



Pressure | Temperature | Level

Industrial steam and hot-water boiler systems



Smart in sensing



About us

As a family-run business acting globally, with 10,200 highly qualified employees, the WIKA group of companies is a worldwide leader in pressure and temperature measurement.

The company also sets the standard in the measurement of level, force and flow, and in calibration technology.

Founded in 1946, WIKA is today a strong and reliable partner for all the requirements of industrial measurement technology, thanks to a broad portfolio of high-precision instruments and comprehensive services.

With manufacturing locations around the globe, WIKA ensures flexibility and the highest delivery performance. Every year, over 50 million quality products, both standard and customer-specific solutions, are delivered in batches of 1 to over 10,000 units.

With numerous wholly owned subsidiaries and partners, WIKA competently and reliably supports its customers worldwide. Our experienced engineers and sales experts are your competent and dependable contacts locally.

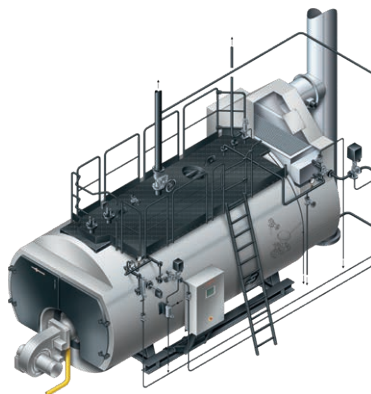
WIKA – Your partner for industrial steam and hot-water boiler systems

Industrial boiler systems are used in the food and automotive industries as well as in hospitals and many other areas.

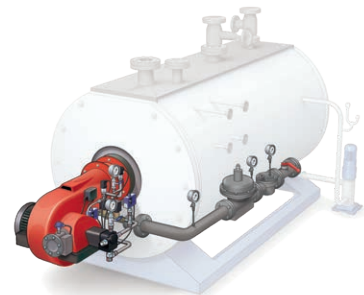
In them, a whole series of modules work hand in hand: for example boilers, economisers, oil pressure control, water treatment and return flow temperature safeguard. The goal is the efficient provision of energy in the form of hot water or steam.

As a manufacturer of industrial steam and hot-water boiler systems, you know how important it is to be able to rely on every single component, one hundred percent. As a supplier of safety-relevant measuring and switching instruments, we understand this responsibility.

That is why WIKA focuses on the reliability and accuracy of the measuring instruments, as well as a high delivery performance. In the following pages, you will find the most important measuring instruments that WIKA offers for the different modules of a boiler system.



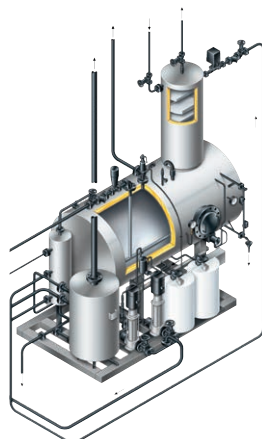
Boiler with economiser



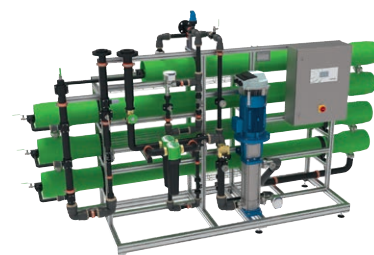
Burner



Pressure booster system



Technical water treatment plant



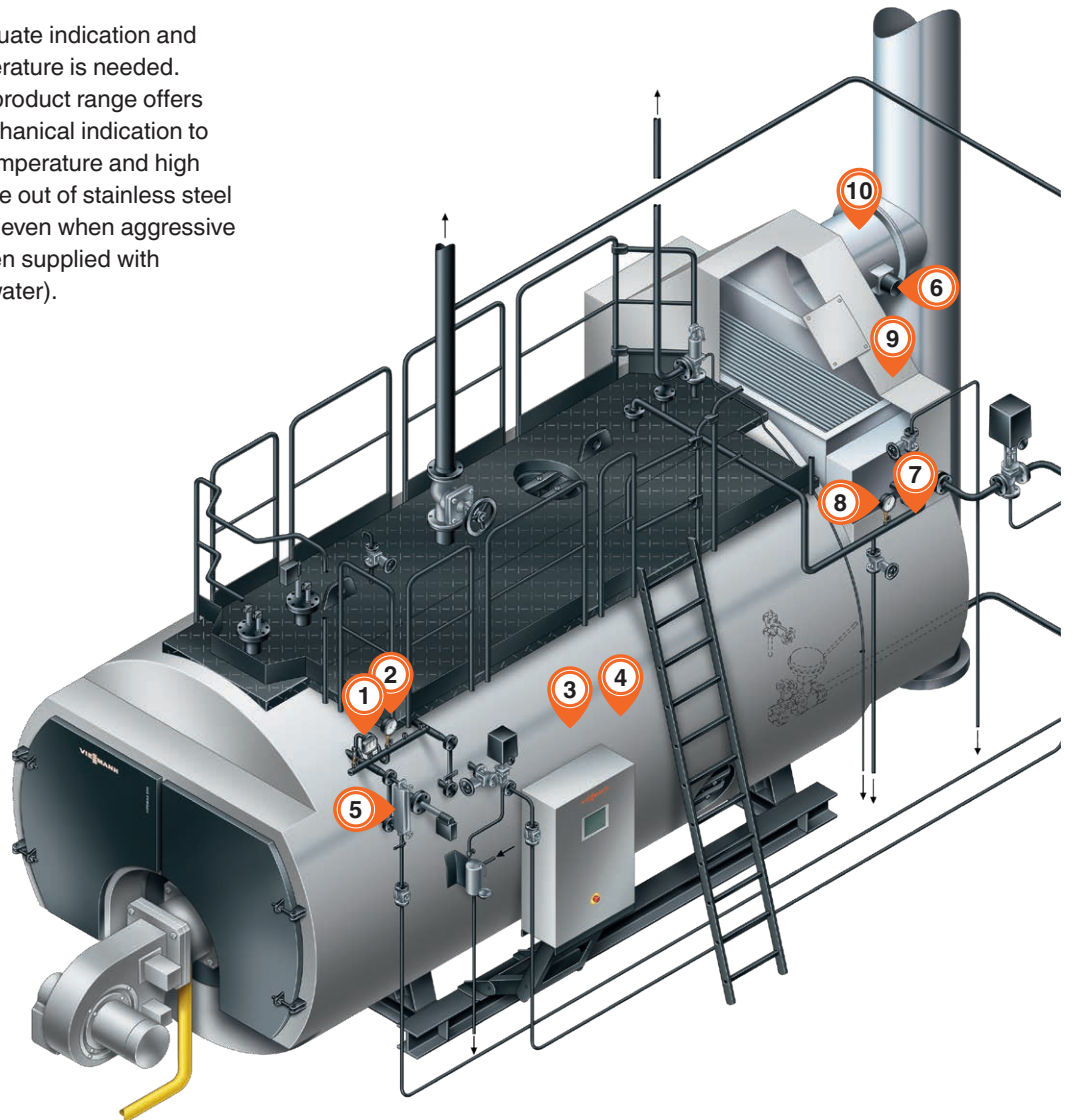
Reverse osmosis system

Steam boiler with economiser

The majority of industrial boiler manufacturers offer additional modules that improve the efficiency, the performance and the service life of an industrial boiler.

For steam boilers, one of these important modules is the economiser. Whether it is mounted and integrated directly on the boiler or if it is assembled independently as a stand-alone module on-site later: The principle of the economiser is that it uses the extracted heat from the flue gas to preheat the feedwater. In this way the economiser improves the boiler efficiency in an ecological and environmental way as in addition, substantial savings can be operated through this module.

For this additional appliance an adequate indication and control of the pressure and the temperature is needed. For the economiser module, WIKA's product range offers all the instruments needed, from mechanical indication to electronic sensing. The WIKA high temperature and high pressure resistance instruments made out of stainless steel can be installed on each economiser even when aggressive media are used (steam boiler are often supplied with chemical and thermally treated feedwater).



Legend – Measuring locations:

- ① Boiler pressure (transducer)
- ② Boiler pressure (display)
- ③ Boiler temperature (limiter)
- ④ Boiler temperature (display)
- ⑤ Water level (display)
- ⑥ Exhaust gas temperature (monitoring)
- ⑦ Return water temperature (monitoring)
- ⑧ Return water temperature (display)
- ⑨ Economiser pressure (display)
- ⑩ Exhaust gas temperature (display)

Pressure

2
9



Bourdon tube pressure gauge
113.53, 100
211.11
212.20
213.53, 23x.50.1x0



Pressure switch
PCS, PXS

1



Pressure sensor
A-10
S-20

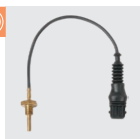
Temperature

6
7



Temperature switch
TCS, TXS

6



Threaded thermometer
TF37

4



Bimetal thermometer
TG54

8

10



Dial thermometer
A52

4

3



Expansion thermometer
SB15, SW15

Level

5



Glass level gauge
LGG-E

Accessories

2



Syphon
910.15



Valves
IV10, IV11, IV20, IV21

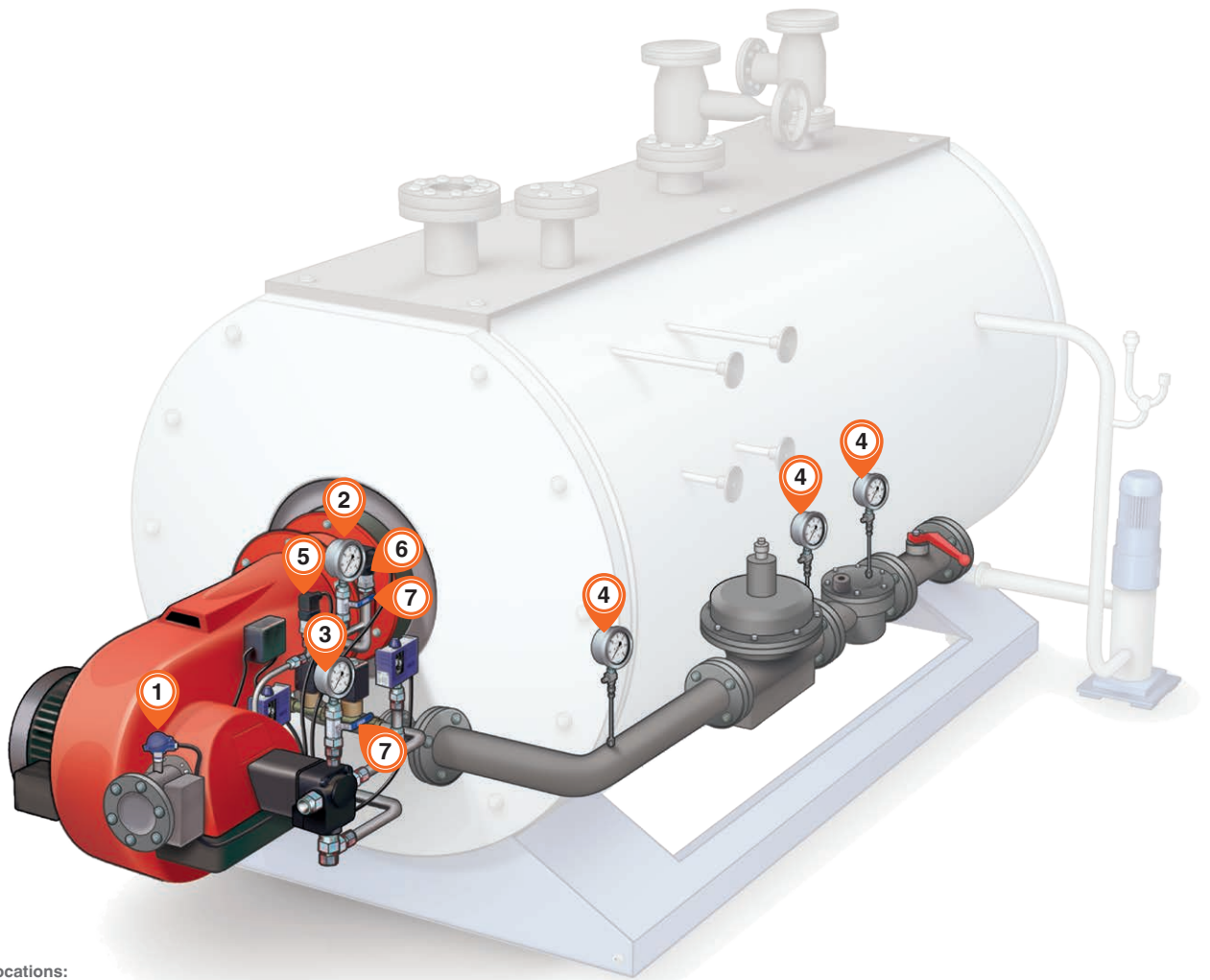
Industrial burner

The choice of a burner is essential while acquiring an industrial steam or a hot-water boiler. The energy source (fuel or gas), the burner power, the end user application and finally the choice of the burner manufacturer will be the determining criteria of the selection of the burner model.

Reliability, energy efficiency, noise emissions and ease of use are further key buying factors that will decide an end user to adopt one specific burner model.

The settings of the combustion system are decisive for economical operation and a long service life of the boiler.

Burner manufacturers need robust and reliable instruments for pressure and temperature measurement. Whether pressure gauges for the oil and gas supply line, pressure sensors for monitoring the oil injection pressure or temperature sensors involved in the pre-heating of air or oil to enable an optimum combustion in the chamber – with its broad product range, WIKA always offers the best solutions.



Legend – Measuring locations:

- | | |
|---|---------------------------------------|
| ① Air preheating, forward flow (transducer) | ④ Gas pressure (display) |
| ② Oil pressure, return flow (display) | ⑤ Oil injection pressure (transducer) |
| ③ Oil pressure, forward flow (display) | ⑥ Oil return pressure (transducer) |
| | ⑦ Shut-off device |

Pressure

2



Bourdon tube pressure gauge

213.53
23x.50

3

4



Capsule pressure gauge

612.20

5



Pressure sensor

A-10

6

Temperature

1



Resistance thermometer

TR10
TR31

1



Threaded thermometer

TF35
TF37
TFT35



Expansion thermometer with switch contact

SB15



Expansion thermometer

IFC

Accessories

7



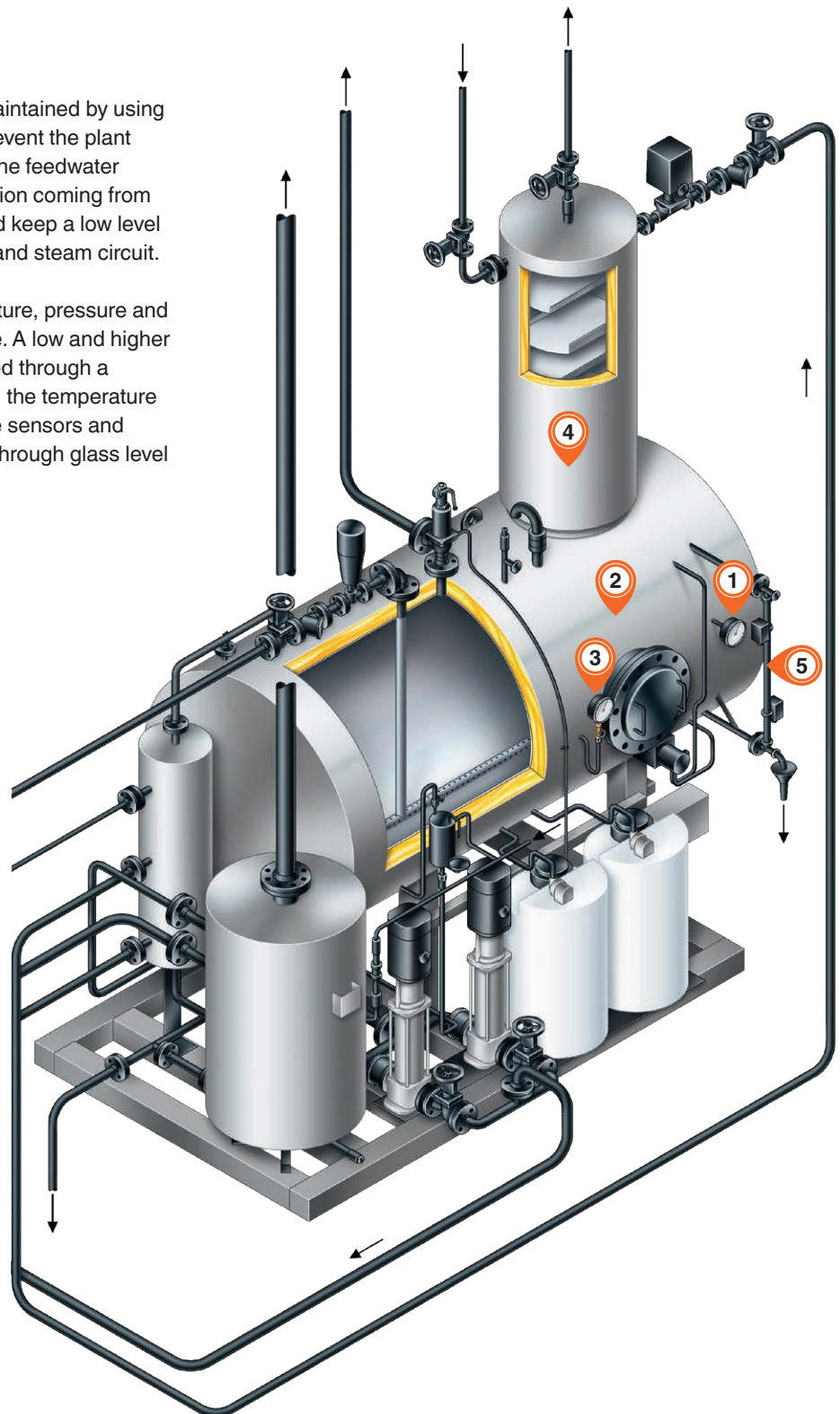
Ball valve

BV

Technical water treatment plant

The correct function of the boiler can be maintained by using a degassing system. The degassing will prevent the plant (especially the pipelines, the economiser, the feedwater vessel and the boiler itself) from any corrosion coming from the feedwater. It will limit the oxidisation and keep a low level of oxygen and carbon dioxide in the water and steam circuit.

For this specific process, different temperature, pressure and level measurements and controls are made. A low and higher pressure will be measured and controlled through a pressure gauge and a pressure transmitter, the temperature level will be monitored through temperature sensors and finally the water tank level will be checked through glass level measurement.



Legend – Measuring locations:

- ① Feedwater temperature (display)
- ② Feedwater temperature (transducer)
- ③ Pressure – Feedwater vessel (display)
- ④ Pressure – Degasser dome (transducer)
- ⑤ Feedwater level (display)

Pressure

3



Bourdon tube pressure gauge
111.1x
213.53
23x.50

4



Pressure gauge with output signal
PGT23

1



Dial thermometer
A52

2



Temperature switch
TSD-30

2



Threaded thermometer
TF35
TF37
TFT35

Level

5



Bypass level indicator
BNA

Accessories

3



Syphon
910.15

Pressure booster system

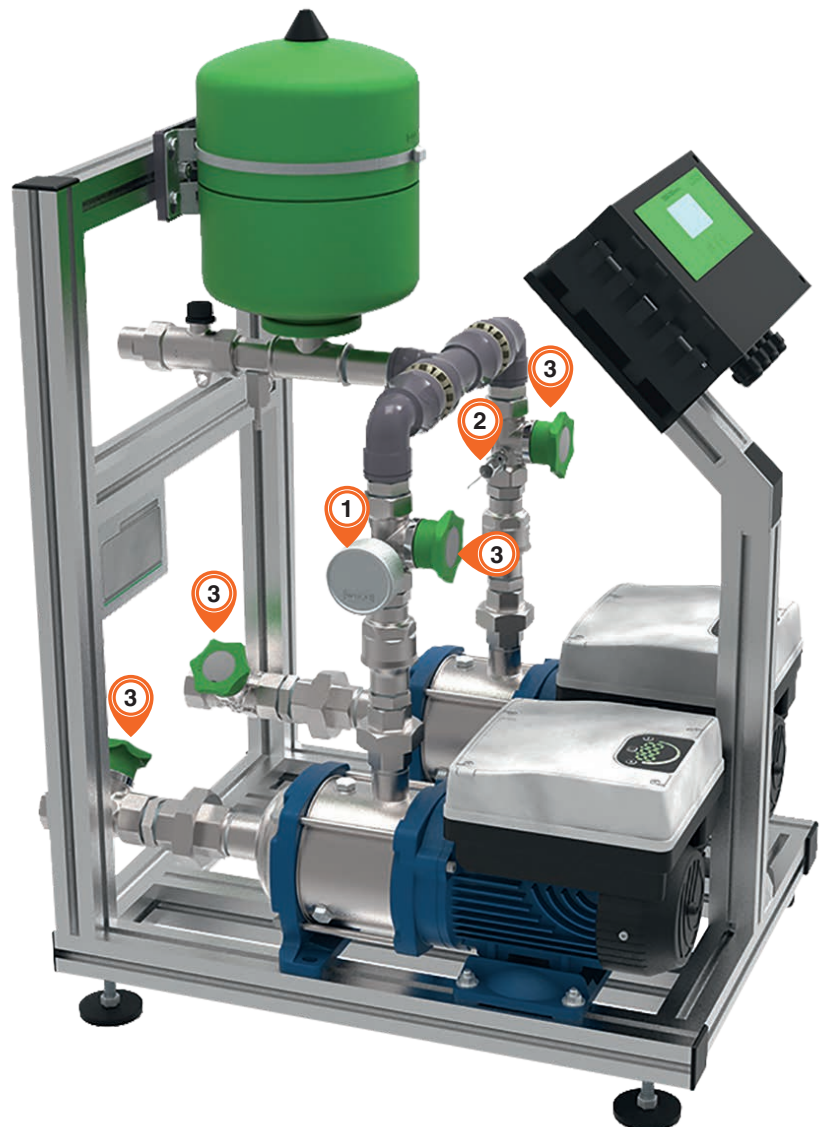
An industrial steam boiler is a complex heating device on which are mounted different types of components that generally work under extreme conditions. Depending on the needs and the application of the end user, additional integrated or stand-alone modules, such as economisers, reverse osmosis systems, superheaters, etc., can be added to the steam boiler system in order to substantially increase and optimise the boiler efficiency.

A module that can be added and integrated into the boiler system is the pressure booster system. Its role is to feed the steam boiler with a continuous, regular or variable amount of feedwater corresponding to the demand of steam that has to be generated.

In this case, the control of the pressure is essential to maintain the required pressure level.

Due to their compact design, the pressure measuring instruments from WIKA enable an easy installation.

Their resistance and reliability are also an advantage in case vibrations and shocks occur during the process.



Legend – Measuring locations:

- ① System pressure (display)
- ② System pressure (transducer)
- ③ Shut-off device

Pressure

1



**Bourdon tube
pressure gauge**

113.53
213.53
23x.50

2



**Pressure switch
PSM02**

2



**Pressure switch,
maximum pressure
limiter
PSM-520**

2



**Pressure switch
PSD-4-ECO**

Accessories

3



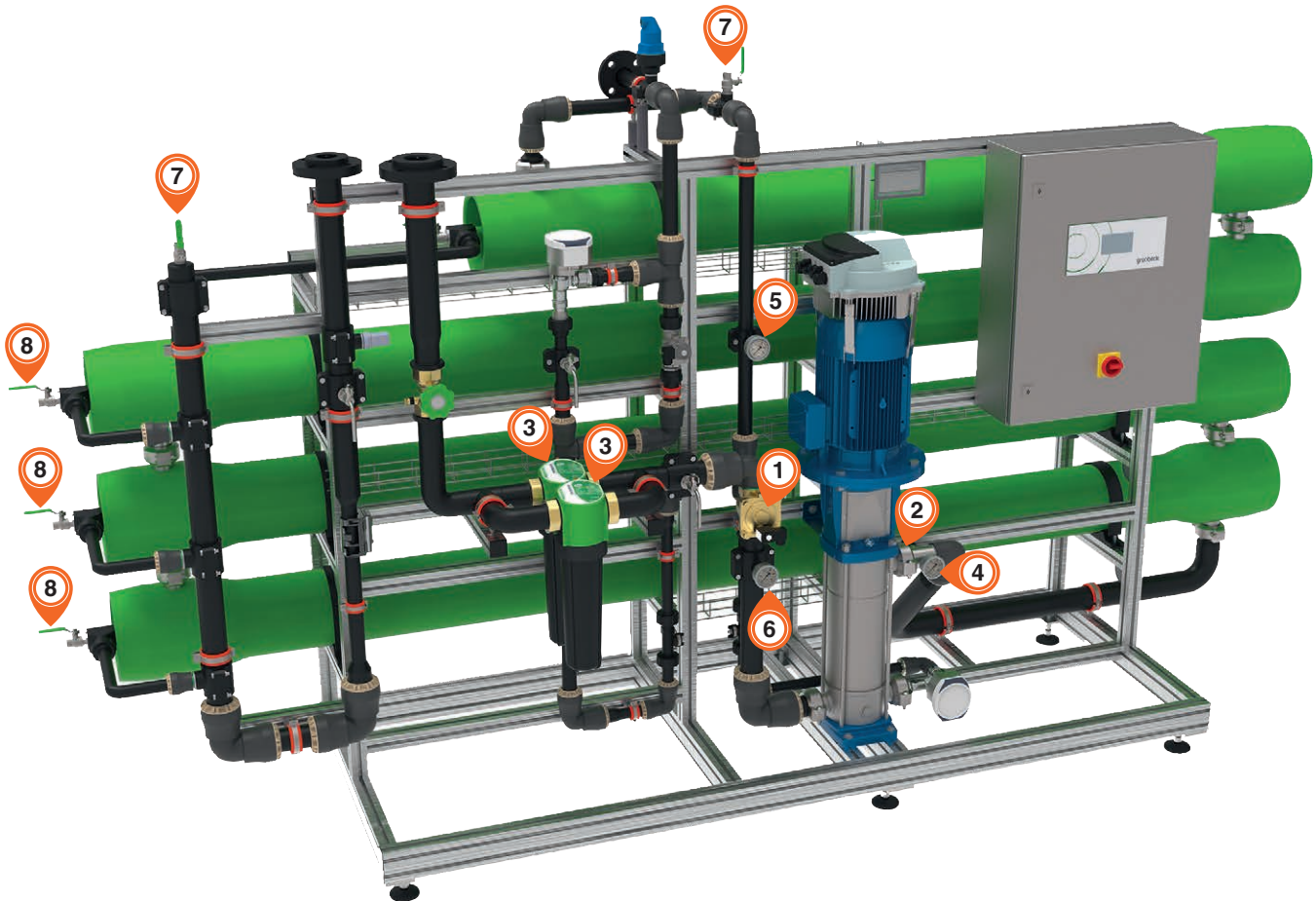
**Ball valve
BV**

Reverse osmosis system

On industrial steam boilers, the use of an additional water treatment module, a reverse osmosis system, is generally required. The aim of the reverse osmosis system is to remove minerals from the feedwater and eliminate deposits inside or outside the boiler tubes, as far as possible, as they affect the efficiency and the performance of the steam production.

For the measurement of the water pressure during the filtering into the diaphragm system, robust and precise pressure measuring instruments are needed as vibration may occur during the process. WIKA's product range for pressure measurement is particularly well suited to this application,

since our model 213.53 and 233.50 glycerine-filled pressure gauges will smoothly absorb any pump vibration. Our pressure switches and pressure transmitters with compact design enable an easy installation on the reverse osmosis module.



Legend – Measuring locations:

- | | |
|------------------------------------|------------------------------------|
| ① Dry run protection | ⑤ Pressure – Concentrate (display) |
| ② Pump pressure (transducer) | ⑥ Pressure – Feedwater (display) |
| ③ Pressure – Fine filter (display) | ⑦ Permeate venting |
| ④ Pump pressure (display) | ⑧ Permeate tapping |

Pressure

3
4
5
6



Bourdon tube pressure gauge
111.1x
113.53
213.53
23x.50

1



Pressure switch
PSM01, PSM02

1
2



Pressure sensor
A-10
O-10

1



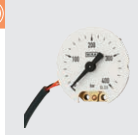
Pressure switch
PSM-700, PCS

1



Pressure gauge with switch contacts
PGS23

3



Pressure measuring system
PME01
PMM01

1



Pressure switch
PSD-4-ECO

Accessories

7
8



Ball valve
BV

7
8



Valves
IV10, IV11, IV20, IV21

Accessories



Pressure gauge stop-cock/Pressure gauge cock
910.10



Instrument mounting brackets
910.16



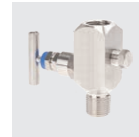
Ball valve
BV



Shut-off valve for pressure gauges
910.11



Pressure gauge in-line filters
910.22



Needle valve and multiport valve
IV10, IV11



Snubber for pressure measuring instruments
910.12



Cooling element for pressure measuring instruments
910.32



Block-and-bleed valve
IV20, IV21



Settable overpressure protector
910.13



Adhesive label set for red and green circular arcs
910.33



Precision digital pressure gauge
CPG1500



"myWIKa device" app
Play Store



Syphons and connecting pipes
910.15

Calibration service

Consultation, design, implementation - all from one source

Precise calibration instruments are the starting point for resolving your test requirements. However, they only form one part of a high-performance calibration system. From our extensive product range, we can design a complete and individual solution for you which contains all the relevant components: with adaptability for test items, pressure and vacuum supply, components for pressure control and fine adjustment, through to voltage supply and multimeters for the calibration of electrical test items.

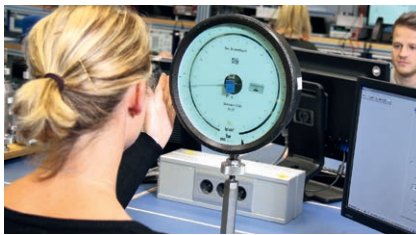
Our particular strength lies in the project planning, development and the building of complete, individual, application-specific systems – from simple manual workstations through to fully automatic test systems in production lines.



Complete test assembly for pressure, temperature and electrical measurands

Manufacturer-independent calibration - fast and precise for ...

Pressure



- -1 bar ... +10,000 bar
- Calibration using working standards (precise electrical pressure measuring instruments) or high-accuracy reference standards (pressure balances)
- With an accuracy down to 0.003 % of reading for the standard used
- In accordance with the directives DIN EN 837, DKD-R 6-1 or EURAMET cg-3

Temperature



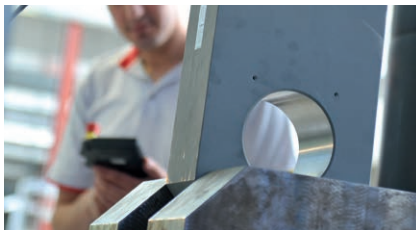
- -196 °C ... +1,600 °C
- Comparative calibration in calibration baths with an accuracy down to 10 mK
- Comparative calibration in tube furnaces with an accuracy down to 100 mK
- Calibration at fixed points of ITS-90 with an accuracy down to 2 mK
 - Triple point of mercury (-38.8344 °C)
 - Triple point of water (0.01 °C)
 - Melting point of gallium (29.7646 °C)
 - Solidification point of tin (231.928 °C)
 - Solidification point of zinc (419.527 °C)
 - Solidification point of aluminium (660.323 °C)
- In accordance with the appropriate DKD directives

Current, voltage and resistance



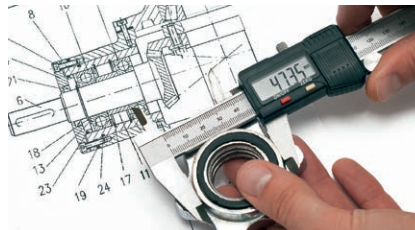
- DC current from 0 mA ... 100 mA
- DC voltage from 0 V ... 100 V
- DC resistance from 0 Ω ... 10 kΩ
- In accordance with the directives VDI/VDE/DGQ/DKD 2622

Force



- 1 kN ... 200 kN with a measurement uncertainty of 0.1 % in tension and compression force direction in accordance with DIN EN ISO 376 (calibration certificate per ISO 17025)
- 500 N ... 6 MN with a system accuracy of 0.5 % in tension and compression force direction (3.1 inspection certificate in accordance with DIN EN 10204)

Length



- 3.1 inspection certificate (factory calibration)
- Replacement of the measuring device if required
- Calibration of special-purpose gauges in accordance with customer drawings
- Calibratable measuring devices
 - Callipers to 800 mm
 - Testing pins to 100 mm
 - Ring gauges and plug gauges to 150 mm
 - Tapered thread gauges to 150 mm
 - Gauge blocks to 170 mm (also possible as a set)
 - others on request

Mobile and on-site (pressure and temperature)



- In order to have the least possible impact on the production process, we offer you a time-saving, on-site DAkkS calibration, throughout Germany, in the mobile calibration laboratory and on-site.
- In our calibration van or on your workbench
- With a DAkkS accreditation for pressure
 - from -1 bar ... +8,000 bar
 - with accuracies down to 0.01 % of full scale for the standard used
- With a DAkkS accreditation for temperature from -55 °C ... +1,100 °C

Image sources:

Page 4: Viessmann Industriekessel Mittenwalde GmbH

Page 8: Viessmann Industriekessel Mittenwalde GmbH

Page 10: Grünbeck Wasseraufbereitung GmbH

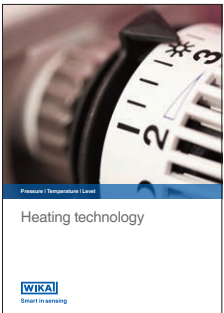
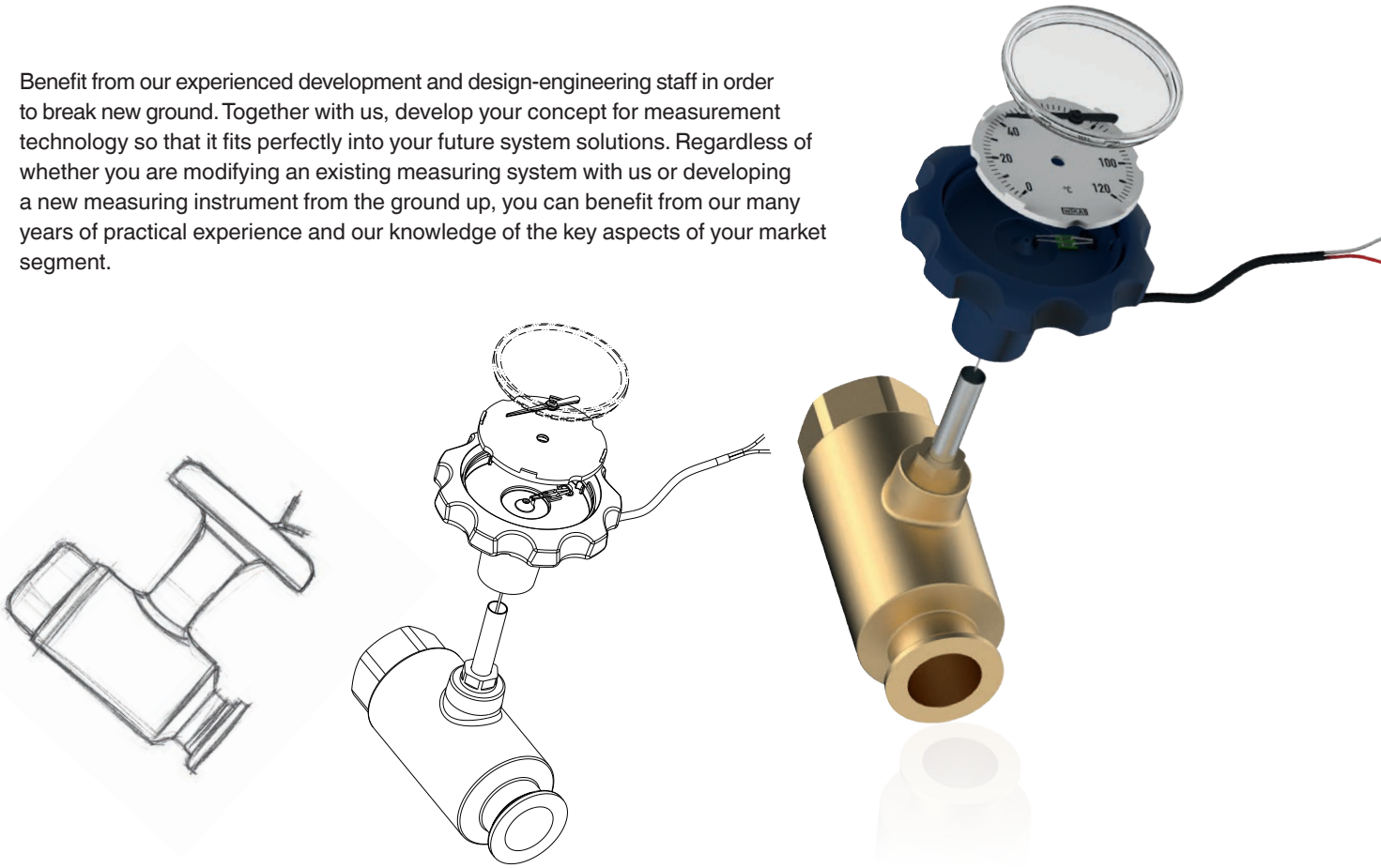
Page 12: Grünbeck Wasseraufbereitung GmbH

Detailed information
can be found online



From idea to completed implementation

Benefit from our experienced development and design-engineering staff in order to break new ground. Together with us, develop your concept for measurement technology so that it fits perfectly into your future system solutions. Regardless of whether you are modifying an existing measuring system with us or developing a new measuring instrument from the ground up, you can benefit from our many years of practical experience and our knowledge of the key aspects of your market segment.



WIKA segment brochure
"Heating technology"



Whether in residential or office accommodation, in private households or public buildings; whether with wood, oil, gas or solar power: Modern heating technology enables you to obtain an efficient and sustained supply of heat and hot water. This conserves resources and the environment. Furthermore, it is subject to stringent standards and regulations.

WIKA offers manufacturers and distributors a comprehensive range of pressure, temperature and level measuring instruments tailored to suit a wide range of requirements. With this brochure, we would like to provide you with an overview of our products and services for heating technology.