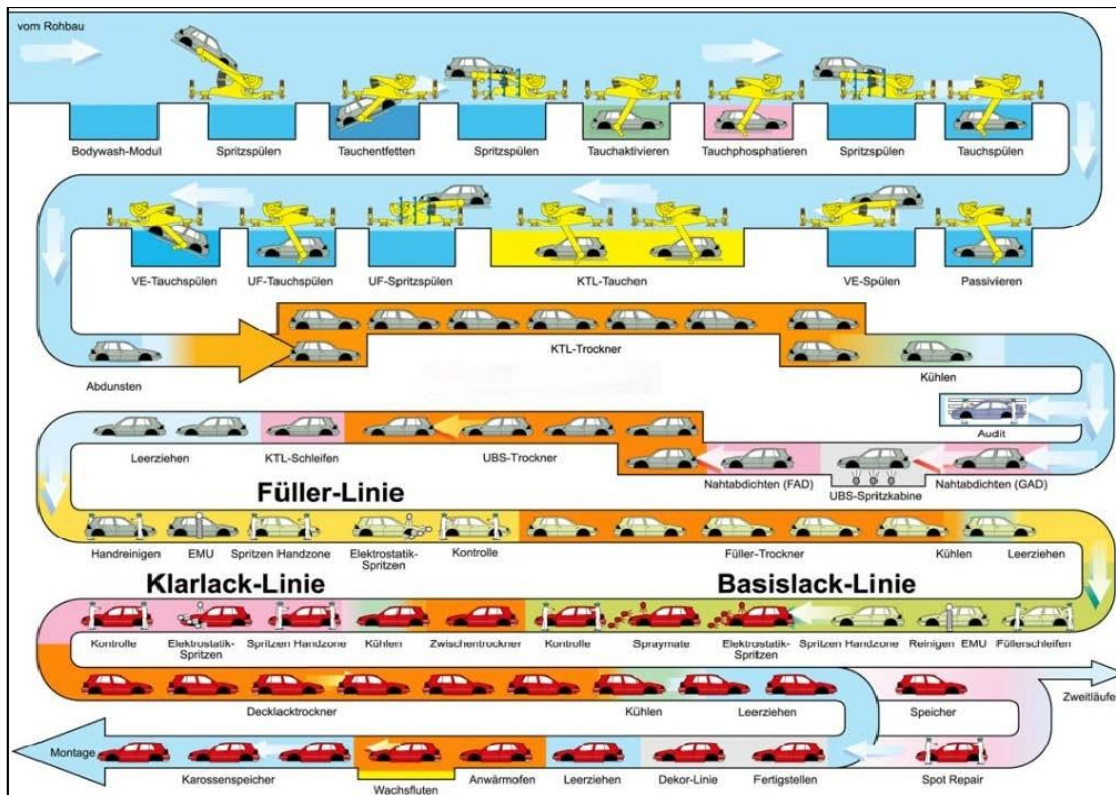


DE 45



DE 46

Painting Plants and Pre-Treatment (Automotive)



DE44

DE45

DE49 (Ex)

ME11

EA14

Additional useful instruments for building automation:



DE40 Maintenance-free differential pressure transmitter for measurement of gauge pressure and partial vacuum of neutral liquids and gases.

Typical applications include use for pump control in recirculation lines of heating systems



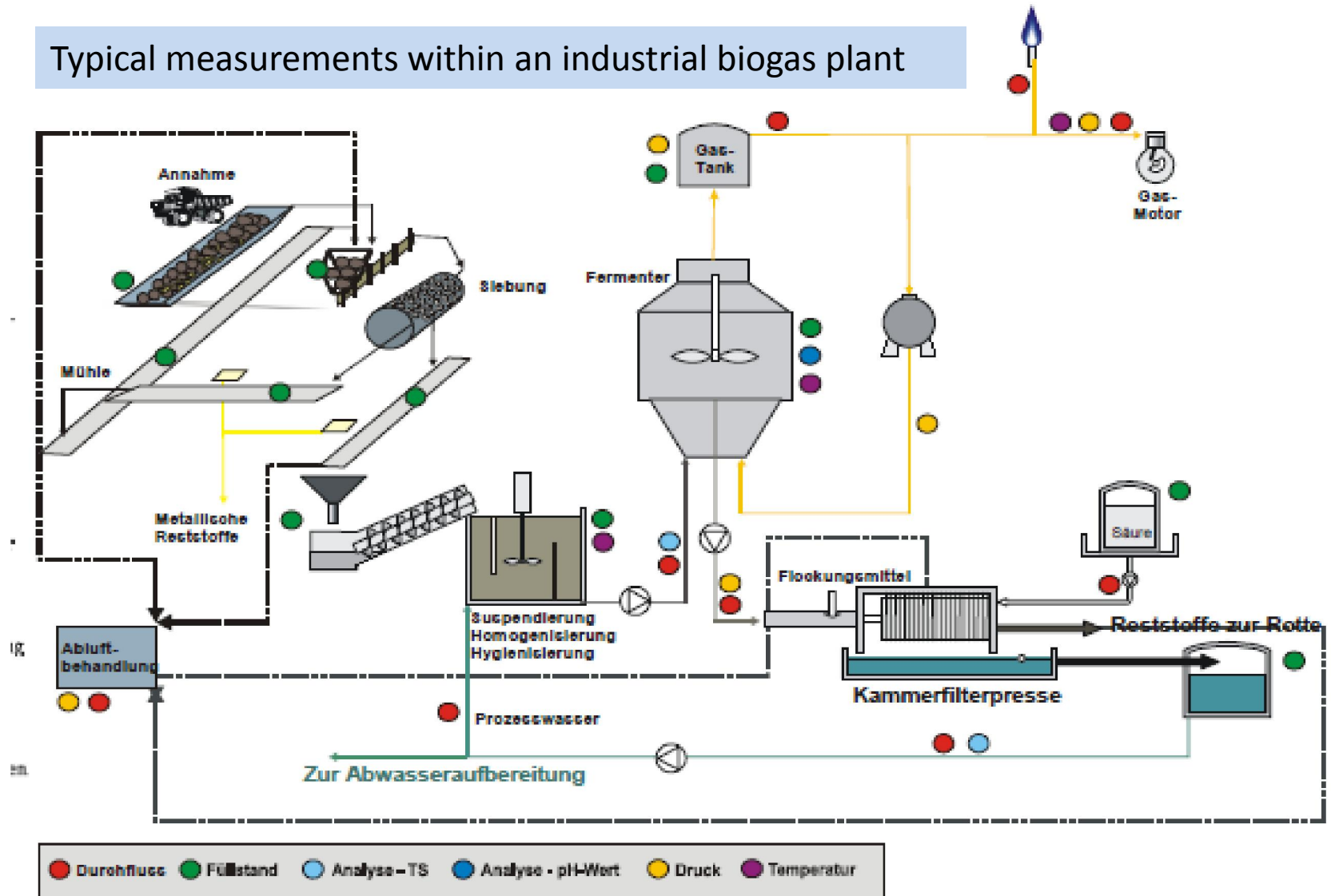
FD38 Digital Flow Transmitter for flow measurements of non-aggressive liquids and gas.

Typical applications include oil and hot water systems in the building automation or in cooling systems for the process industry

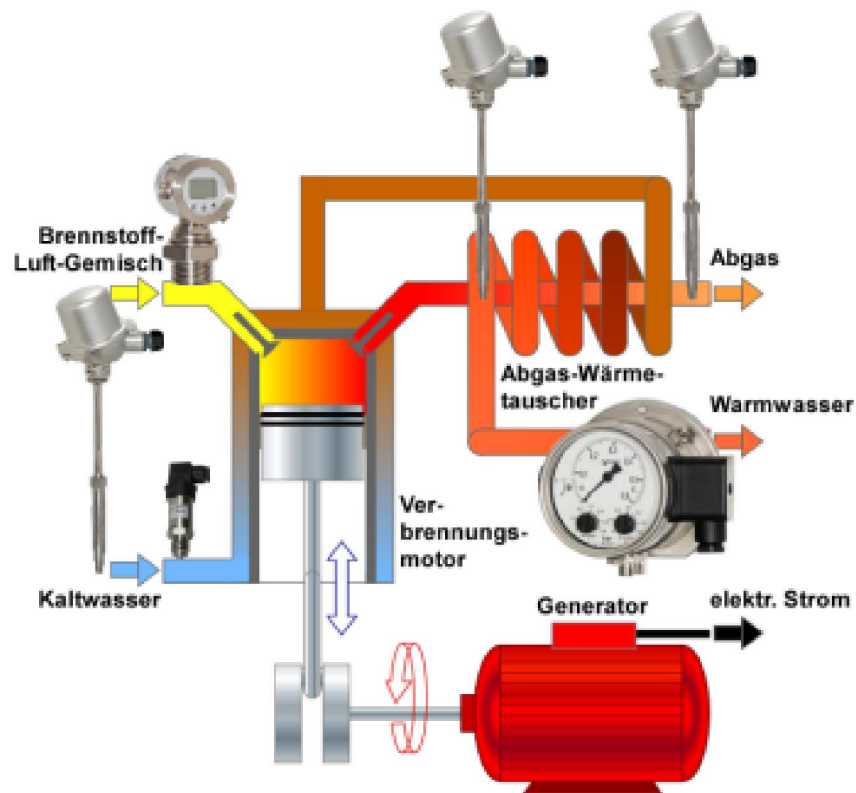
Biogas plant



Typical measurements within an industrial biogas plant



Block heat power plant in biogas plants

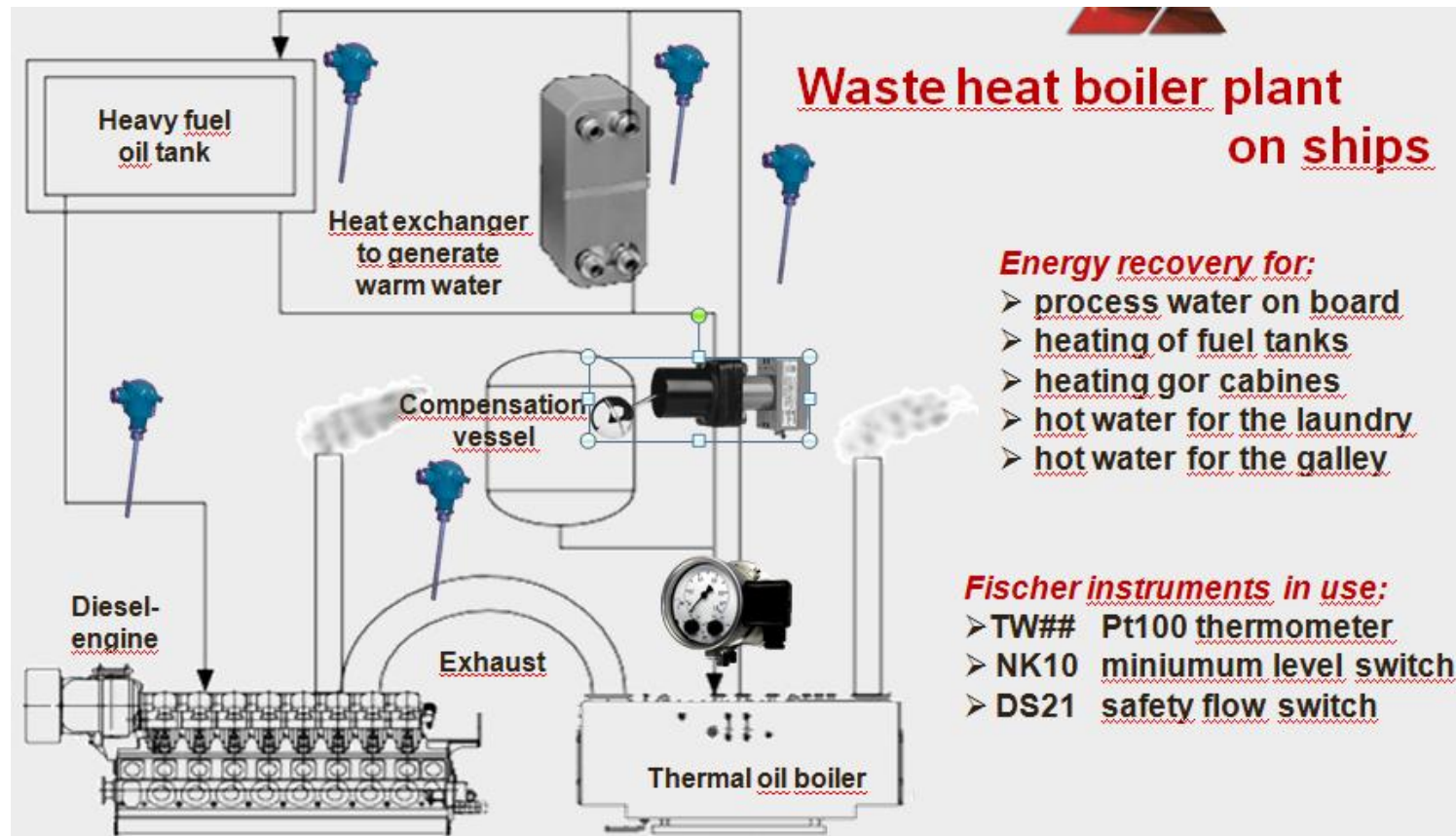


Graphik in Anlehnung an Peter Lehmecher

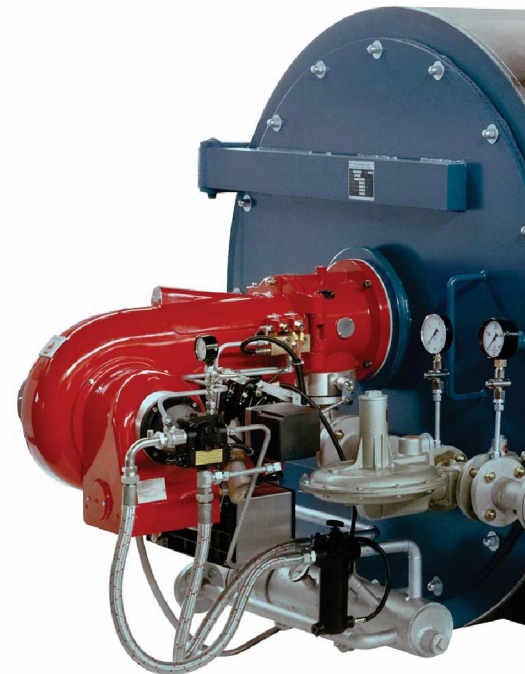
Typical measuring instruments in biogas plants

bio mass container	Temperature	TW30 / TW50
reception pit	Level	DE70 / MDM with flushing rings
digesters	Level	DE70 / MDM with flushing rings
digesters	Temperature	TW30 / TW50
digesters residues	Level	DE70 / MDM with flushing rings
substrate line	Pressure	ME49 / 50
secondary fermentation	Pressure	ME49 / 50
Secondary fermentation	Temperature	TW30 / TW50
foam – Dedection	Level	NC57
block heat power plant	Temperatur	TW30 / TW50
block heat power plant	Pressure	ME50
Thermal - oil	Pressure	DS21
Thermal - oil	Level	NK10

Waste Heat Boiler Plant on Ships



Thermal oil



Thermal oil plants

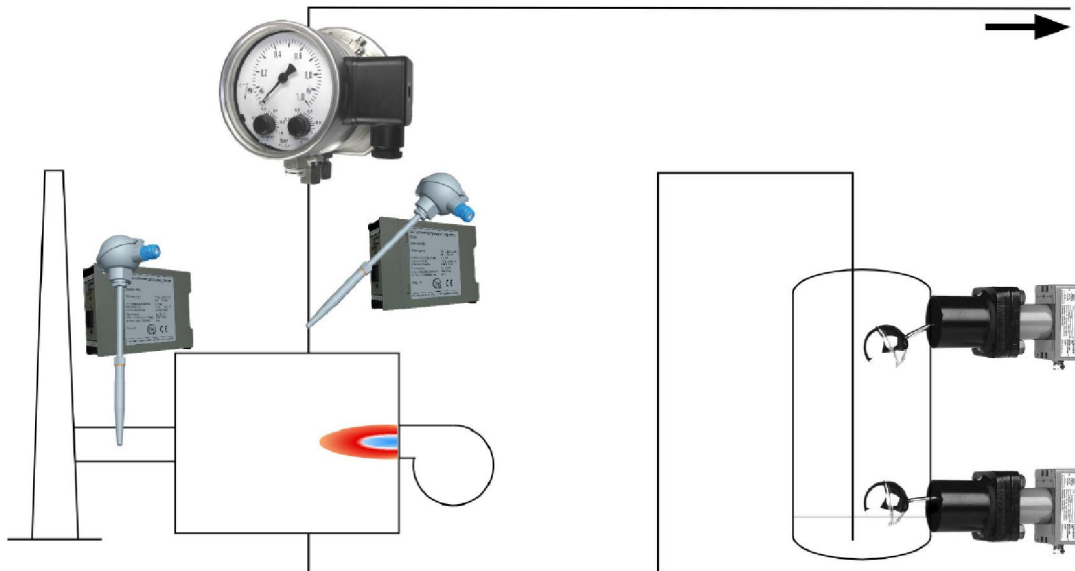
Heat transfer by thermal - oil vs.. water

The advantage of heat transfer with thermal oils:

Heat transfer oil is not generating, even under high temperature, vapor pressure above 1 bar. This means that thermal oil systems, apart from some special systems, is a pressure-free heat transfer system. Temperatures up to about 400°C can be handled

Water is probably the most common heat transfer medium. And it will probably remain so. But its quickly reach the limits of applicability. Especially because with increasing temperature is accompanied by a high increase in vapor pressure.

Useful instruments: DS21, NK10, EU11, TW45



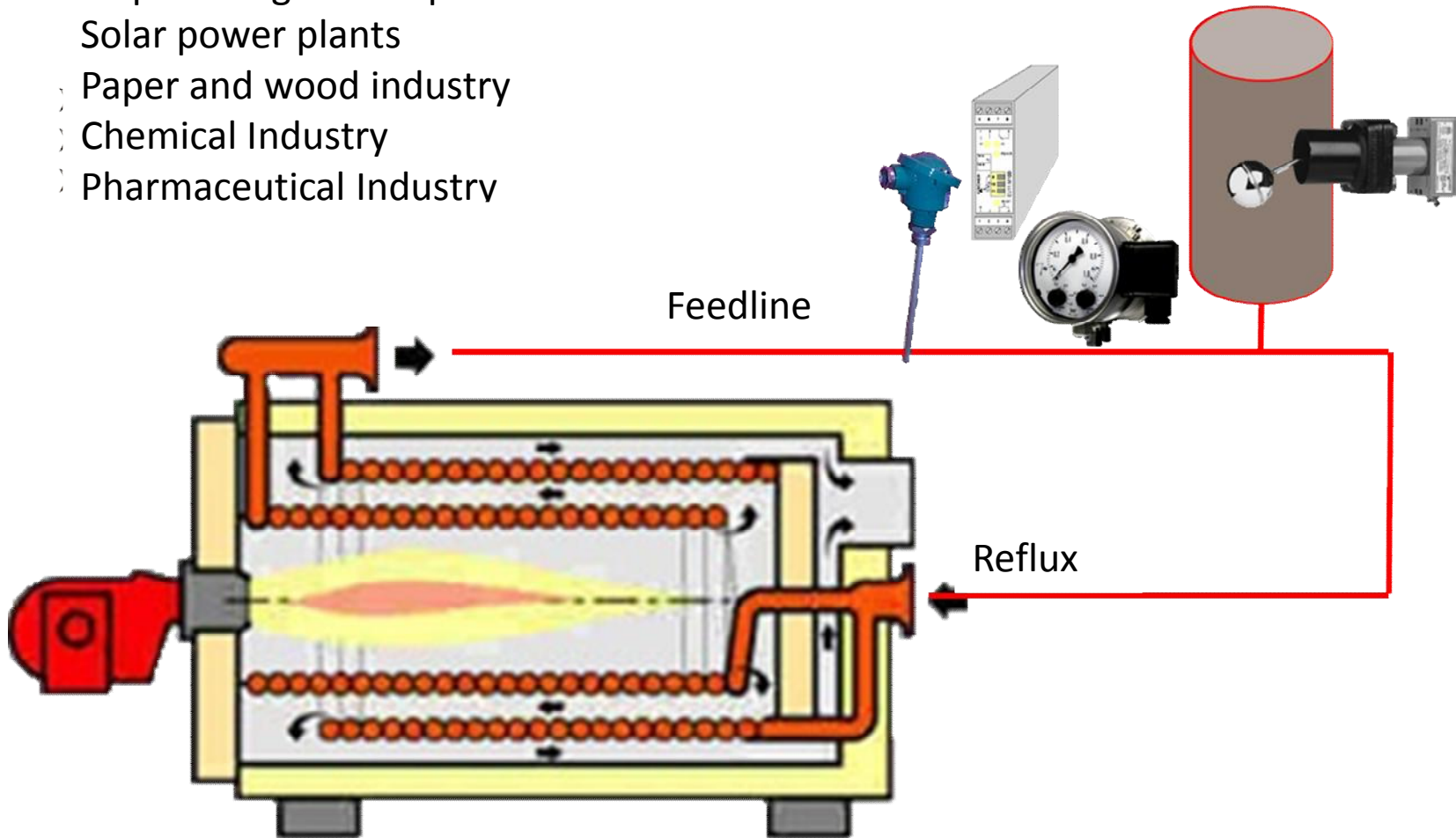
With the flow monitoring device DS21 sufficient media circulation is monitored.

With the safety temperature device EU11 and thermometer TW45 media temperature and exhaust gas temperature is monitored.

With the level switch NK10 the expansion vessel is monitored.

In this branches you will find thermal oil for heating transfer

- Industrial areas
- Shipbuilding and oil platforms
- Solar power plants
- Paper and wood industry
- Chemical Industry
- Pharmaceutical Industry



Aggressive Media



Attention: Aggressive Media!!

Fischer instruments in use:

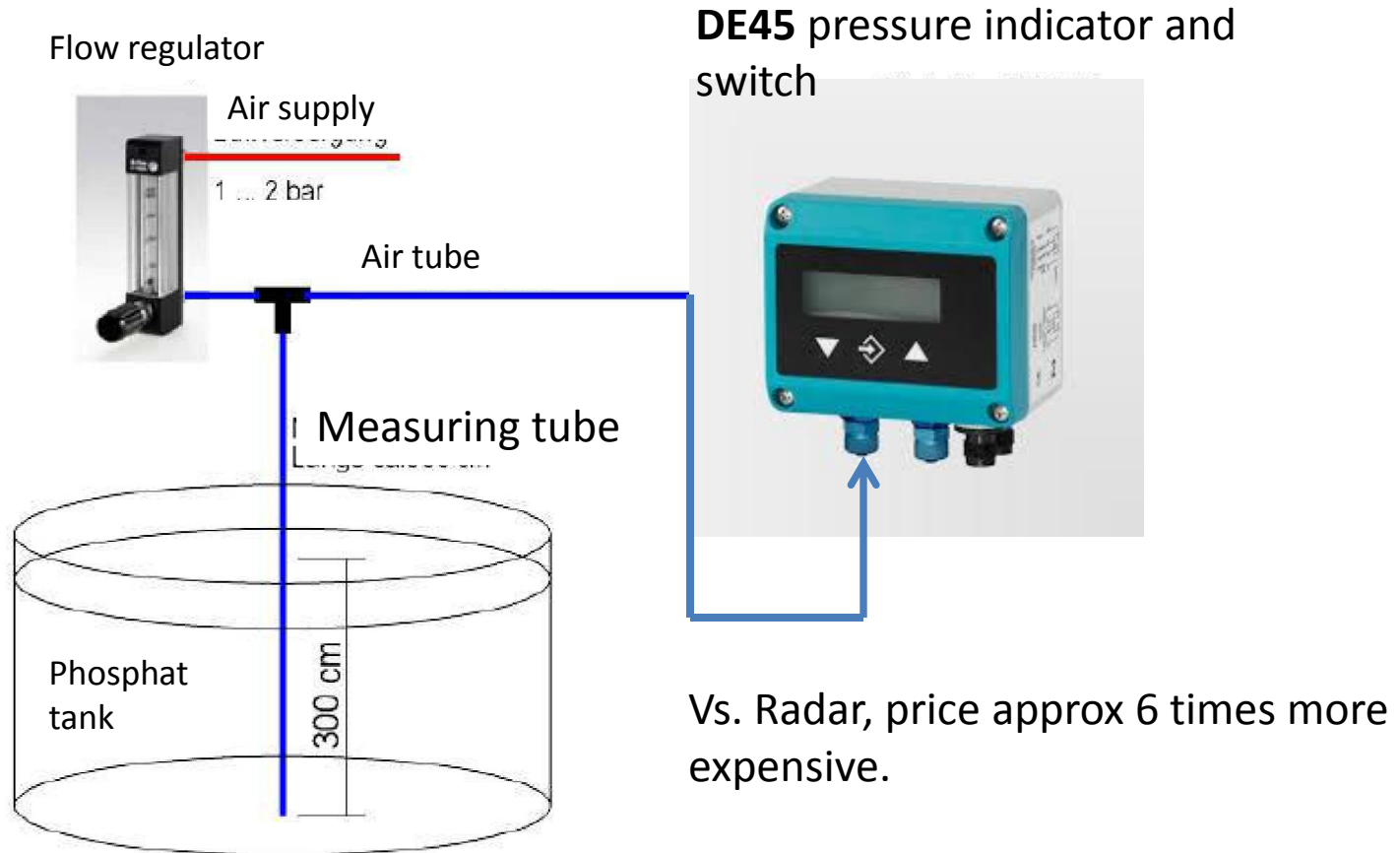
- transmitter manometer ME01/ ME02
- pressure transmitter ME69 / ME67



Field of application

- here: production of printed circuit boards
- water and waste water treatment
- generally suitable for high aggressive media

Air purge system



Cryogenic Gases



In the area of monitoring cryogenic gases in tanks, FISCHER offers a comprehensive program for level and pressure monitoring.

Cryogenic gases include the ventilation gases nitrogen (LIN), oxygen (LOX) and argon (LAR).

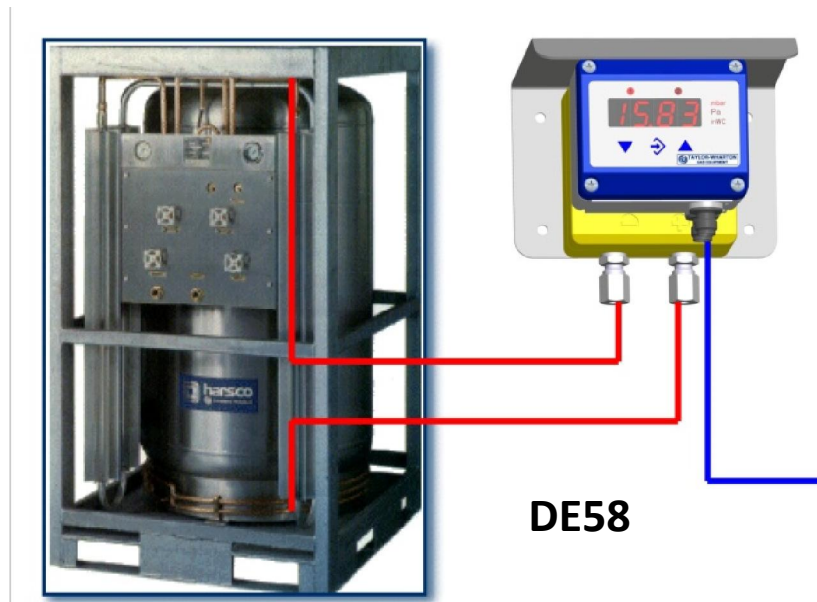


DE15

FISCHER offers, among other things, the mechanical display **DA30**, the electronic pressure and differential pressure transmitters **DE15** and for so-called Minibulks (small tanks) the differential pressure switch / transmitter **DE58**.



DA30



DE58

Measurement technology for tank vehicles

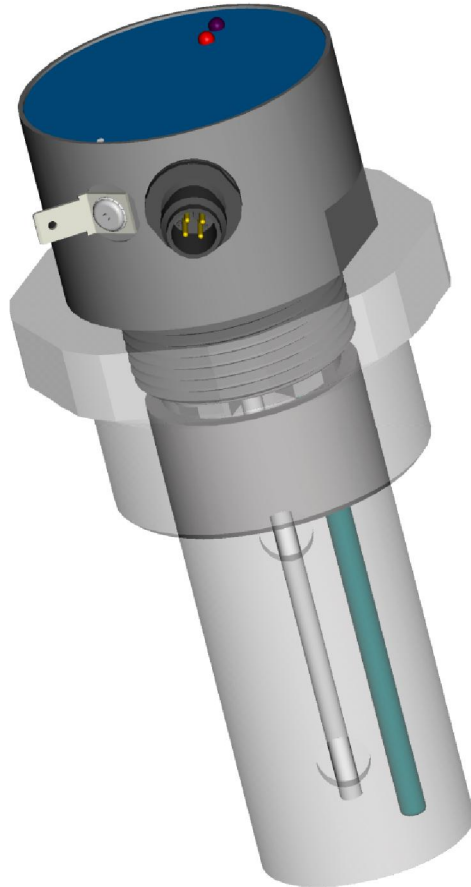


NC56 capacitive level sensor for plastic and metal tanks suitable.

Good media resistance due to ECTFE coating

Easy setup via infrared interface

Typical areas of application: fire water tanks and foam tanks





NR56 and **EA01** level sensor with reed contacts and fuel gauge for plastic and metal tanks suitable.

Easy setup via infrared interface

Typical applications: Electronic dip stick for truck with diesel tank and fuel oil tanks.



NC57 and **EA14F** capacitive level sensor and fuel gauge with suitable pump control and alarm suitable for plastic and metal tanks.

Easy setup via infrared interface

Typical areas of application: Chemicals tank trucks, food tank trucks



Pump, Filter, and lubricating monitoring



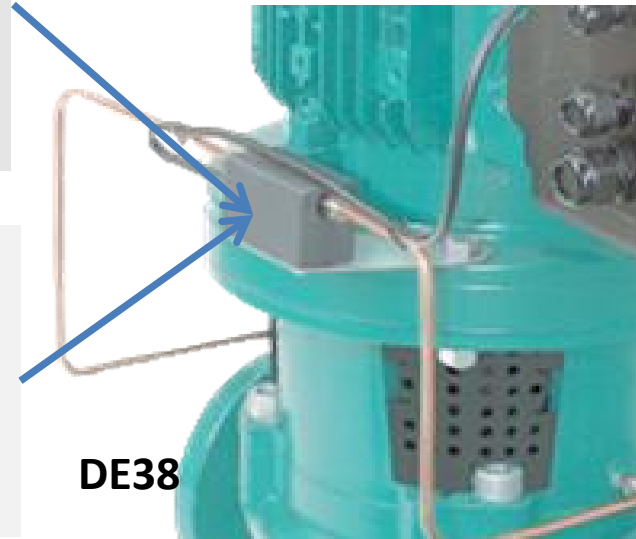
Pump monitoring



DE28



DE38



Typical areas of application:

Booster stations; Pressure maintenance systems, heating systems;
Water supply; Wastewater management.

Filter monitoring



DA03



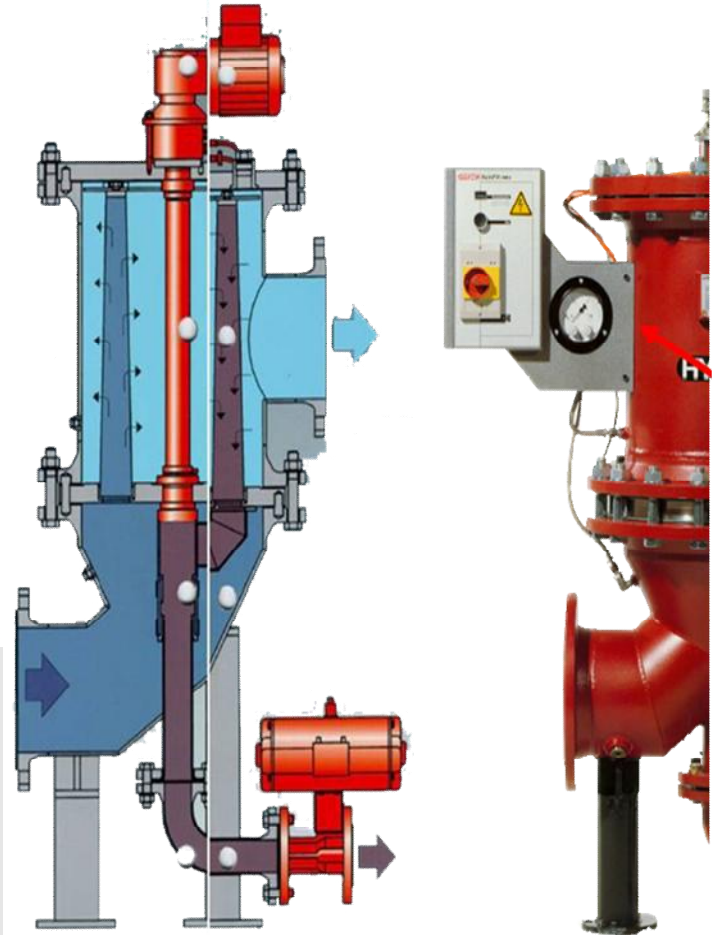
DS31



DE45



DS11



Oil circulation monitoring of industrial compressors



DS11/ DE16



DE38
Indication
e.g in
bar, l/min,
m3/h



DS11 with
orifice plate



Gears for

- cement mills
- wind crafts
- ship engines
- container cranes
- compressors for industrial use
-

Clean room



Complete panels according to customer's requirement



Panel mounting



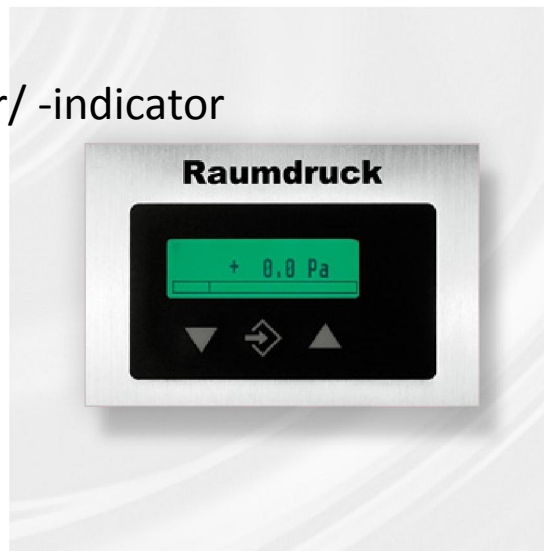
Wall or standalone mounting



DE46 room pressure transmitter / - indicator with directly mounted shut off valve **DZ67**

FT61 –
Humidity-, Temperature measurement device

DE24 –
Room pressure transmitter/ -indicator



EA14A –
Indicator for general purpose



TW68 –
Compact resistance thermometer with mit
miniature head transmitter





LE06 –
locks symbolism



LE07 –
LED indicator lights



RT03 Room pressure sensor with wall duct



RT02 Calibration valve for wall panels

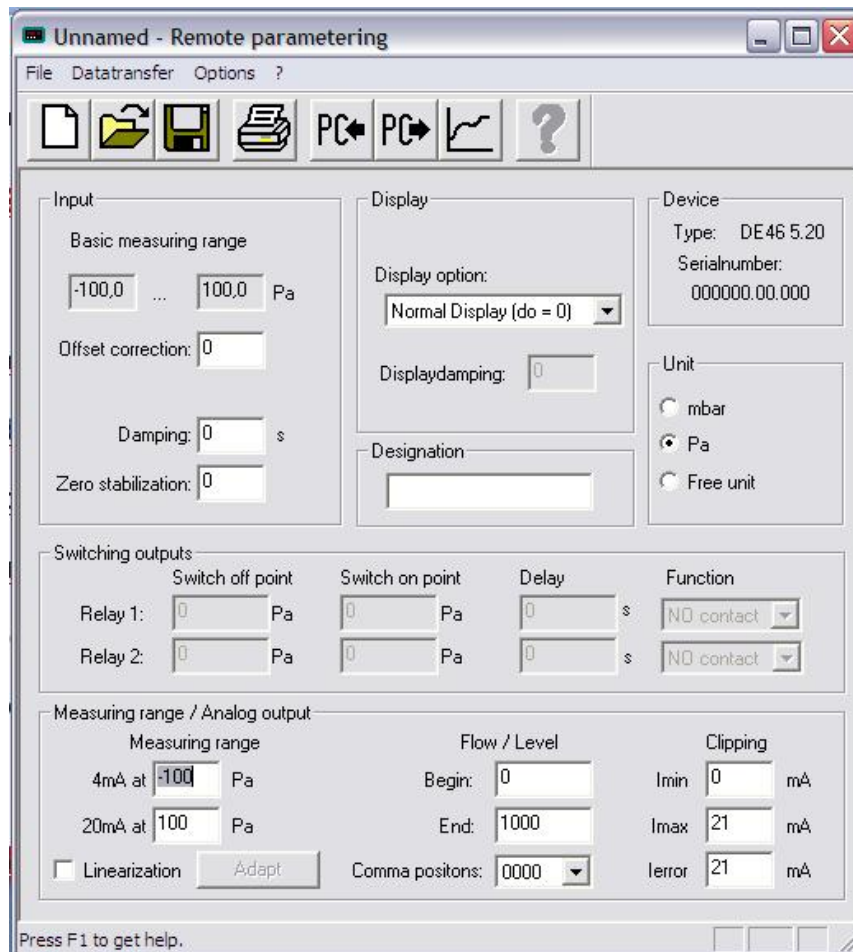


RT04 Reference pressure distribution



RT 010065
Room pressure sensor with hepa filter

Parameterization of Devices



... And many application more

Many thanks for your attantion!