

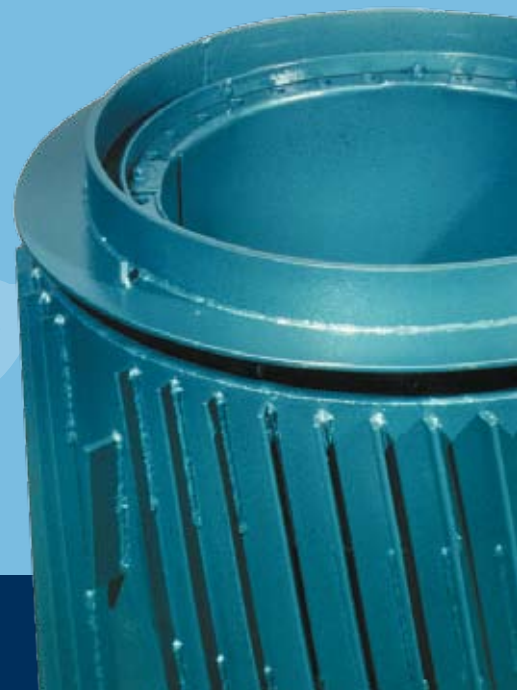
**INNOVATIVE
STEAM TECHNOLOGY**

Jumag
Dampferzeuger



**JUMAG -
the high-
speed steam
generator
with a
DIFFERENCE**

**It has no paragon –
it is one!**



Jumag

the JUMAG - high-speed steam generator **DIFFERENCE**



the **STEAM GENERATOR - DG 160**

JUMAG steam generators are **HIGH-SPEED STEAM GENERATORS, OF SPECIAL DESIGN.**

They are not induced-single-circulation boilers. The usual evaporator coil and the inevitably necessary piston pump with gear, sleeves, suction and pressure control valves – a number of possible error sources - are missing.

JUMAG steam generators operate in principle like a water boiler. The burner automatically switches itself on and off depending on the steam pressure. The boiler feed pump, a maintenance-free centrifugal pump, operates dependent on the water level.

Due to their design these high-speed steam generators have a remarkably low energy consumption.

JUMAG steam generators have an extremely large heating surface in relation to their steam generating capacity. The heating gases are led through several flues in such a way that an ideal temperature difference is created between heating gas and water and/or water-steam-mixture in all parts of the heat exchange areas.

JUMAG steam generators comply with the Pressure Equipment Directive 97/23/EC and already fulfil all further values required in the future.

They are category II or III boilers depending upon type and operating pressure. All Jumag steam generators, whether single or multi-units, are suitable for permit-free and TÜV-monitor-free operation within Germany as well as in many neighbouring countries.

The units developed on the basis of decades of experience are popular in trade and industry due to their simple operation and maintenance as well as due to their cost-efficiency and operational reliability. They have achieved an outstanding reputation at home and abroad - particularly among specialists - on account of their advantages.

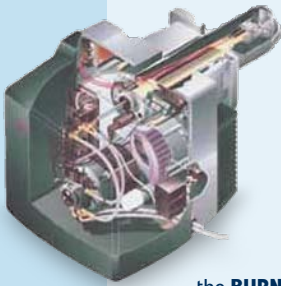
A JUMAG steam generator will provide you with an absolutely reliable and trouble-free steam supply for many years.



the **JUMAG EVAPORATION SYSTEM**

The JUMAG steam generator creates its steam in a heavy, solid pressure hull made of boiler steel. The **JUMAG THREE-DRAFT EVAPORATION SYSTEM** is practically wear-free due to its generous design and the low steam velocity. The pressure hull is suspended in the boiler housing completely tension-free.





the **BURNER**

Oil or gas-heated, one or two-stage design. JUMAG steam generators are generally equipped with Weishaupt burners. Over 2.5 million **BURNERS** of this series impressively prove its exceptional position. The legal requirements are exceeded by far. Weishaupt burners already fulfil all standards required in the future and substantially contribute to a lowering of your operating costs.



the **PRESSURE CONTROLLERS/ PRESSOSTATES**

The DANFOSS **PRESSOSTATE** (pressure control value) controls the burner depending on load and is adjustable to the operating conditions.



the **WATER LEVEL CONTROL**

A multi-stage, absolutely maintenance-free Grundfos **CENTRIFUGAL PUMP** provides for the boiler feed water supply. The pump shaft, impellers and intermediate chambers are manufactured of chromium-nickel stainless steel, the sliding surfaces of carbide. The pump conveys feed water up to a temperature of 120 ° C.

the **FEED PUMP/CENTRIFUGAL PUMP**

The built-in **WATER LEVEL CONTROL**, proven over many years, provides for an almost constant water level in the evaporation system. Red and white guide rollers located outside of the water indicate the water level. Housing and floats are made of high-grade steel.

The stable operating display with integrated SPS as well as pressure and temperature dial are clearly and practically integrated on the **INSTRUMENT PANEL**. Simply touching the 5.7" sized full text display starts up the JUMAG steam generator. Displaying the current operating situation, the daily degree of boiler utilisation, the energy consumption as well as calling up an error history, is possible, to mention only some examples. At present, the display allows the selection of one of ten languages, at the press of a button.



the **INSTRUMENT PANEL**

You shouldn't be satisfied with less!

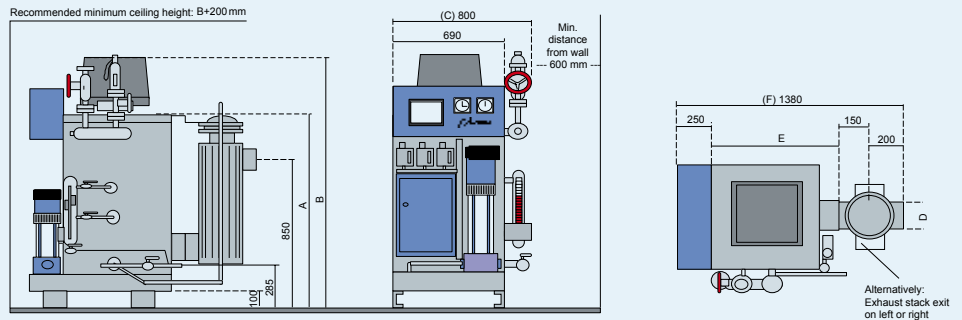


the **EXHAUST GAS ECONOMISER**

More than 98% of all steam generators we deliver are in the meantime equipped with the **JUMAG EXHAUST GAS ECONOMISER**. It withdraws the largest part of the remaining energy from the exhaust gases and supplies this to the boiler in the form of pre-heated feed water. The energy saving is considerable; the amortisation period is accordingly short and the environmental burden substantially reduced. JUMAG exhaust gas economisers are maintenance-free and to the largest extent made of high-quality stainless steel.

DIMENSIONS and TECHNICAL DATA

Dimensioned sketch: DG160



CONNECTION DIMENSIONS

Steam valve:

Welding neck flange DIN 2633 DN 20

Safety valve:

Welding neck flange DIN 2633 DN 25

Feed pump:

1" Female thread

Clarifying pipe:

3/4" Male thread

INSTALLATION INSTRUCTIONS

JUMAG steam generators comply with the European Pressure Device Guideline 97/23/EC. The operation of JUMAG steam generators is permit-free and TÜV-monitor-free within Germany and also in some neighbouring countries.

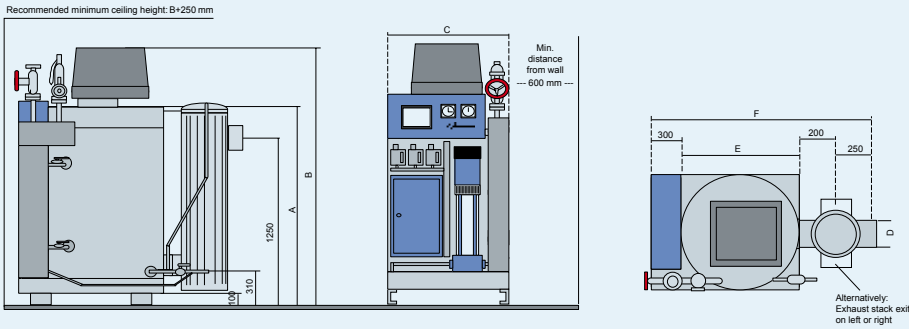
The Regulation governing operational safety must be taken into account. Furnace regulations must likewise be observed and be co-ordinated with the locally responsible chimneysweep.

The specified data apply in connection with the exhaust gas economiser and a feed water temperature of 80 ° C at a working pressure of 6 bar.

Subject to technical modifications.

TYPE OF BOILER	DG 160	DG 260	DG 360	DG 460
Unit type	Single unit	Single unit	Single unit	Single unit
Steam generating capacity up to	160 kg/h	260 kg/h	360 kg/h	460 kg/h
Thermal load up to	100 kW	175 kW	245 kW	300 kW
Thermal output up to	94 kW	160 kW	225 kW	276 kW
Max. operating pressure	13 bar	13 bar	13 bar	13 bar
Total volume	24 Ltr.	45 Ltr.	60 Ltr.	75 Ltr.
Warming up time	8 Minutes	8 Minutes	8 Minutes	8 Minutes
Max. oil throughput	8,4 kg/h	14,6 kg/h	20,5 kg/h	25,2 kg/h
Max. gas throughput	9,7 m ³ /h	17 m ³ /h	24 m ³ /h	29 m ³ /h
Gas flow pressure min.	20 mbar	20 mbar	20 mbar	20 mbar
Gas connection	1"	1"	1"	1"
Exhaust mass flow	0,05 kg/s	0,08 kg/s	0,11 kg/s	0,13 kg/s
Exhaust stack D	150 mm	180 mm	180 mm	250 mm
Flue draft min.	0,15 mbar	0,15 mbar	0,15 mbar	0,15 mbar
El. connection	400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz
El. power consumption	1,5 kW	1,5 kW	1,5 kW	1,5 kW
Total weight	580 kg	680 kg	780 kg	1180 kg
Boiler height B	1580 mm	1750 mm	2150 mm	2150 mm
Boiler width C	800 mm	800 mm	800 mm	930 mm
Boiler depth F	1380 mm	1480 mm	1480 mm	1680 mm
Installation height A	1250 mm	1420 mm	1620 mm	1620 mm
Installation width	690 mm	800 mm	800 mm	930 mm
Installation depth E	780 mm	800 mm	800 mm	930 mm

Dimensioned sketch: DG260 - DG360 - DG460



2x DG 360	2x DG 460	3x DG 360	4x DG 460
Double unit	Double unit	Triple unit	Quad unit
720 kg/h	920 kg/h	1380 kg/h	1840 kg/h
490 kW	600 kW	900 kW	1200 kW
450 kW	552 kW	828 kW	1104 kW
13 bar	13 bar	13 bar	13 bar
2 x 60 Ltr.	2 x 75 Ltr.	3 x 75 Ltr.	4 x 75 Ltr.
8 Minutes	8 Minutes	8 Minutes	8 Minutes
41 kg/h	50,4 kg/h	75,6 kg/h	100,8 kg/h
48 m ³ /h	58 m ³ /h	87 m ³ /h	116 m ³ /h
20 mbar	20 mbar	20 mbar	20 mbar
1"	1"	1"	1"
2x 0,11 kg/s	2x 0,13 kg/s	3x 0,13 kg/s	4x 0,13 kg/s
2x 180 mm	2x 250 mm	3x 250 mm	4x 250 mm
2x 0,15 mbar	2x 0,15 mbar	3x 0,15 mbar	4x 0,15 mbar
400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz
2x 1,5 kW	2x 1,5 kW	3x 1,5 kW	4x 1,5 kW
2x 780 kg	2x 1180 kg	3x 1180 kg	4x 1180 kg
2150 mm	2150 mm	2150 mm	2150 mm
2x 800 mm	2x 930 mm	3x 930 mm	4x 930 mm
2x 1480 mm	2x 1680 mm	3x 1680 mm	4x 1680 mm
1620 mm	1620 mm	1620 mm	1620 mm
800 mm	930 mm	930 mm	930 mm
800 mm	930 mm	930 mm	930 mm



MULIT-UNIT SYSTEM MDA

Steam generating capacity:
520-1840 kg/h

For a higher overall steam generating capacity or a wider steam generating capacity range, but also for redundancy or TÜV-inspection exemption, we recommend our Jumag multi-unit steam generators.

The specified data apply in connection with the exhaust gas economiser and a feed water temperature of 95 °C at a working pressure of 6 bar(o).

Subject to technical changes.

UNITS and ACCESSORIES



The application of a filter and a pipe disconnecter is recommendable and legally foreseen in order to protect the system components against contamination and to prevent the backflow of prepared water into the pipelines. The **UNTREATED WATER INPUT MODULE REM**, consisting of shut-off valves, backflush filter, water meters and pipe disconnectors, is piped ready for installation.



We recommend our cation exchangers for softening untreated water. These remove the hardness stabilisers calcium and magnesium from the water, in order to prevent persistent boiler scale formation on the boiler walls. **SOFTENING PLANTS** are to be designed with regard to the local water hardness (°dH) and the soft water need (m³/h). Semi-, fully automatic or double pendulum softening plants can be used according to the case of application.



Steam generators must be clarified under pressure and thus under temperature in order to avoid the build-up of deposits and thick materials in the boiler evaporation system. The hot water-steam mixture may not be drained directly into the sewer. JUMAG offers **CLARIFYING VESSELS** in different sizes in black or stainless steel for this purpose.



A suitable metering solution must be added to the feed water so as to bind the oxygen of the carbonic acid and remainder acid as well to adjust the pH value. This takes place by means of stroke and frequency-controlled **DOSING PUMP**.

Any subsequent and often complex pipework and wiring of the feed water/condensate vessel with level regulation as well as the metering and softening plants can be omitted with the use of the JUMAG **WATER PURIFICATION MODULE WAM**. Planning expenditure and possible errors are thus reduced when assembling. The components are also individually available of course.



Switch on in the morning - forget it - switch off in the evening



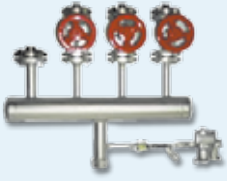
the **COMPACT STEAM GENERATING UNITS KDA**

Installing, connecting and switching on. In order to achieve this, JUMAG builds all aggregates required for generating steam on a base frame suitable for fork-lifts. **COMPACT UNITS** (for steam generating capacities to 360 kg/h) are piped and electrically wired ready for installation.



the **MULTIPLE STEAM GENERATING UNIT MDA**

We recommend a double or triple steam generating unit for steam generating capacities over 360 kg/h or for a thermal output over 225 kW. These **MULTI-UNITS** (for steam generating capacities of 400-1080 kg/h) provide a higher availability than a single unit in critical operating situations, because at least 50% of the total steam output is still available in the case of a possible shutdown of one unit.



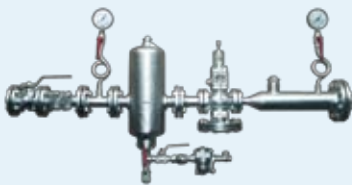
The application of a **STEAM DISTRIBUTOR** is expedient, if several steam generators are connected for the operation of a steam network or if several consumers are connected to a steam network.



The **PWT** is a fully welded **PLATE HEAT EXCHANGER**. The heat transfer areas consist of a multiplicity of profiled stainless steel plates, which are welded together to a package. Both the casing as well as the connection flanges are made of stainless steel V4A. The unit is welded throughout to provide in a gas-tight plate heat exchanger, which excludes leaks and leakages.



These **DOUBLE-WALLED ALL-PLASTIC SAFETY TANKS** are officially approved in Germany. You can install up to 5000 litres in various space-saving installation variations in a simple boiler room without an additional drain tray or soil protection measures even in water protection zones.



The compact, ready to be installed **PRESSURE REDUCTION STATION TYPE DMS PRO**, for professional and reliable application consists of the following components:

- Inlet flange
- Shut-off valve
- Dirt trap with fine screen
- Pressure reducer without auxiliary energy with integrated steam trap
- Outlet flange
- Pressure gauge unit - reduction pressure
- Safety valve (optional)
- Pressure gauge unit - supply pressure



We recommend the application of a steam-heated **TUBE HEAT EXCHANGER** for simple heating purposes.

The three-shelled exhaust system is suitable for oil and gas-fired steam generators with dry and condensation mode of operation. Both the interior and the outer casing are made of high-quality stainless steel. The metric modular system in an adherence actuated element construction method is approved by building inspection/building laws as well as officially checked and can be built up as an **INTERIOR OR EXTERIOR FLUE**.



We recommend our **CONTAINER UNITS** for mobile application or in the case of boiler house space problems (for steam generating capacities up to 1080 kg/h). The ready-for-installation containers are equipped on request with one or more JUMAG steam generators, a water purification module, a clarifying vessel as well as a stainless steel flue. All exterior flange connections are made of stainless steel V4A.

JUMAG steam generators can be installed without problems in trailers or trucks and be operated as **MOBILE STEAM GENERATING UNITS** for constant, mobile applications, such as e.g. for cleaning exhaust air ducts in the catering trade or for sewage repair work. The steam can also be transported over a distance of up to 50 m to the required place of work by means of suitable flexible steam hoses.



the **CONTAINER STEAM GENERATING UNITS CDA**



the **MOBILE STEAM GENERATING UNIT MOBDA**

REFERENCES

APPLICATION AREAS

Air conditioning
 Animal feed manufacturers
 Bakeries and malt houses
 Biotechnological enterprises
 Brewing and beverage industry
 Canteen kitchen companies
 Chemical industry
 Concrete and gravel works
 Cosmetic and filling industry
 Dairy/cheese factories
 Delicatessen and butchers' shops
 Distillers and wineries
 Drying enterprises
 Food industry
 Forming engineering
 Hot-air plants
 Laundries and cleaners
 Medical-technical industry
 Metal cleaning industry
 Schools and Universities
 Research centres and academies
 Road and sewer reconstruction
 Textile preparation/refinement
 Vulcanisation industry
 Wax industry
 Wood and chipboard industry



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