JUMAG

Steam boiler

PRODUCT RANGE

Steam boiler
Steam systems
Components

COMBUSTION

A class of its own

JUMAG STEAM BOILERS

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oil or gas fired, **steam output** up to 4,000 kg/h	oil or gas fired, **steam output** up to 4,000 kg/h	oil or gas fired, **steam output** up to 4,000 kg/h
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Steam boiler DG and FLO

OIL OR GAS FIRED

The better function

- A class of its own: The DG and FLO steam boilers combine the benefits of the large water boiler with those of a quick steam boiler
- No maintenance intensive coil and piston pump
- Depending on the water level the **internal centrifugal pump** refills the supply water via the **JUMAG Economiser**
- Multi-duct flue gas control transfers heat from the flue gas to the water via the **evaporating system**
- The very low exhaust temperature is a significant proof for the very high JUMAG efficiency up to >100%

Economically efficient and safe

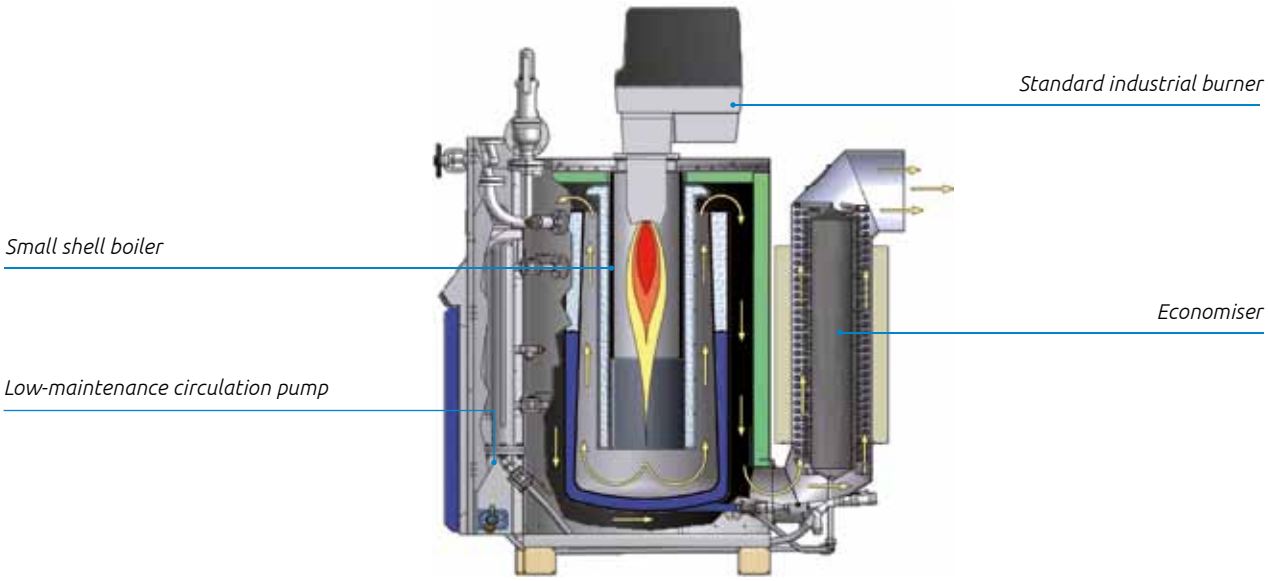
- Parallel connection of several steam boilers possible
- Partial and multi redundancy possible through modular steam plant concept

The better evaporating system

- Double-walled mini-waterspace boiler
- Wall thickness up to 8 mm
- Very robust and durable
- Very high energy storage capacity

Simple Setup

- Boiler category III (PS*V<1.000) after DGRL 2014/68/EU
- Approval- and supervision-free in Germany and many other countries



Steam boiler DG and FLO

OIL OR GAS FIRED

JUMAG oil or gas fired **steam boilers DG and FLO** link the advantages of a compact quick steam generator with those of a robust shell boiler.

Fig.: JUMAG steam boiler DG560

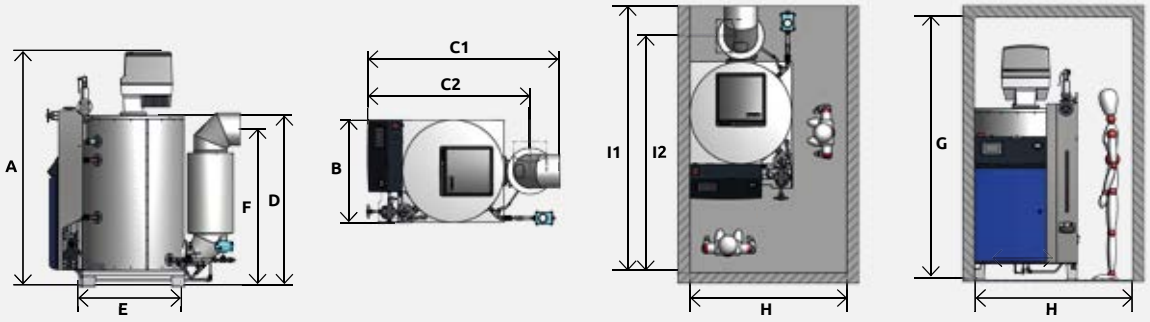
The JUMAG among the boilers: **Steam boiler FLO** with an output of 1,060 kg/h.

Fig.: JUMAG steam boiler FLO1060

Technical data

Boiler type	DG160	DG260	DG360	DG460	DG560	FLO
PED 2014/68/EU Kategorie III (PS * V)	< 1.000					< 3.000
Steam output up to	160 kg/h (2.6 kg/Min.)	260 kg/h (4.3 kg/Min.)	360 kg/h (6.0 kg/Min.)	460 kg/h (7.6 kg/Min.)	560 kg/h (9.3 kg/Min.)	1060 kg/h (17.7 kg/Min)
Heat load	110 kW	175 kW	245 kW	315 kW	400 kW	760 kW
Heat output	105 kW	170 kW	235 kW	300 kW	380 kW	720 kW
Max. operating pressure	13 barg (discharge pressure of the safety valve)					13 barg
Working pressure	6 to 11 barg (lower pressures possible via JUMAG pressure reduction station)					11 barg
Heat up time in min	5	8				10
Max. oil throughput (11.8 kWh/kg)	9.3 kg/h	14.8 kg/h	20.7 kg/h	26.7 kg/h	33.9 kg/h	64.4 kg/h
Max. gas flow rate (10.35 kWh/m³)	10.6 m³/h	16.9 m³/h	23.7 m³/h	30.4 m³/h	38.6 m³/h	73.4 m³/h
Power supply	400 V / 50 Hz					
Power supply value	2.4 kW	3.2 kW	3.2 kW	4.0 kW	4.0 kW	6.0 kW

Legend dimensions (exemplary illustration DG560)



Dimensions

Boiler type	DG160	DG260	DG360	DG460	DG560	FLO
Total height A	1,521 mm	1,764 mm	2,049 mm	2,044 mm	2,142 mm	2,620 mm (oil burner) 2,794 mm (gas burner)
Total width B	815 mm	829 mm		936 mm		1,130 mm
Total depth C1 (at backwards bend)	1,411 mm	1,631 mm		1,756 mm		2,033 mm
Total depth C2 (at bend turned by 90° or straight up)	1,206 mm	1,370 mm		1,484 mm		1,753 mm
Charging height D	1,130 mm	1,368 mm	1,568 mm	1,565 mm		2,071 mm
Charging depth E	812 mm	856 mm		981 mm		1,196 mm
Height F, exit flue gas	795 mm	1,437 mm				2,234 mm
Minimum height setup space G	1,771 mm	2,014 mm	2,299 mm	2,294 mm	2,392 mm	3,271 mm
Minimum width setup space H	1,315 mm	1,329 mm		1,436 mm		1,630 mm
Minimum depth setup space I1 (at backwards bend)	2,081 mm	2,301 mm		2,426 mm		2,703 mm
Minimum depth setup space I2 (at bend turned by 90° or straight up)	1,876 mm	2,040 mm		2,154 mm		2,423 mm

Steam boiler EDI

ELECTRICALLY HEATED

Electric steam boiler EDI convinces with outstanding steam quality, also permitting clean steam. Boilers and nearly all media-contacting parts are made of stainless steel.

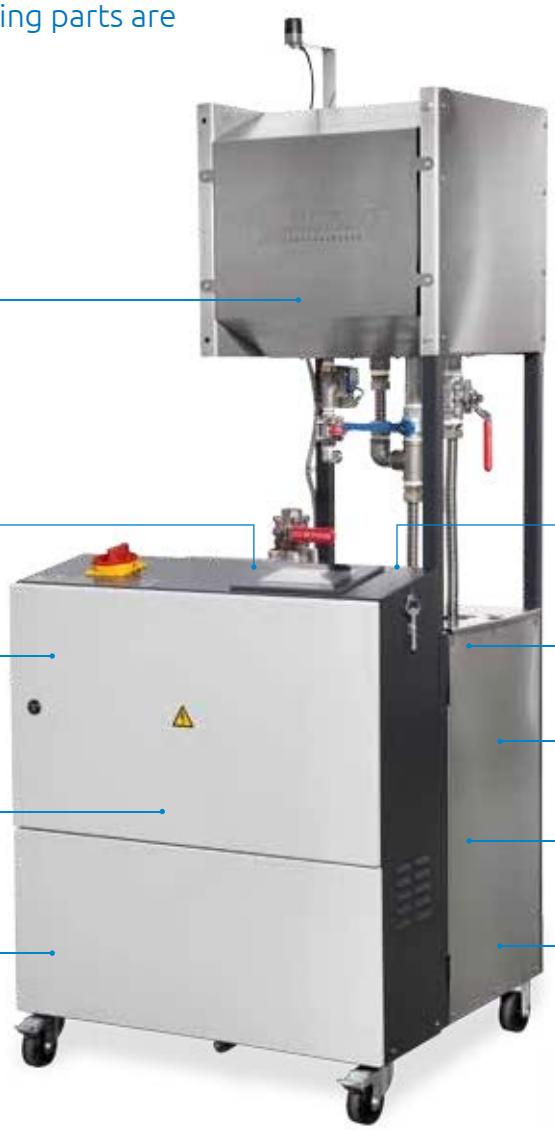
Space-saving mounted feed water tank/condensate vessel

Touch screen control in many languages

Immediate load adjustment by electric power control

No current collection peaks due to symmetrical mains load

High-temperature-resistant heating elements made of stainless steel



Operating pressure easily adjustable between 0.3 to 11 barg

Vertical evaporation system construction in 1.4571 – i.e.for steam in a high-purity quality

Optionally with feed water pre-heating for partial degassing or pressure degassing

Innovative design and large water surface leads to dry steam

Well accessible for maintenance purposes due to horizontal flange-connected radiators

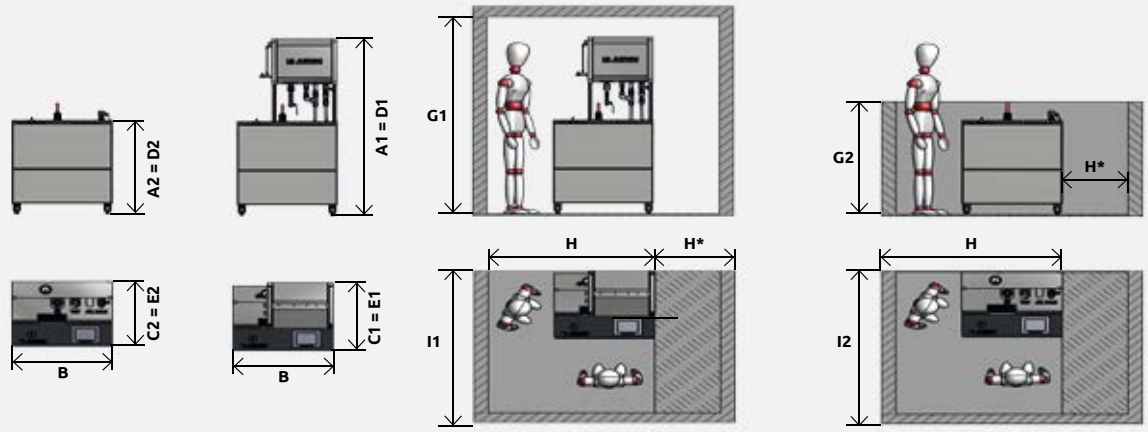
Fig.: JUMAG electric steam boiler EDI with integrated feed water tank/condensate vessel

Fig.: Basic design without feed water tank/condensate vessel

Technical data

Boiler type	EDI20	EDI40	EDI60	EDI80	EDI100	EDI120
Operating pressure (blow-of pressure relief valve) PED 2014/68/EU category at (PS*V < 200)	5.3 barg		3.4 barg		2.6 barg	
Operating pressure (blow-of pressure relief valve) PED 2014/68/EU category III at (PS*V < 1000	12.5 barg					
Steam output up to (at 15°C feed water temperature)	26,5 kg/h 0.44 kg/min	53 kg/h 0.88 kg/min	80 kg/h 1.32 kg/min	106 kg/h 1.77 kg/min	132.5 kg/h 1.77 kg/min	160 kg/h 2.64 kg/min
Heat output	20 kW	40 kW	60 kW	80 kW	100 kW	120 kW
Max. operating pressure	0.3 barg - 11 barg					
Heating time	15 Min	7.5 Min	8 Min	6 Min	6,5 Min	5,5 Min
Volume pressure vessel	37.7 Liter		58.8 Liter		76.7 Liter	
Low water level (STB)	14.3 Liter		31.5 Liter		40.5 Liter	
Power supply	400 V / 50Hz					
Power supply value	22.2 kW	42.2 kW	62.2 kW	82.2 kW	102.2 kW	122.2 kW
Pre-fuse customer-side	min. 35 A – max. 63 A	63 A	min. 100 A – max. 125 A	125 A	min. 160 A – max. 200 A	200 A
Net weight	190 kg	190 kg	250 kg	250 kg	300 kg	300 kg

Legend dimensions Feed water tank/condensate vessel



Dimensions

With feed water tank/ condensate vessel	EDI 20/40	EDI 60/80	EDI 100/120	Without feed water tank/ condensate vessel	EDI 20/40	EDI 60/80	EDI 100/120
Total height A1	1,798 mm			Total height A2	1,040 mm	1,105 mm	1,120 mm
Total width B	765 mm	1,176 mm	1,430 mm	Total width B	765 mm	1,176 mm	1,430 mm
Total depth C1	703 mm			Total depth C2	673 mm		
Minimum charging height D1	1,798 mm			Minimum charging height D2	1,040 mm	1,105 mm	1,120 mm
Minimum charging depth E1	703 mm			Minimum charging depth E2	673 mm		
Minimum height setup space G1	2,000 mm			Minimum height setup space G2	1,200 mm		
Minimum width setup space H	1,265 mm	1,676 mm	1,930 mm	Minimum width setup space H	1,265 mm	1,676 mm	1,930 mm
Optional maintenance space H*	-	500 mm		Optional maintenance space H*	-	500 mm	
Minimum depth setup space I1	1,463 mm			Minimum depth setup space I2	1,433 mm		

Steam systems

COMPACT, MULTIPLE AND CONTAINER STEAM SYSTEMS

Compact steam systems can make do with the smallest footprints. Save installation effort with a system pre-installed ready for connection. All components are coordinated with each other.

Fig.: Compact steam boiler, example configuration

Multiple steam boilers provide the capacity that is currently needed. They ensure redundancy.

Fig.: Multiple units, modular design

Fig.: Multiple unit. Second downstream JUMAG economiser installed space-savingly on the basic frame

Container steam systems can be supplied in containers or as room units. They can be placed outside buildings or used as mobile units.

Fig.: Container steam system

Fig.: Container steam system

Components

FEED WATER TANK/CONDENSATE VESSEL, BLOW DOWN AND DESALINATION TANKS

The JUMAG feed water tank/ condensate vessel uses the condensate, relaxation steam and residual energy of the blow-down water for preheating.

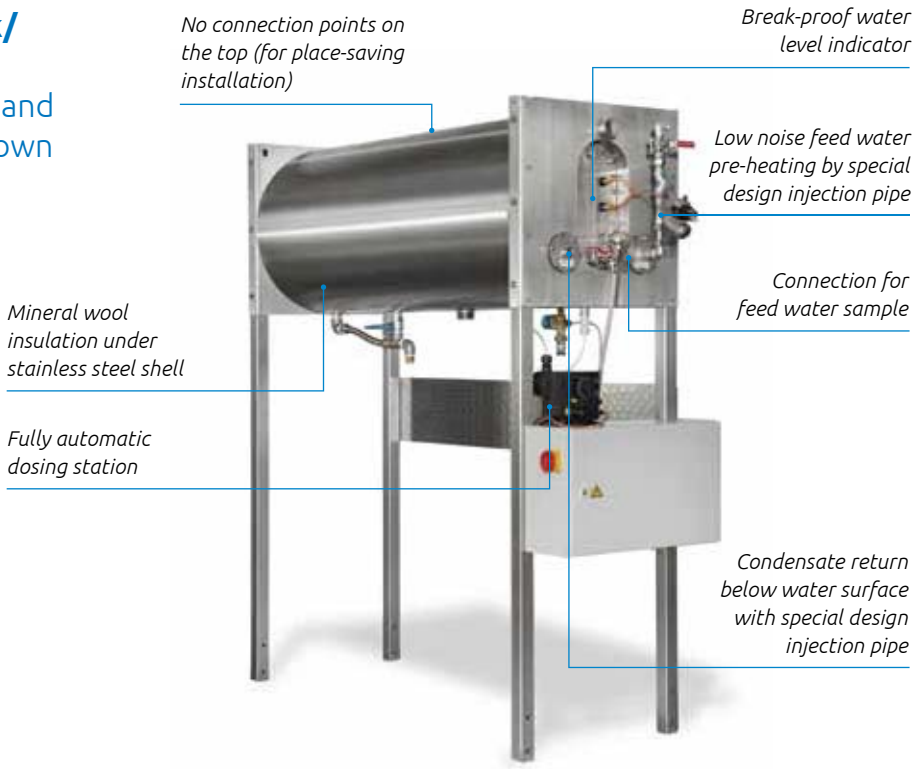


Fig.: Feed water tank/condensate vessel, example configuration

JUMAG blow down and desalination tanks with heat recovery save use of expensively treated cooling water. The automatic system can be programmed process-dependently.

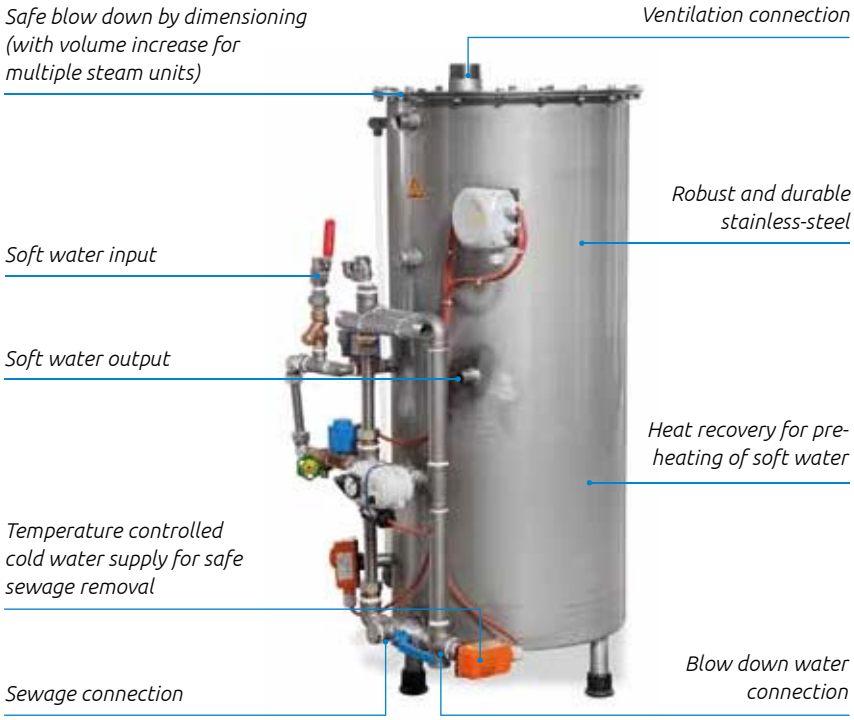
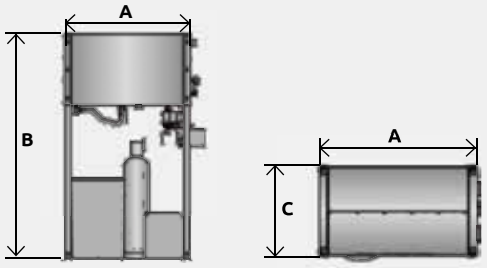


Fig.: Blow down vessel, example configuration

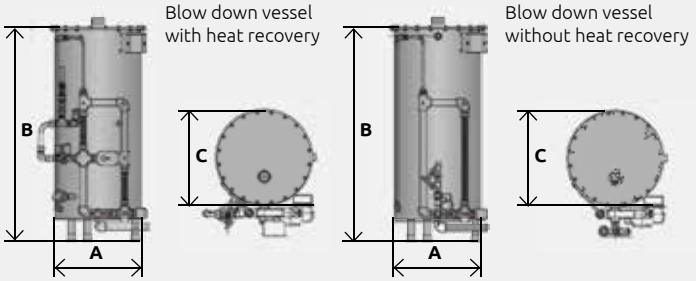
Technical data and dimensions Feed water tank/condensate vessel

Type	SWG 220	SWG 330	SWG 570	SWG 860	SWG 1140	SWG 1540	SWG 2050
Fresh water supply (Male thread at the vessel/ female thread at the valve)	½“					1“	
Boiler feed (male thread)	DN50		DN65			DN80	2 x DN80
Ventilation (male thread)	2“		2 ½“			DN100	
Overflow/drainage (female thread)	1“		1 ½“			2“	
Condensate return flow (male thread)	1“		1 ½“			1 x DN65 + 1 x 1 ½“	
Steam nozzle (male thread)	1“						
Shut-off valve steam pre-heating (female thread)	½“ / 1“						
Connection sampling cooler (female thread)	⅜“						
Width at the bottom A	1,150 mm	1,650 mm	1,150 mm	1,650 mm	2,150 mm	1,617 mm	2,117 mm
Inner stand distance	527 mm		827 mm			1,142 mm	
Height (adjustable) B	2,000 mm		2,000 mm - 2,400 mm			2,194 mm - 2,554 mm	
Depth C	645 mm		965 mm			1,250 mm	
Volume	220 l	330 l	570 l	860 l	1,140 l	1,540 l	2,050 l
Weight	155 kg	180 kg	230 kg	265 kg	300 kg	415 kg	475 kg

Legend dimensions
Feed water tank/condensate vessel



Legend dimensions
Blow down vessel



Technical data and dimensions Blow down vessel

Type	Normal blow down vessel	Blow down vessel with increase I	Blow down vessel with increase II
Blow down feed (male thread)	1“		
Drain (female thread)	1“		
Ventilation pipe (male thread)	2“	3“	
Fresh water connections (female thread)	½“ / 1“		
Connection overflow feed water tank/ condensate vessel (male thread)	1“		
Width A	500 mm		
Height B	1,100 mm	1,600 mm	2,050 mm
Depth C	650 mm		
Volume	140 l	240 l	290 l
Net weight without heat recovery	65 kg	82 kg	94 kg
Net weight with heat recovery	90 kg	107 kg	119 kg

Components

FOR STEAM QUALITY AND ENERGY EFFICIENCY

Steam dryer Zyklon DT

A good water separation in steam protects the system and increases steam quality. The build of the JUMAG steam dryer is based on the benefits of a cyclone steam dryer and combines them with other advantages:

- High separation rate of entrained water drops
- Small water droplets are also separated by the centrifugal force
- Low pressure loss in the steam
- The steam dryer works efficiently even at low steam volumes

Second economiser

The second economiser is a heat exchanger that uses the energy contained in the flue gases for heating water, such as:

- the feed water supplied to the boiler
- the fresh, softened water supplied to the feed water tank/condensate vessel
- soft water for other uses

It is installed on the flue-gas side between the first economiser and the chimney (figure page 9). The water to be heated flows to the flue gases to be cooled in a counter flow. The lower the temperature of the flowing water, the higher the efficiency.

Pressure reduction station with electronic control

JUMAG steam boilers operate at an adjustable steam pressure range of 6 - 11 barg. Pressure reducing valve is used for working pressures between 0.3 to 8 barg or constant working pressures. They are installed in the steam pipe between the steam boiler and the consumer.

- The pressure reduction station with auxiliary power similar to large and quick pressure changes with quick response. By a pneumatically controlled main valve, the position of the valve can be continuously adjusted according to need.

Condensate return system

Condensate cannot always be routed directly into the feed water tank with a natural drop. In these cases, the condensate will be collected in a low location in a condensate return system and pumped into the feed water tank/condensate vessel with circulation pumps.

Steam accumulator

If the steam consumption fluctuates briefly, use of steam accumulators is sensible. A water supply in the steam accumulator is heated at low steam consumption and stores energy accordingly. At a high steam consumption, the water will give off its energy in the form of steam.

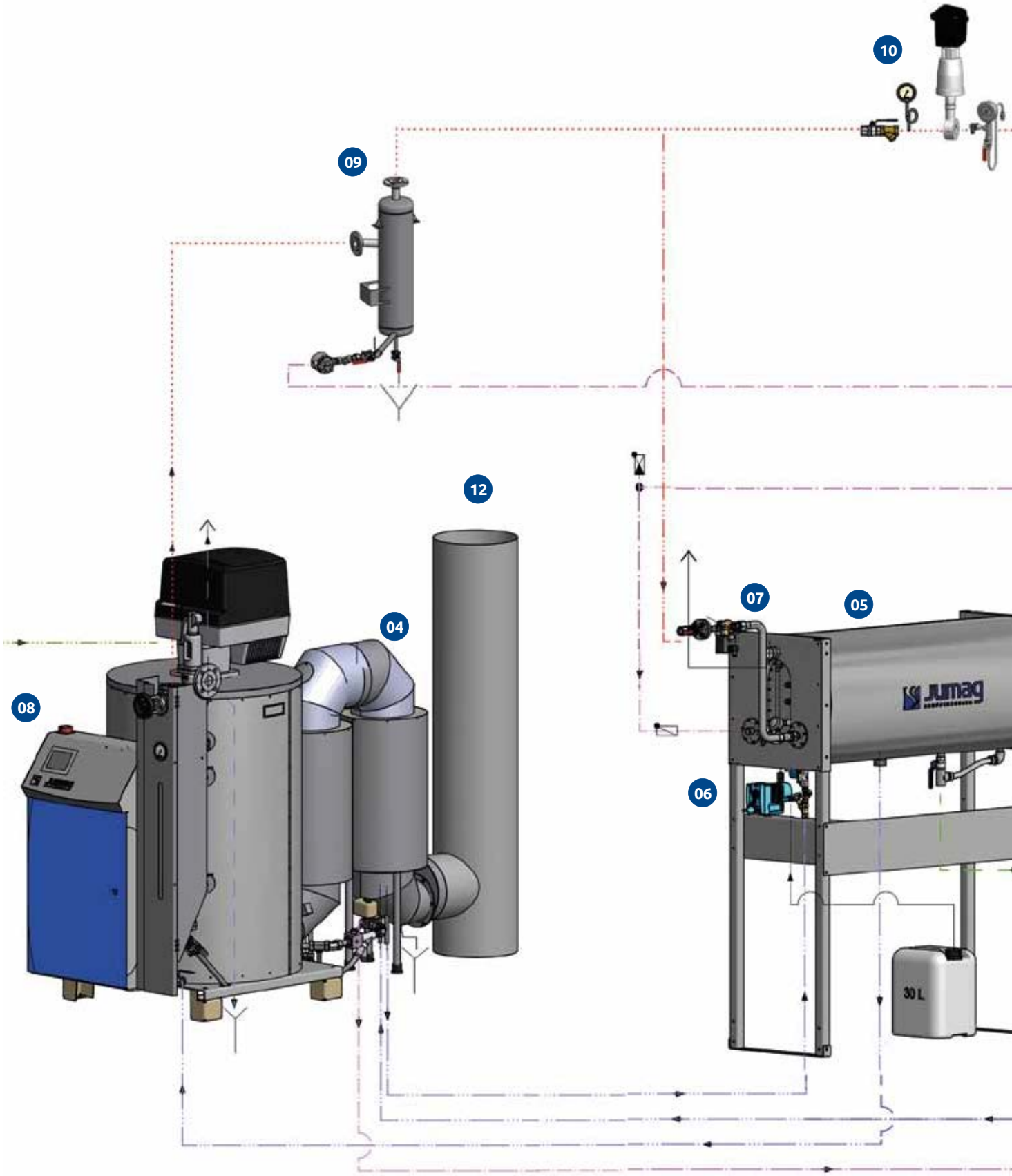
- Covers short-term steam consumption peaks.
- Steam systems can be designed smaller at fluctuating steam demand due to smoothing and will run more evenly.
- The JUMAG steam accumulator is adjusted to JUMAG boilers and uses the advantages of the JUMAG system and JUMAG control.

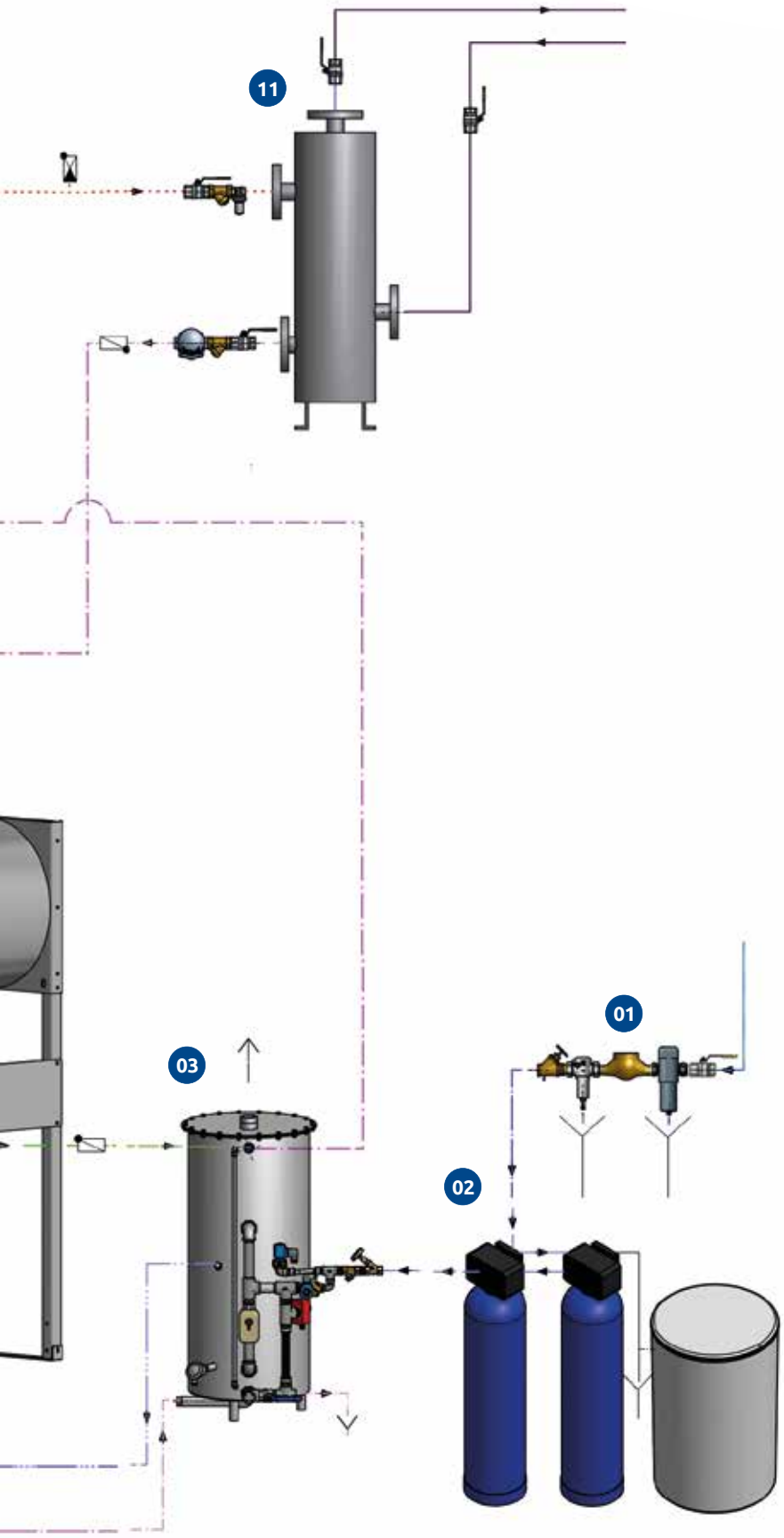
JUMAG Connect Remote – Remote access to your steam boilers

Control your system from any location! Released end devices may be mirrored and operated in your network or via the internet, also via mobile end devices

- Operator and released users can access the control via internet and view or change process values.
- The connection can be established by WLAN, LAN or mobile phone.
- Data safety by encryption since there is no external access to the operator's network.
- The JUMAG customer service can access the system directly for troubleshooting or program updates.

Flow chart





Key

01 Raw water inlet module

02 Double softening plant with brine container

03 Blow down vessel with heat recovery

04 Second Economiser

05 Feed water tank/condensate vessel

06 Dosing station

07 Feed water pre-heating module

08 Steam boiler

09 Steam dryer Zyklon DT

10 Pressure reduction station

11 Steam consumer

12 Chimney

JUMAG is

WHEN QUALIFICATION, PASSION AND THE SPIRIT OF INNOVATION COME TOGETHER.

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COMBUSTION

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