RENNER
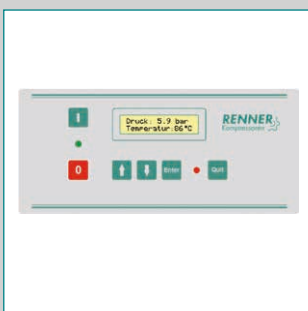## Kompressoren

Control systems
for compressors and compressed air stations
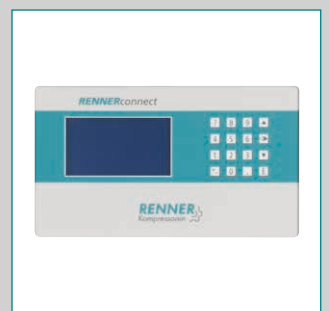
Made in Germany

Efficient and reliable!

RENNERtronic

RENNERtronic Plus

RENNERcontrol

RENNERconnect

RENNER Compressor Control Systems

Compressed air supply must work reliably and economically. RENNER intelligent control systems ensure this for both individual and multiple compressor stations.

RENNERlogic – RENNER's standard control system

RENNERlogic – a controller that is both functional and simple with many benefits!

Features:

- the start button starts up the compressor, the stop button makes the compressor go into shut off delay

- emergency stop: the compressor switches off immediately in emergency situations

- LED display: the compressor status is displayed by various flashing patterns.

- remote-indicating thermostat monitoring the temperature of the system

- hour meter to easily monitor operating hours

- pressure gauge and switch to check and control pressure

- DIP switch to easily set the shut off delay and start up period

- Modbus RTU, for example, to connect to a higher level control system

Advantages:
- standard: terminals in the switching cabinet to connect an external on/off switch
- standardised: potential free signals, fault and stand by messages
- simplified: automatic restart after power failure by connecting an additonal board (90 seconds time delay)
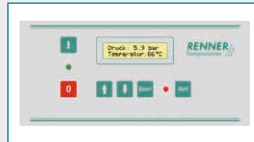- option: the compressor can be turned off via an external signal

Standard equipment
- RENNER screw compressors from 2,2 – 55,0 kW

RENNERtronic
The user-friendly basic control

Performance features

Pressure control within two adjustable pressure bands: Customers can determine two pressure bands within limits set by the factory. Based on these pressure bands the compressor is controlled.

Capture of operating and load hours: To identify uneconomical operation where load hours are highly variable.

Monitoring of adjustable maintenance intervals: For different compressor components, such as air or oil filters, maintenance intervals can be programmed. A message appears when maintenance is due.

Fault memory: The last ten messages stating the current operating hours are displayed on the control for diagnostic purposes.

Different code levels: The menu system is protected from unauthorised changes by various code numbers (e.g. factory code, service code, customer code).

Base load change over function: The control has a base load change over function that can be activated via the menu (additional module required).

Control of frequency converters: A PI control is integrated for controlling compressors with variable speed control. This control determines the rotating speed setpoint depending on the set pressure limit and transmits this to the converter as an analog signal (additional module).

Modbus RTU: serves, for instance, for the connection to a higherlevel control system or a building control system (Industry 4.0 Ready).

Advantages
• saves energy • safe operation of the compressor • controls and monitors the system • easy to use • greater reliability of operation • can be exhanced according to specific customer requirements • optional compressor monitoring **Industry 4.0**

Standard equipment
• Starting with RS 75 in different versions • For all compressors with variable speed control • RS-PRO 2-30,0 – 55,0 D • Booster (RSM)

Optionally available for:	Part no.
• RENNER screw compressors from 2,2 – 55,0 kW • SL-S / SL-I 1,5 – 7,5	10869

RENNERtronic Plus
The compressor control with additional functions

Performance features

The RENNERtronic Plus has all the functions of the standard RENNERtronic. And it can do even more!

Real-time clock: All functions can be called up on the large display with real-time clock. The internal software has a timer with 7 channels.

Base load change over function: This software comes with a base load change over function which will be connected via RS485 interface (modbus) to a maximum of 4 additional compressors.

Hardware: The hardware also has additional features: RENNERtronic Plus has 11 digital inputs (the RENNERtronic has 5), 8 digital outputs (instead of 6), 1 analog input for a temperature sensor and 3 for pressure transducers and current transformers. Both analog outputs can be used without an additional module. Easier operation due to a larger display.

Monitoring of system pressure: System pressure is monitored via a pressure transducer connected to the air end. The compressor only starts up after full discharge; shut off delay time can be controlled by system pressure. In addition, the controller checks whether the mains pressure is building up, for example to identify a belt break.

Options
• profibus connection

Standard equipment
• SLM-S 7,5 – 30,0 • water injected compressors (RSW)

Optionally available for:	Part no.
• starting with RS 75 in different versions • for all compressors with frequency converters • RS-PRO 2-30,0 – 55,0 D • Booster (RSM)	05591
• RENNER screw compressors from 2,2 – 55,0 kW • SL-S 1,5 – 5,5	00829

RENNER Kompressoren

Base Load Change Over

Advantages of Base Load Change Over

- Even workload for all compressors in terms of operating hours

- Maintenance work can be done during operation

- All compressors are activated with the same switch on / off pressure

- High potential for energy savings

- High efficiency for fluctuating air demand

- User-friendly configuration

- Compressors from other manufacturers can be connected and activated

Master	Slave 1	Slave 2
1	2	3
3	1	2
2	3	1

Master compressor: is always the same compressor; Master controls, which and how many compressors are activated.
Base Load compressor: is the compressor that is activated first (K1)
Switching interval: the base load compressor alternates after a defined number of load hours. The switching interval can be adjusted.

Base Load Change Over (installed in compressor)

1. Using RENNERtronic control: The master compressor must be equipped with RENNERtronic. All other compressors (up to 4) are controlled by the MK200 module.
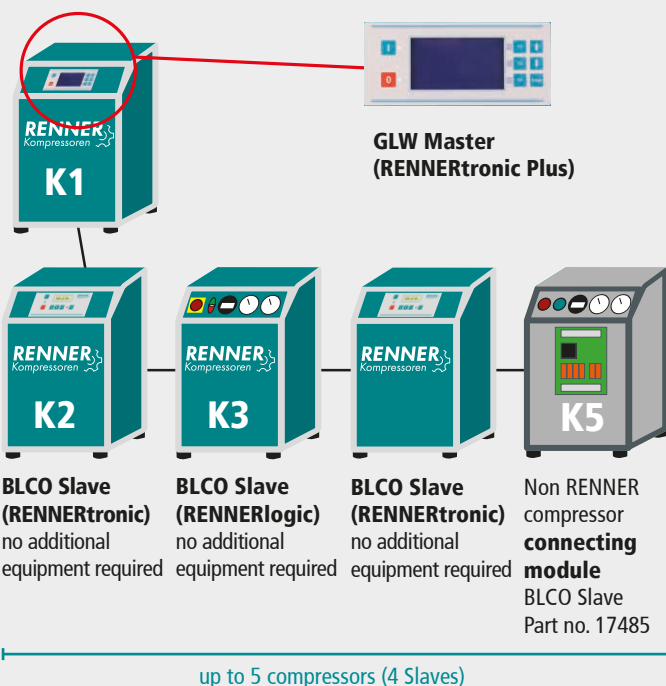
2. Using RENNERtronic Plus: Up to 4 other compressors (slaves) can be connected. The compressors are connected via an RS485-interface. Compressors from other manufacturers are connected via a slave module.

Other features: The base load compressor can be activated by a timer. The base load compressor can be one particular compressor and all other compressors take turns.

Application examples: A new energy efficient compressor runs permanently and covers all demand for air. A second, old compressor will be activated once a week for 2 hours to prevent standstill damage.

A high-performance compressor with variable speed control has priority during day time. At night priority is given to a RS-B which is sufficient for the lower air demand that time.

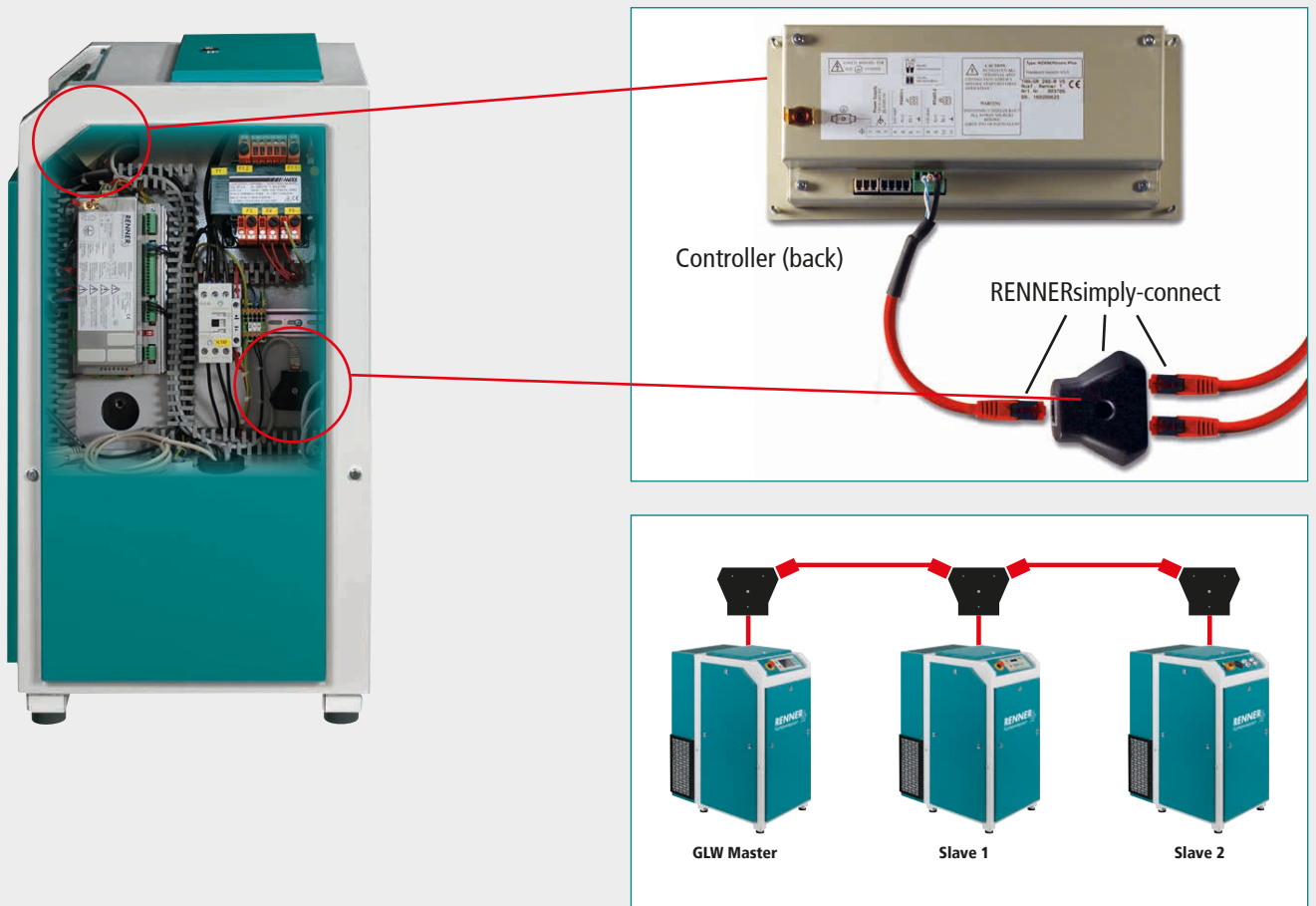The base load compressor can be determined, all other peak load compressors alternate.

**GLW Master
(RENNERtronic Plus)**

K1

K2
**BLCO Slave
(RENNERtronic)**
no additional
equipment required

K3
**BLCO Slave
(RENNERlogic)**
no additional
equipment required

**BLCO Slave
(RENNERtronic)**
no additional
equipment required

K5
Non RENNER
compressor
**connecting
module**
BLCO Slave
Part no. 17485

up to 5 compressors (4 Slaves)

Base Load Change Over (installed in compressor)	
Option	**Part no.**
BLCO Master (RENNERtronic) for up to 4 Slaves	10680
BLCO Master (RENNERtronic Plus) for up to 4 Slaves	incl.
BLCO Slave (RENNERtronic, RENNERlogic and SCROLL) to connect to a superordinate control system via digital inputs and outputs	05581
BLCO Slave (RENNERtronic / RENNERlogic) via RS485	incl.
Adjustment of circuit diagram for compressors of other manufacturers for BLCO (circuit diagram must be provided by client)	03155
Connecting cable 2x 0,5 mm² shielded wire (BLCO with RENNERtronic Plus)	00979
Connecting cable 10 x 0,75 mm² (BLCO with RENNERtronic)	15475

RENNERsimply-connect

The easy solution to connect compressors.

RENNERsimply-connect is a system providing an easy and quick way to connect RENNER compressors via RS485 bus. RENNERsimply-connect is universally applicable, whether you would like to implement an integrated base load change over or connect to a superordinate control system. Prefabricated connecting cables and terminals eliminate the need for complicated wiring. Simply guide the connecting cable into the switch cabinet, plug it in, and the RS485 connection will be established.
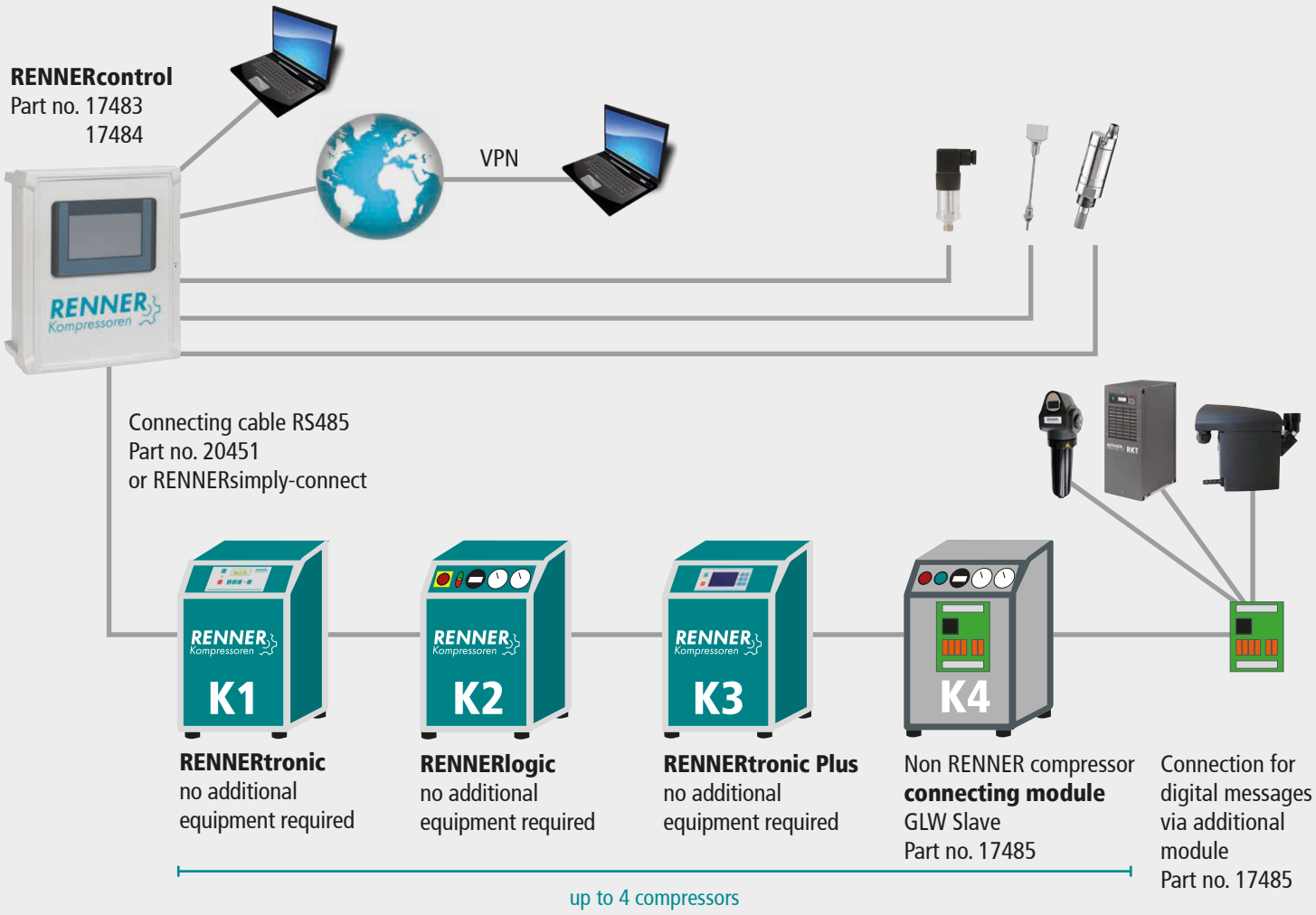
RENNERsimply-connect can be pre-assembled in your compressor or is available as a retrofit kit.

Controller (back)

RENNERsimply-connect

GLW Master   Slave 1   Slave 2

Model	Description	Part no.
RENNERsimply-connect	Connecting system mounted in compressor to simply and quickly connect compressors. RENNERsimply-connect consists of two RJ45-sockets, which are mounted ex factory in the switch cabinet of the compressor. Suitable for compressors with RENNERtronic, RENNERtronic Plus and RENNERlogic.	07975
RENNERsimply-connect-logic	Retrofit kit for compressors with RENNERlogic-, RENNERtronic- und RENNERtronic Plus control systems. Connecting system to simply and quickly connect compressors. RENNERsimply-connect-logic / -tronic / -tronic Plus consists of two RJ45-sockets, which are mounted in the switch cabinet of the compressor. They are plugged into the RENNERtronic by means of a built-in connecting cable including connector (RENNERlogic model without connector). Two cable glands for retrofitting are also included.	07985
RENNERsimply-connect-tronic		08469
RENNERsimply-connect-tronic Plus		08416
RENNERsimply-connect 5m	Connecting cable suitable for RENNERsimply-connect system, completely pre-assembled connectors	08239
RENNERsimply-connect 10m	Connecting cable suitable for RENNERsimply-connect system, completely pre-assembled connectors	07990
RENNERsimply-connect 15m	Connecting cable suitable for RENNERsimply-connect system, completely pre-assembled connectors	08738
RENNERsimply-connect 20m	Connecting cable suitable for RENNERsimply-connect system, completely pre-assembled connectors	07921
RENNERsimply-connect 30m	Connecting cable suitable for RENNERsimply-connect system, completely pre-assembled connectors	20199

BLCO in wall-mounting box (RENNERcontrol)

RENNERcontrol is a base load change over in a wall-mounting box with web visualization and touch screen. It is available in different versions.

RENNERcontrol
Part no. 17483
17484

VPN

Connecting cable RS485
Part no. 20451
or RENNERsimply-connect

K1	K2	K3	K4	
RENNERtronic no additional equipment required	**RENNERlogic** no additional equipment required	**RENNERtronic Plus** no additional equipment required	Non RENNER compressor **connecting module** GLW Slave Part no. 17485	Connection for digital messages via additional module Part no. 17485

up to 4 compressors

RENNERcontrol Touch
Webserver with base load change over and 7" touch screen. Visualization and monitoring of compressors via network and at site; BLCO for up to 4 compressors.

**RENNERcontrol Touch without web visualisation**
Like RENNERcontrol Touch, but without webserver

The compressors are connected via RS485 interface of the RENNER control systems RENNERlogic, RENNERtronic und RENNERtronic Plus. Compressors of other manufacturers require a connecting module. The application examples of the built-in base load change over apply to RENNERcontrol as well.

## Advantages of RENNERcontrol

- easy to retrofit
- visualization of compressors
- enhanced fault and maintenance management
- analysis of 3 additional analog sensors
- 4 freely assignable digital inputs and outputs

| Base load change over + webserver in wall mounting box	
Model	**Part no.**
RENNERcontrol Touch	17483
RENNERcontrol Touch without webser visualization	17484
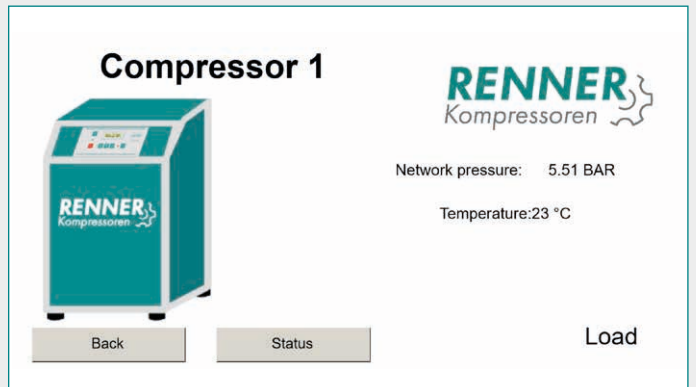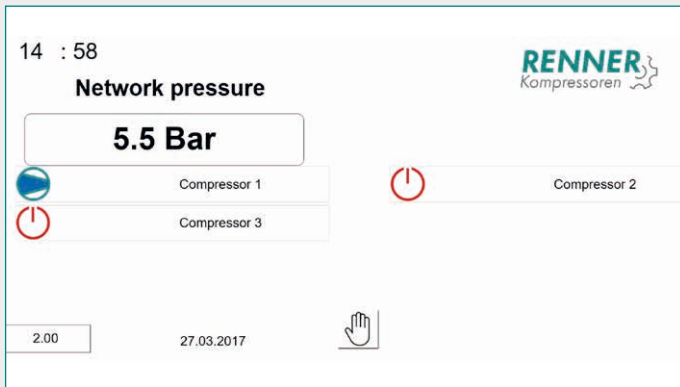
The basic view shows the current network pressure, the current state of the compressors as well as date and time. Detailed information can be retrieved by directly selecting the respective data.

If a compressor is selected, **the current state** will be explained in more detail. From this screen other details like oil temperature profile, fault message memory, and maintenance data can be retrieved.
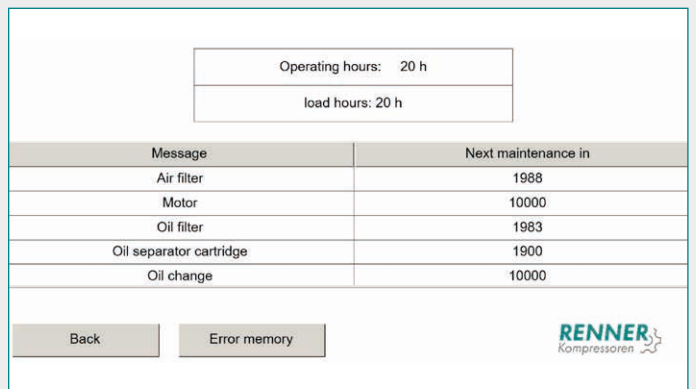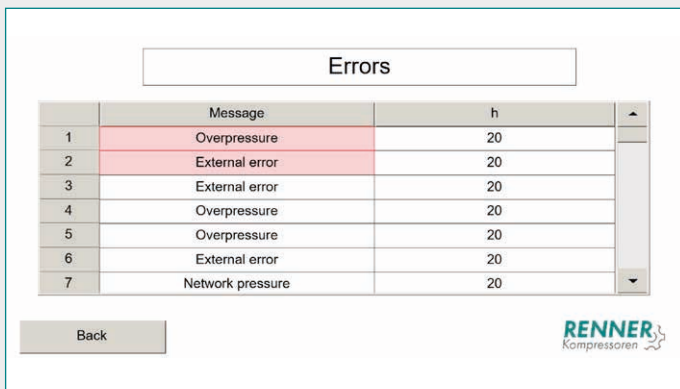
Fault indication of the selected compressor

Display of maintenance schedule and the operating hours of the selected compressor
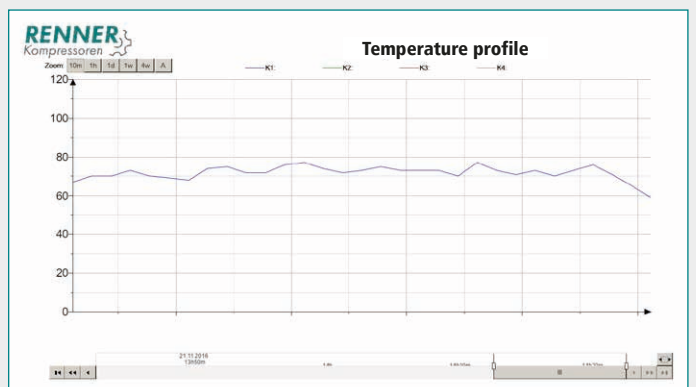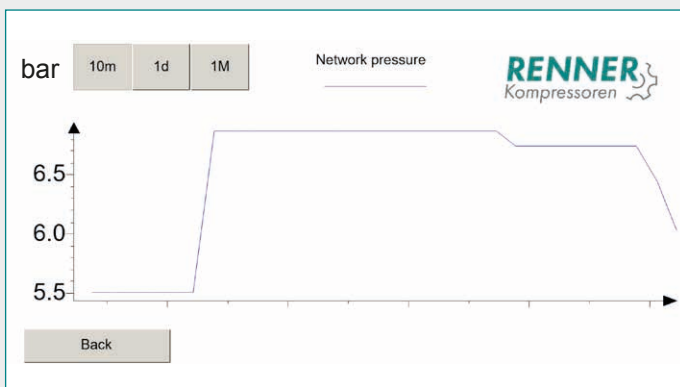
Visualisation of the pressure profile of selected compressors

Display of the temperature profile of compressor and room

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RENNERconnect

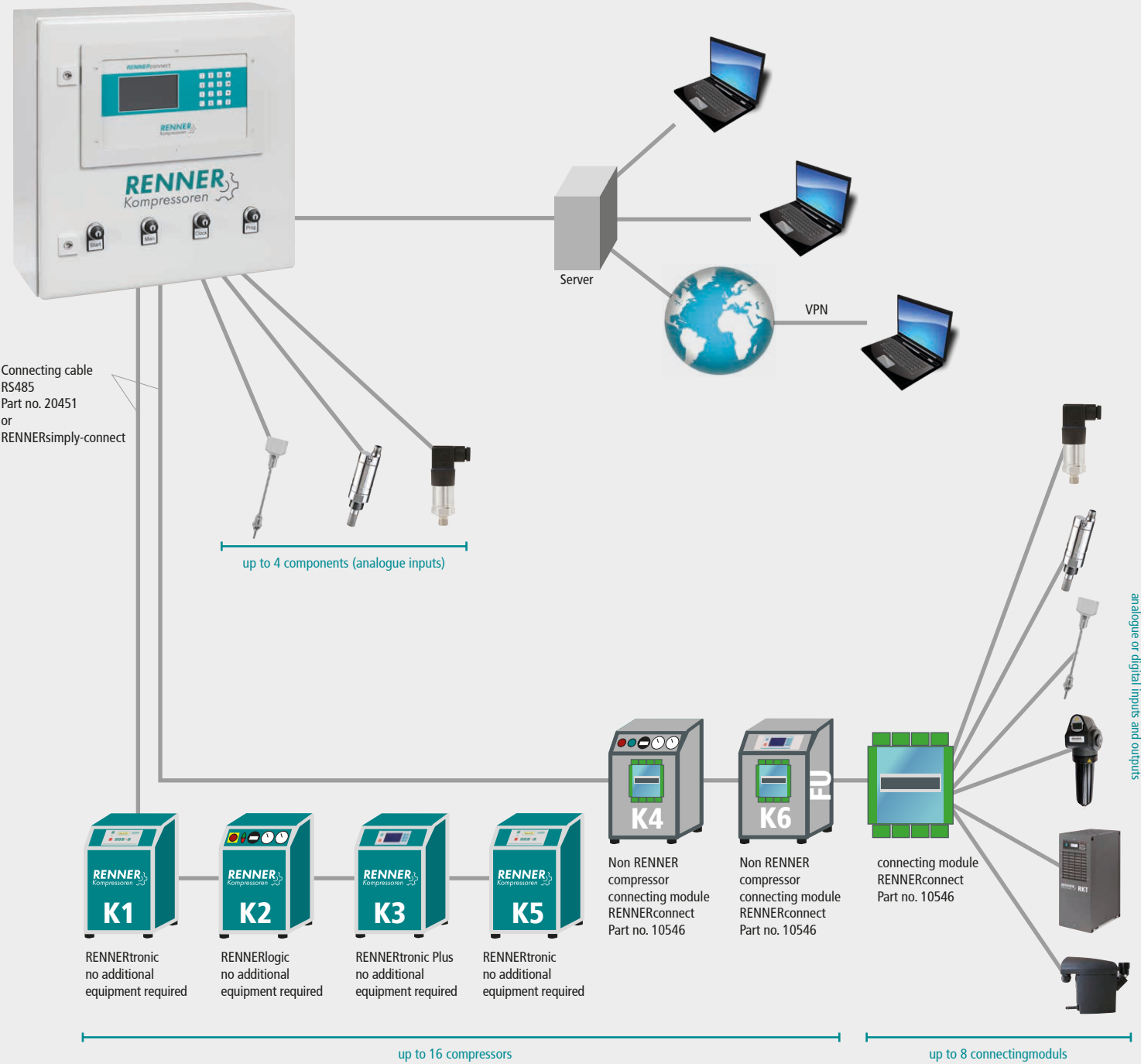Does your compressed air station work economically? RENNERconnect is a higher level, intelligent control system for optimal management and monitoring of your compressed air station. RENNERconnect contributes to efficiency and is highly reliable. Intelligent, air-demand based connection of the compressors provides not only a high energy savings potential, but also ensures increased operational reliability of your compressors.

Connectivity:

RENNERconnect
Part no. 04833
04834
04835

Connecting cable
RS485
Part no. 20451
or
RENNERsimply-connect

Server

VPN

up to 4 components (analogue inputs)

K4
Non RENNER compressor connecting module RENNERconnect Part no. 10546

K6
FU
Non RENNER compressor connecting module RENNERconnect Part no. 10546

connecting module RENNERconnect Part no. 10546

analogue or digital inputs and outputs

K1
RENNERtronic
no additional equipment required

K2
RENNERlogic
no additional equipment required

K3
RENNERtronic Plus
no additional equipment required

K5
RENNERtronic
no additional equipment required

up to 16 compressors

up to 8 connectingmoduls

Features of the RENNERconnect:

1) Regardless of the compressor type, up to 16 compressors can be controlled:
   - RENNER compressors
   - non RENNER compressors
   - standard compressors with load and no-load control

2) All compressors operate in a common, narrow pressure band, which means:
   - all compressors are activated at the same switch on/off pressure
   - pressure band can be reduced to a minimum
   - high potential for energy savings, as pressure can be reduced maximally
   - older compressor stations can be operated more economically

3) All compressors are connected via RS485-bus-system.

4) RENNERconnect can connect to various additonal components in your compressor room and monitor them (e.g. dryer, drain, dew point sensor, flow sensor, additional pressure sensors).

5) DIN ISO 50001: The control system can be used as energy management tool according to DIN ISO 50001 (section 4.6.1. monitoring, measurement, analysis). Contact us, we gladly provide you with information!

- extremely low switching frequency (extends the service life of all mechanical components of the compressors)

- particularly low energy cost due to constant calculation of air consumption which ensures an efficient use of compressor capacity

Advantages of RENNERconnect

- Compressors using RENNERtronic, RENNERtronic Plus or RENNERlogic can be directly connected to RENNERconnect.

- Compressors of other manufacturers can be connected by simply applying a compact connecting module.

- Maximum energy savings (up to 30%) by avoiding expensive idle time and load / unload switching cycles, pressure optimization by 4 adjustable pressure bands and by reduction of maximum pressure.

- At least double the service life of suction controls, air ends, contactors and motors! The service cost corresponds to the actual load times.

- RENNERconnect matches the use of the compressors automatically with the demand for compressed air in order to generate just the right amount needed for production.

⦗ ▁▃▅ Industry 4.0 ⦘

Connect your central control system via modbus with RENNER compressors and benefit from extensive possibilities of network data exchange in real time. Whether you want to focus on status monitoring, look at fault reports, or retrieve service messages, all information is available and ready to be gathered. Communication interfaces of the control systems are used between the individual RENNER compressors and secure full access as well as full control of the compressed air station.

Intelligent interconnectedness of the components enables communication between compressed air production, air treatment as well as their optimal adjustment to achieve maximum efficiency.

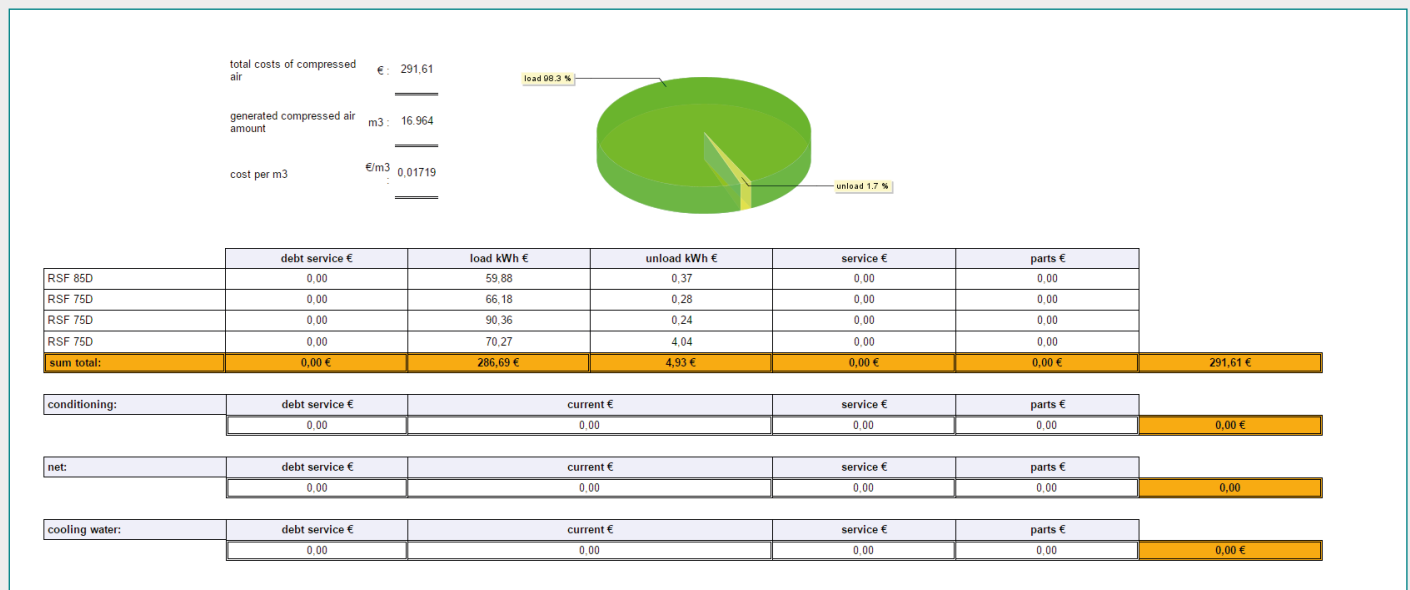# Webserver for the RENNERconnect control system

In control of your compressed air station – always and everywhere

- webserver is part of every RENNERconnect control system
- all current measurements are displayed on webserver
- up to date online analysis of the operation of the compressors and other equipment
- statistical analysis of all parameters in daily, weekly, or monthly reports
- compressors and equipment can be set and parameterized via webserver
- optionally: automatic forwarding of daily reports
- calculation of service dates in accordance with operating hours of compressor

Energy balance and cost calculation:

The energy and cost calculation is available for each completed day. Several days up to a full month can be merged. The table can be exported in Excel or Word format for further use.

COMPRESSOR DATA AND ENERGY CALCULATION   **Wednesday 02.12.2015**

efficiency:	6,44649 kW/(m3/min)	€/kWh:	0,16 €/kWh	load costs:	98,31 %
efficiency:	0,10744 kWh/m3	P-min:	7,2 bar	unload cost:	1,69 %
costs:	0,01719 €/m3	P-max:	7,8 bar	total costs:	291,61 €

channel	compressor	m3/min		load kW		kW	load		unload		average %	cycles		compressed air	total kWh			efficiency kWh/m3	total costs €		
		min	max	min	max	unload	h	min	h	min	load	motor	load	m3	load	unload	total		load	unload	total
01	RSF 85D	3,5	12,4	21,40	81,60	9,20	9	48	0	7	98,8	11	16	3.815	374,2	2,3	376,6	0,09870	59,88	0,37	60,25
02	RSF 75D	5,3	12,6	34,40	79,00	20,10	9	13	0	4	99,3	8	8	4.005	413,6	1,7	415,3	0,10371	66,18	0,28	66,45
03	RSF 75D	5,3	12,6	34,40	79,00	20,10	12	36	0	4	99,5	6	6	5.114	564,8	1,5	566,3	0,11072	90,36	0,24	90,60
04	RSF 75D	5,3	12,6	34,40	79,00	20,10	8	43	1	8	88,5	7	15	4.029	439,2	25,2	464,4	0,11527	70,27	4,04	74,31
ZGM											sum total	32	45	16.964	1.791,8	30,8	1.822,6	0,10744	286,69	4,93	291,61

Consumption 'Flowsensor ' :   15.847 m3

energy measurement 'RSF 85D' :   377 kWh
energy measurement 'RSF 75D' :   415 kWh
energy measurement 'RSF 75D ' :   566 kWh
energy measurement 'RSF 75D ' :   464 kWh
universal sensor 'Wärmerückgewinnung' :   1.052 KW

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	total costs of compressed air	€ :	291,61
	generated compressed air amount	m3 :	16.964
	cost per m3	€/m3 :	0,01719

load 98.3 %

unload 1.7 %

	debt service €	load kWh €	unload kWh €	service €	parts €	
RSF 85D	0,00	59,88	0,37	0,00	0,00	
RSF 75D	0,00	66,18	0,28	0,00	0,00	
RSF 75D	0,00	90,36	0,24	0,00	0,00	
RSF 75D	0,00	70,27	4,04	0,00	0,00	
sum total:	**0,00 €**	**286,69 €**	**4,93 €**	**0,00 €**	**0,00 €**	**291,61 €**

conditioning:	debt service €	current €	service €	parts €	
	0,00	0,00	0,00	0,00	0,00 €

net:	debt service €	current €	service €	parts €	
	0,00	0,00	0,00	0,00	0,00

cooling water:	debt service €	current €	service €	parts €	
	0,00	0,00	0,00	0,00	0,00 €

Maintenance summary

| channel	description	total [h]	load [h]	Airfilter intervall	[h]	Oilfilter intervall	[h]	Oil separator	[h]	Oil change	[h]	alert	next service
1	RS 132	1738	1680	262	R	262	R	262	R	262	R	☑	----
2	RSF 2-110	2953	2941	853	R	853	R	853	R	853	R	☑	----
3	RS 15	3818	3026	956	R	956	R	956	R	956	R	☑	----

Main View
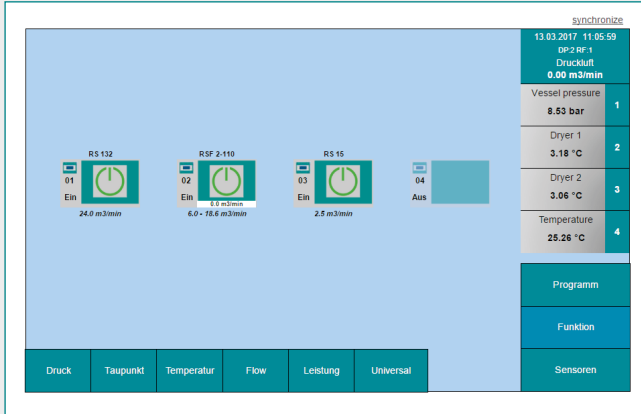
View of all connected compressors and sensors
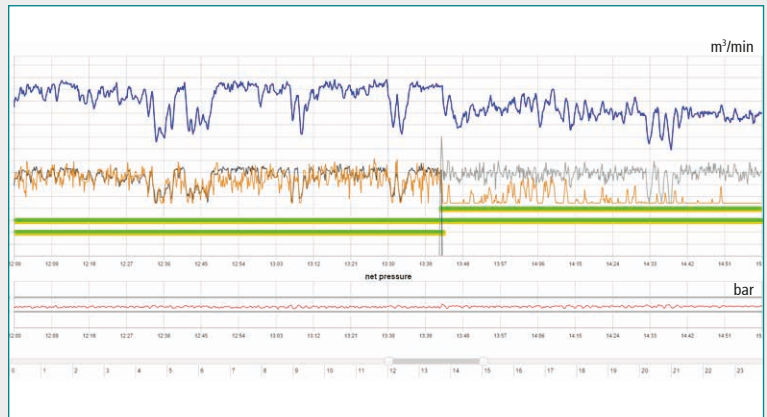
Dew-Point-Diagram
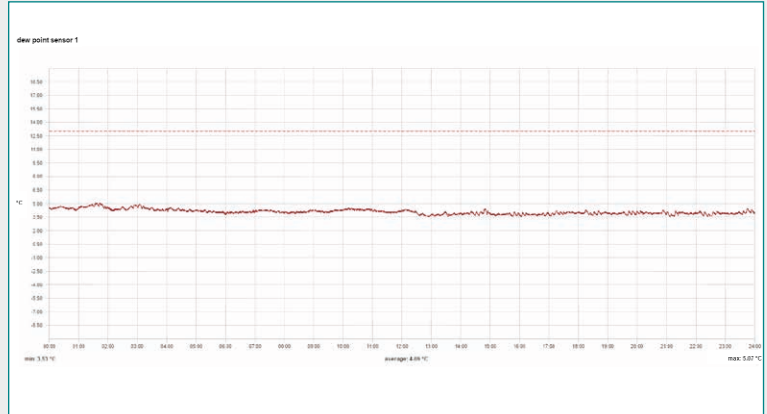
All connected sensors can be displayed graphically. Exceeding or undershooting alarm thresholds triggers selectable alarm responses.

Panel-Designer
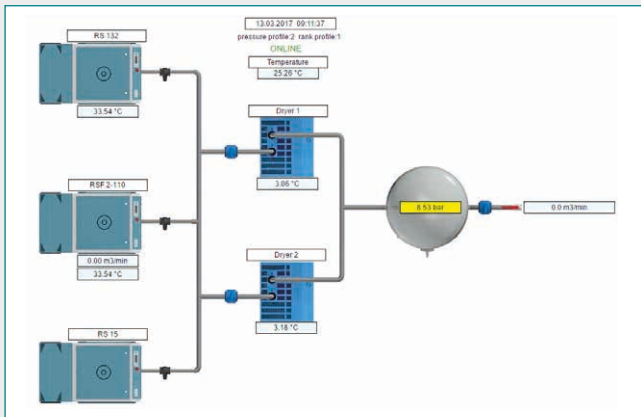
With the integrated panel designer, you can create a professional image of your station.

Total diagram

A clear overall diagram shows at a glance the pressure profile, flow rate as well as the operating times of the compressor.

Webserver Plus

An integrated service and alarm management will be provided by the option „Webserver Plus":

- sending eMails in case of faults, warnings, and maintenance
- message, if limit values of pressure, dew point, and temperature are exceeded fall below minimum
- remote control of pressure profiles, sequences and timer via webserver

RENNERconnect-Control System		
Model	**Description**	**Part no.**
RENNERconnect in plastic housing offers space for max. 1 connecting module for additional notifications (dimensions: 490x390x130 mm)	• Superordinate control for up to 16 compressors (2 of which with variable speed control, optionally 4) • Connectivity option for up to 8	04833
RENNERconnect in plastic housing offers space for max. 4 connecting modules for additional notifications (dimensions: **500x500x200 mm)**	• Additional modules with digital and analog inputs and outputs for altogether 16 analog sensors with 4-20mA and 24 digital inputs for monitoring (falut messages originating from dryers, drains, filters von Trocknern, Ableitern, Filtern, other notifications…)	04834
RENNERconnect without housing suitable for installation in an existing switch cabinet	• incl. pressure sensor • includes compressed air visualisation (webserver)	04835

RENNER
Kompressoren

COMPRESSED AIR FOR ALL APPLICATIONS

RENNER GmbH Kompressoren, a family run business established in 1994, develops and assembles economical and energy-efficient compressors. A broad range of compressed air accessories are also part of the product portfolio. The structure and size of the company ensure flexible decisions and short lead times, thus providing optimal focus on the requirements of the customers.

THE RENNER MANUFACTURING AND SUPPLY PROGRAMME:
We can supply you with the right compressor for any application – guaranteed.

SCREW COMPRESSORS:
- from 2.2 to 355 kW
- up to 40 bar, e.g. for manufacture of PET bottles
- compact systems with air receiver, refrigeration dryer, and variable speed control
- heat exchanger integrated or as an external box
- special applications: gas compression, operation of drilling devices, rail, and special-purpose vehicles
- customized models designed to customer specifications

OIL-FREE COMPRESSORS:
- SCROLL compressors for oil-free compressed air from 1.5 to 30.0 kW
- water-injected screw compressors for oil-free compressed air in breathing air quality from 18.5 to 120 kW

oil-free Made in Germany   **SCROLLline Industry**   **SCROLLline SuperSilent**

PISTON COMPRESSORS:
- from 1.5 to 11.0 kW
- stationary or mobile, with or without sound insulation

CONTROL SYSTEMS:
- compressor control systems
- superordinate control systems
- state-of-the-art web server monitoring   **Industry 4.0**

COMPRESSED AIR ACCESSORIES:
- air filters, air receivers, refrigeration dryers, adsorption dryers, condensate drains, and oil-water-separators

RENNER GmbH · Kompressoren

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www.renner-kompressoren.de

Zertifiziertes Management-System
ZDH ZERT
DIN EN ISO 9001
Reg.-Nr.: Q1 0205013

Steuerungen - EN - 07/2017 0.5