GHP HELLAS

AIR CONDITIONING WITH NATURAL GAS

OPERATING MANUAL

RMB/Control
Status 04.2023

Combined heat and power unit neoTower® 2.0, 3.3, 4.0, 9.5, 12.5, 25.0, 30.0

Contents

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1. Document information

1.1 Validity

This operating manual belongs to the documentation for the combined heat and power unit, which is referred to in this manual as “CHP” or the “system”.

This operating manual is a supplement to the operation manual for the system and describes control via the operating display with the software “RMB/Control”.

Valid from software status:
– Version 1.5c

Use on the following systems:
– 2.0
– 3.3
– 4.0
– 9.5
– 12.5
– 25.0
– 30.0

For descriptions of the system, observe the associated operation manual.

1.2 Safety instructions

⚠ DANGER!

Information highlighted with the word DANGER warns against a hazardous situation that will lead to death or severe injury.

⚠ WARNING!

Information highlighted with the word WARNING warns against a hazardous situation that can lead to death or severe injury.

⚠ CAUTION!

Information highlighted with the word CAUTION warns against a situation that can lead to minor or moderate injuries.

⚠ ATTENTION!

Information highlighted with the word ATTENTION warns against a situation that can lead to material or environmental damage.

1.3 Explanation of symbols

Text

► Required action

– List

→ Cross reference to another point in this document

Cross reference to other documents that must be observed

2. Safety information

2.1 Intended use

The software “RMB/Control” serves to control and monitor the system. The software is operated via the operating display on the control cabinet.

The software “RMB/Control” is installed by the manufacturer. Only the manufacturer is permitted to implement measures for maintaining and updating the software.

Intended use also includes reading and following this manual.

Any other use is considered contrary to intended use.

2.2 Authorised target groups

This manual is intended for various target groups that are authorised for specific duties.

2.2.1 Manufacturer

The manufacturer supplies the product and has the following duties:
- Training experts on assembly, maintenance, disassembly and disposal.
- Commissioning the system.

Only the manufacturer and specialist partner authorised by the manufacturer have access to the “expert level” area of the “RMB/Control” software.

2.2.2 Operator

The operator is responsible for the building in which the product is installed. The operator has the following duties:
- Fulfilling the requirements specified by the energy provider (e.g. registration, approval, compensation).
- Meeting the installation location requirements.
- Training the user.
- Complying with statutory occupational health and safety obligations.
- Complying with the valid safety, accident prevention and environmental protection regulations.
- Providing and complying with the documentation.
- Ensuring that the product is always kept in a technically sound condition.
- Storing the system when necessary.

2.2.3 Trained personnel

Trained personnel are responsible for the assembly, maintenance, disassembly and disposal of the product. The following points must be observed:
- All tasks must only be performed by qualified personnel who have been trained by the manufacturer and who are familiar with assembly technology, gas and water installations, and current safety regulations.
- Special installation tasks (e.g. tasks involving the building structure or the ventilation system) must only be performed by the suitably qualified personnel of specialist companies.
- Electrical installations must only be performed by qualified, skilled electricians.

Only qualified personnel trained by the manufacturer have access to the “technician level” area of the “RMB/Control” software.

2.2.4 User

Users may perform operational and cleaning tasks on this product. Obligations of the user:
- To be trained on the product by the operator.
- To be familiar with this manual.

Trained users have access to the non-protected areas of the “RMB/Control” software, but not to the “expert level” and “technician level” areas.

2.3 General safety instructions

⚠ WARNING!

Danger of death with a failure to observe the manual!
This manual contains important information for handling the system safely. Potential hazards are specifically highlighted. Failing to observe such information can lead to death or severe injuries.
► Read the manual carefully.
► Follow the safety instructions contained in this manual.
► Follow the safety instructions on the system
► Store the manual in an accessible place.

If you can smell gas, immediately proceed as follows:
– Close the gas valve.
– Do not generate any naked flames.
– Do not operate any electrical switches. (e.g. light switches, all-pole separating points)
– Do not use any electrical appliances in the hazardous area (e.g. telephone).
– Ventilate the rooms.
– Inform the manufacturer, gas utility company or qualified service company.

Use of the system is prohibited in the following cases:
– If the system or individual components are damaged.
– If the system has been altered or modified without authorisation.
– If the supply and return lines (e.g. gas, flue gas, water, electricity, condensate drain) are altered or modified without authorisation.
– If any safety devices are missing or inoperable.
– During the construction phase of the building.
– If the system has been in storage for more than 6 months after delivery without prior removal of preservative agent.
– If the system has been decommissioned for more than 6 months without prior removal of preservative agent.
– For children or individuals who are incapable of assessing the hazards associated with operating the system.

The manufacturer does not accept any liability or guarantee for damage or loss in the following cases:
– Failing to observe this manual.
– Contrary-to-intended use.
– Improper handling.
– Use by unauthorised target groups.
– Failing to meet the installation location requirements.
– Using replacement parts that have not been authorised by the manufacturer.
– Bypassing the system's safety devices.
– Removing the system's seals and sealants.
– Failing to comply with the maintenance intervals.

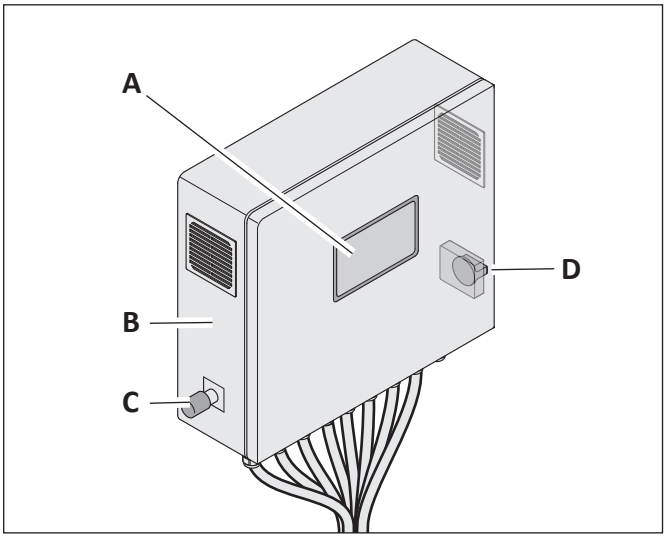
Additional safety instructions are provided in the respective chapters of this manual.
→ "4. Operating" (Page 8).
→ "5. Service repairs" (Page 44).

3. Product information

3.1 Product overview

The “RMB/Control” software is operated via the operating display on the system’s control cabinet. The operating display is equipped with a touch-sensitive screen (“touchscreen”).

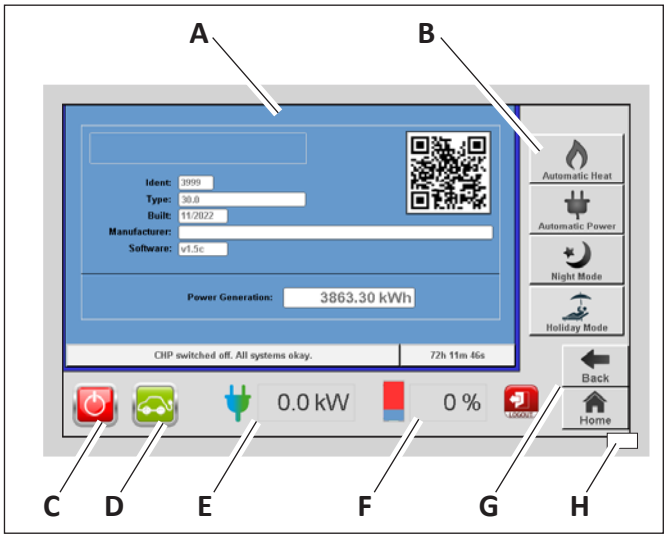
The control cabinet contains all the components required to control the system.



A Operating display
B Control cabinet housing
C Emergency stop switch
D Master switch

3.2 Operating display

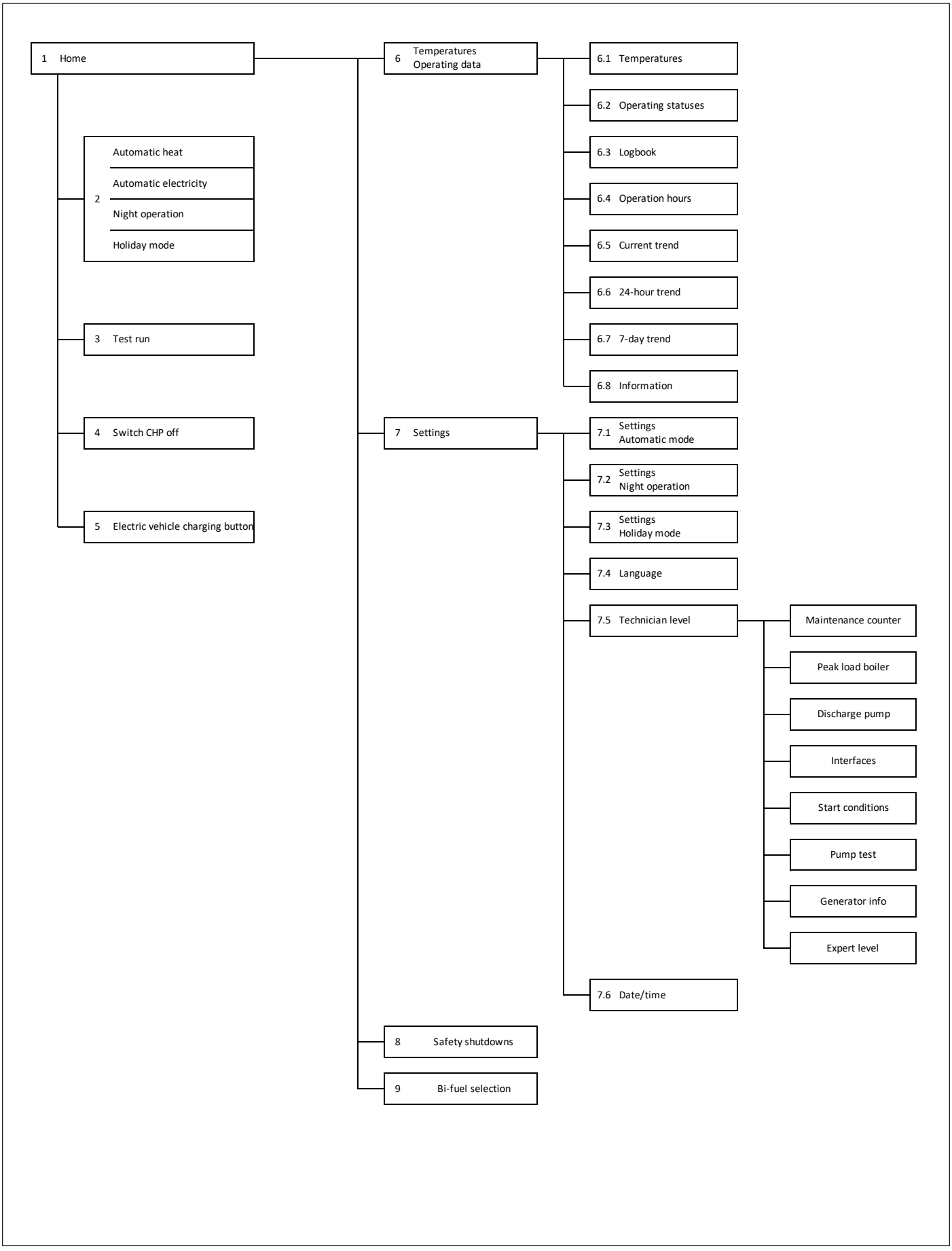
By touching the screen (“touchscreen”), the user is able to execute functions and call up screen pages. If entries are necessary (e.g. names, values) then a corresponding on-screen keypad is automatically displayed.



A Display of the selected menu.
B Function keys for the modes of operation:
  – Automatic heat
  – Automatic electricity
  – Night operation
  – Holiday mode
C Button for shutting down the system
D Button for activating the electric vehicle charging
E Display of the current electricity available
F Display of buffer loading
G Buttons for navigation in the menus
  – Back (change to the previous menu)
  – Home (change to the start screen)
H Button for direct access to the start screen.

The operating display is equipped with a screensaver that starts automatically after a specified time. Touching the screen closes the screensaver.

3.3 Menu structure



4. Operating

⚠ ATTENTION!

Risk of damage to the system with a failure to observe the operating instructions!
This chapter contains important information regarding the safe operation of the system. Incorrect settings in the control mechanism can damage the system or shorten its service life.

- ► Read this chapter carefully before operating the system.
- ► Follow the safety instructions.

Trained users have access to the non-protected areas, but not to the “expert level” and “technician level” areas.
The system must only be operated by qualified users.
→ “2.2.4 User” (Page 4).

Only qualified personnel trained by the manufacturer have access to the “technician level” area.
→ “2.2.3 Trained personnel” (Page 4).

Only the manufacturer and specialist partner authorised by the manufacturer have access to the “expert level” area.
→ “2.2.1 Manufacturer” (Page 4).

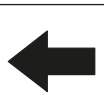
In order to operate the system via the software, the following preconditions must be satisfied:
– The system is completely and correctly assembled.
– The system is switched on.

For information regarding assembly, observe the associated operation manual.

Background colours
The background colour of the screen changes depending on the system state.
The following colours are possible:

Colour	Meaning
Orange	System is switched off
Blue	System is switched on and waiting for requests
Green	System running and producing energy
Red	A safety shutdown has switched the system off

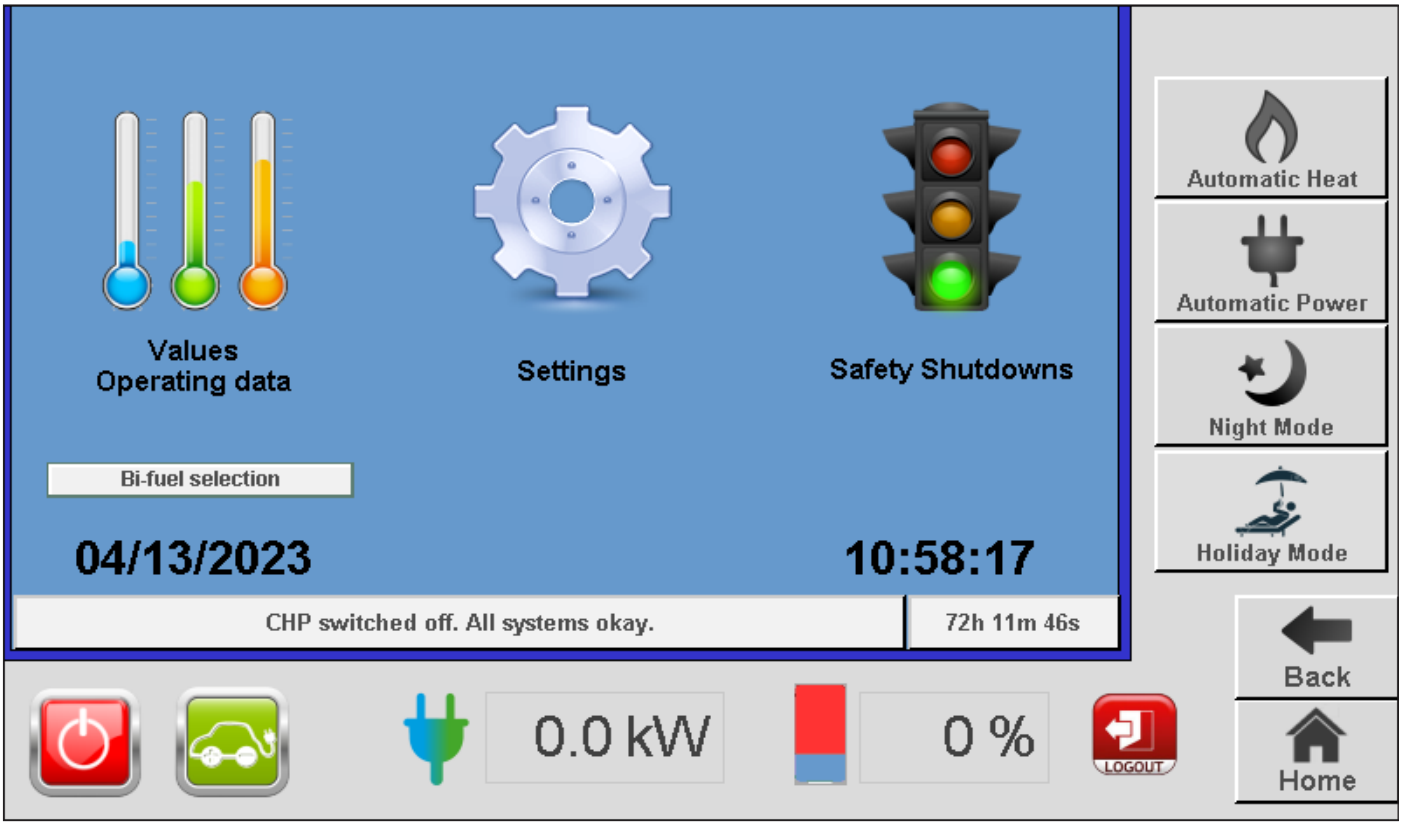
Function keys
The following buttons are permanently displayed for immediate execution of the corresponding function:

Symbol	Meaning
	Shutdown
	Electric vehicle charging button
	Automatic heat
	Automatic electricity
	Night operation
	Holiday mode
	Logout [1]
	Back
	Home

[1] Symbol is only displayed after access to the technician level

The screens for the non-protected areas and the technician level are described in the following, according to the menu structure.
→ “3.3 Menu structure” (Page 7).

4.1 Home



The start screen (home) branches into the following submenus:
- Temperatures and operating data
- Settings
- Safety shutdowns
- Bi-fuel selection

In order to switch to a certain submenu:
► Touch the corresponding button.

The following information is available in the footer:
- Date
- Time
- System status
- System runtime

Status and runtime of the system are displayed in all menus in the footer.

4.2 Modes of operation

The system can be operated in four modes of operation.

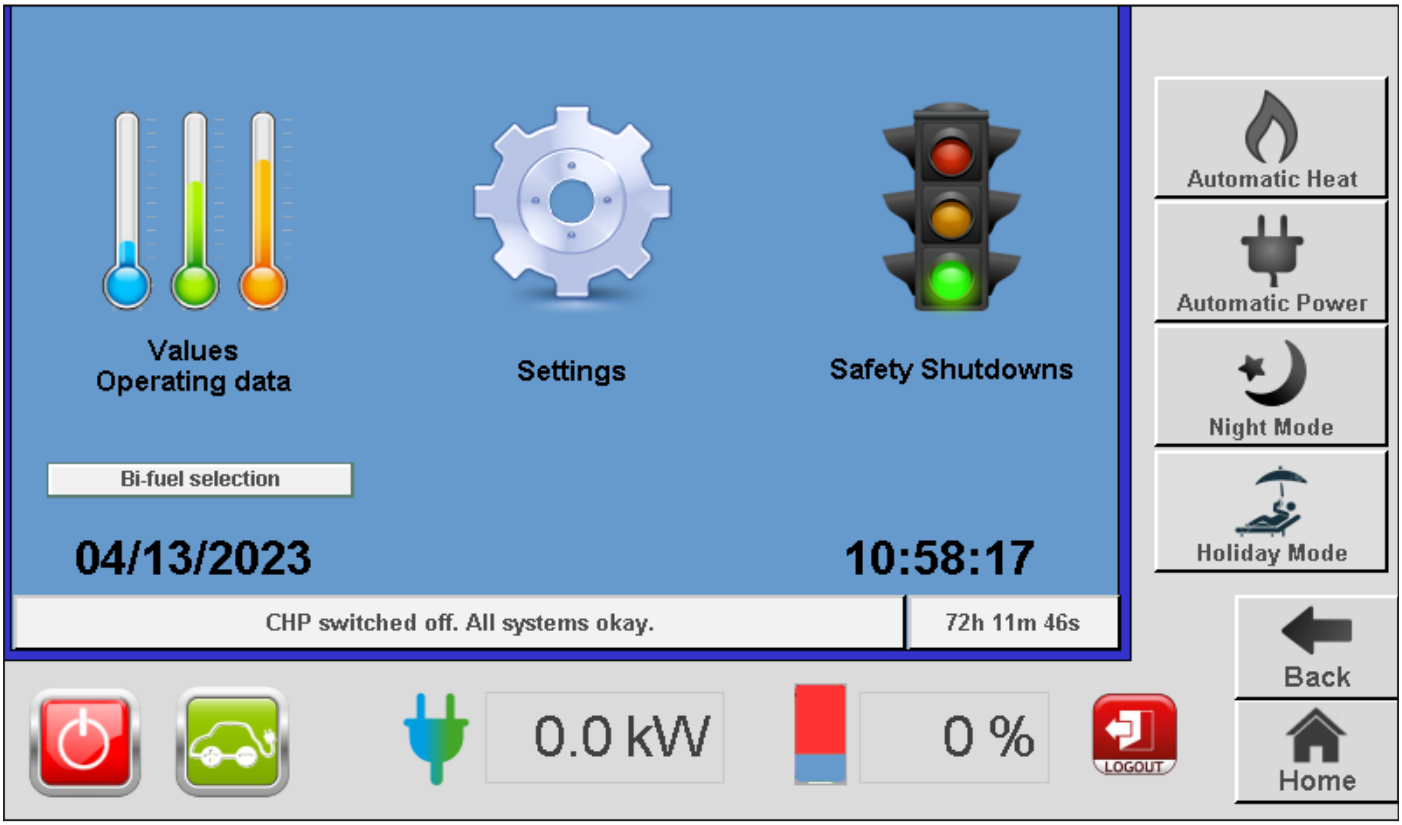
Operation mode		
	Automatic heat	The system starts if a temperature requirement has been set. If the storage battery has reached a specific percentage charge, the system begins to power down steplessly.
	Automatic electricity	The system starts to operate according to a temperature requirement. Once a specific storage battery charge has been reached, the system aligns itself to the electricity consumption of the building.
	Night operation	In night mode the system starts with a temperature requirement. Operation takes place according to the values set for night mode.
	Holiday mode	In holiday mode the system starts with a temperature requirement. Operation takes place according to the values set for holiday mode.

In order to put the system into the desired operation mode:
► Touch the corresponding button on the right side.
A confirmation message appears briefly. The selected button is permanently displayed in green.

After the start, the system has a warm-up phase lasting a few minutes. Only then is the selected output reached.

It is possible to switch between the operating modes at any time.
Switching off the operating modes is only possible by switching the system off.

4.3 Test run



When the system starts, the home menu appears on the screen. The buttons for the operation modes have a grey background.

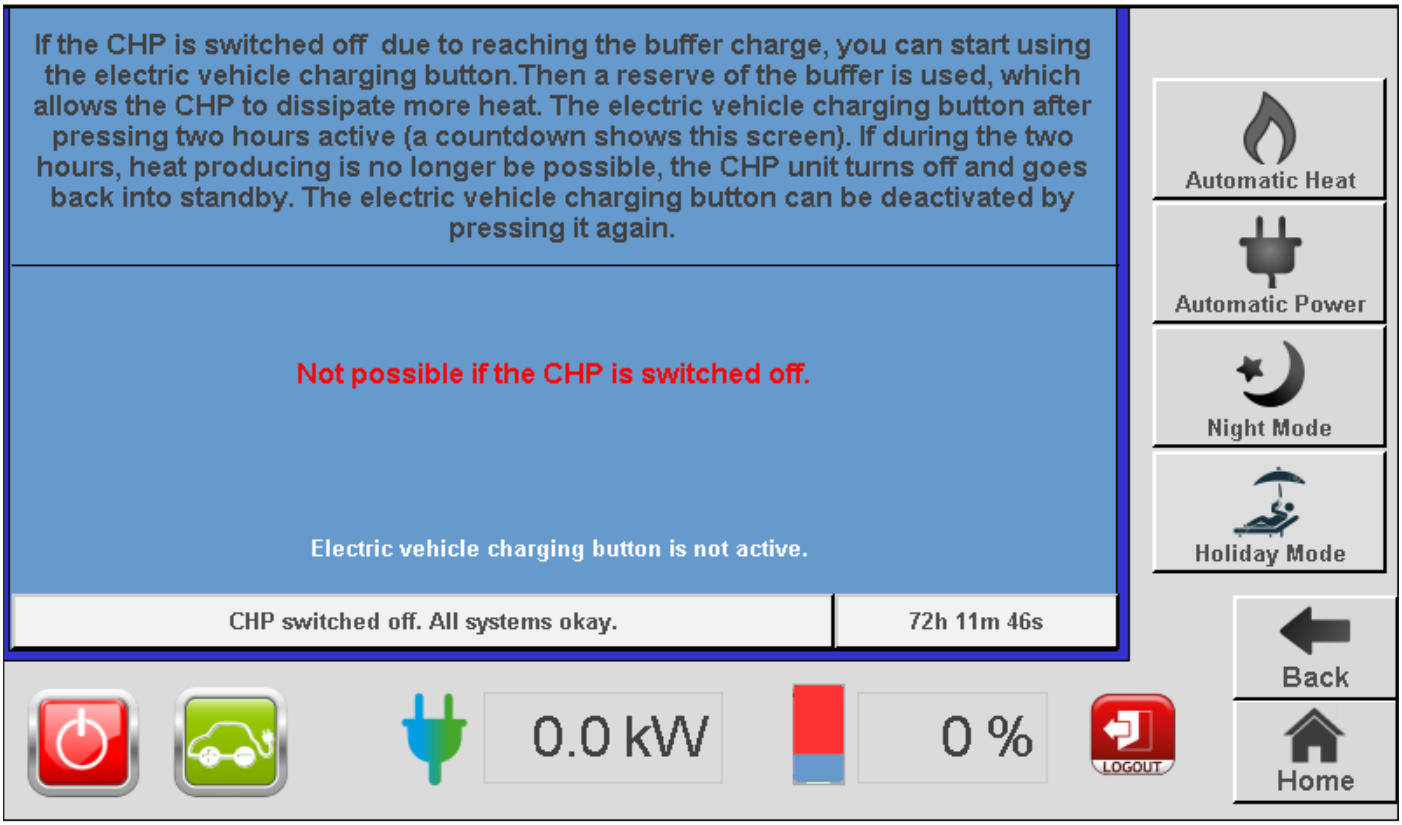
To start the test run:
► Touch the “Automatic heat” button.
The “Automatic heat” button is displayed in green. The test run starts.

4.4 Shutdown

After a shutdown, the system is in hibernation mode. The system does not start according to temperature requirements.

In order to switch off the system:
► Touch the corresponding button at the bottom left.

4.5 Electric vehicle charging button



When the buffer tank is loaded, the system switches off. By touching the electric vehicle charging button it is possible to restart the system. This changes the regulation direction and a buffer reserve is used, so that the system can take off further heat.

In order to activate the electric vehicle charging button:
► Touch the button.

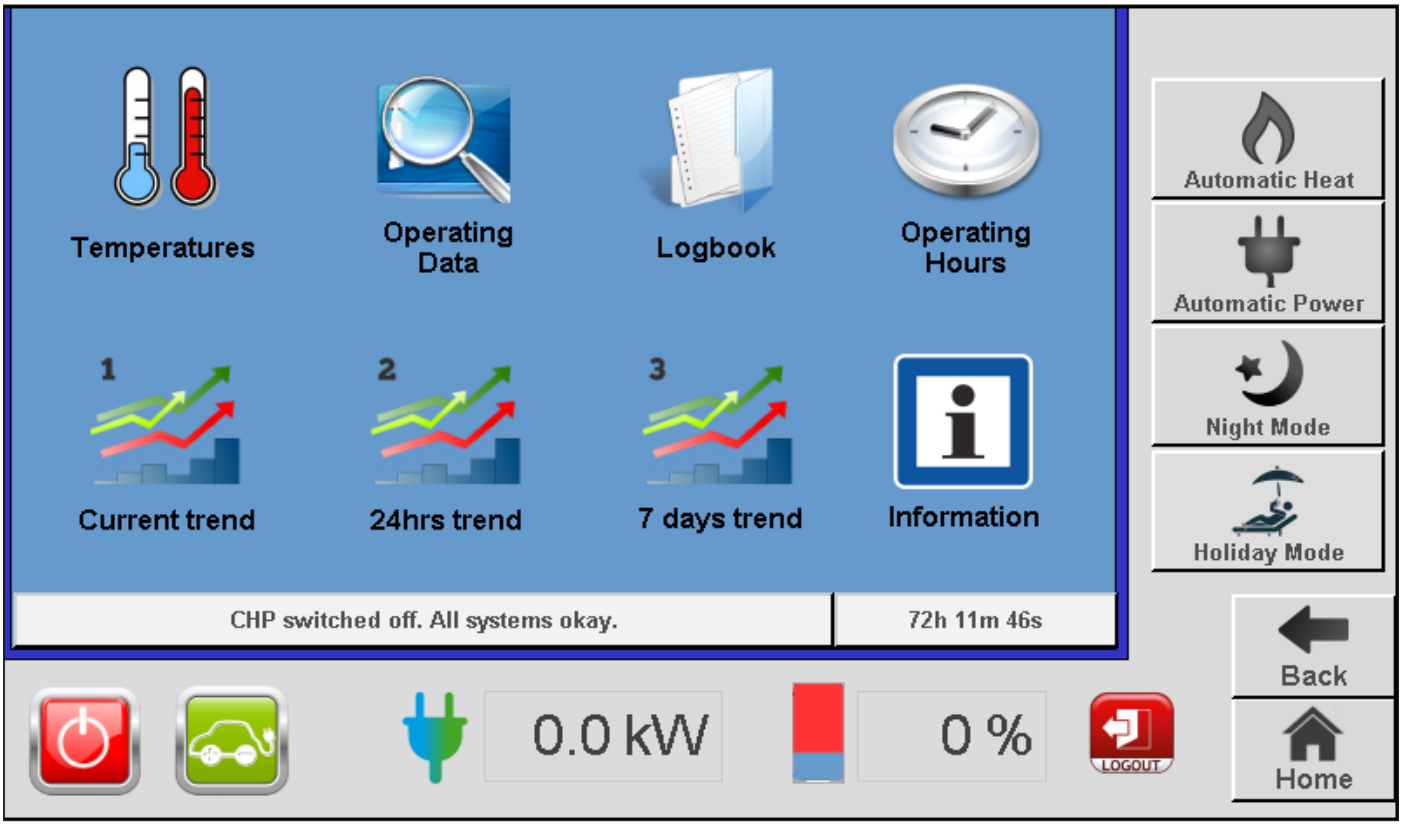
The system is active for two hours. A countdown on the screen displays the remaining time.

If, during the two hours, no further heat can be output:
The system switches off and goes into standby.

If, during the two hours, the electric vehicle charging button is pressed again:
The electric vehicle charging button is deactivated. The switch-off conditions for the most recently selected operation mode apply.

In order to use the function of the electric vehicle charging button externally, it is possible to connect an external button to the system control cabinet. The connection is only approved for a manual button; the connection of a superior controller is prohibited.

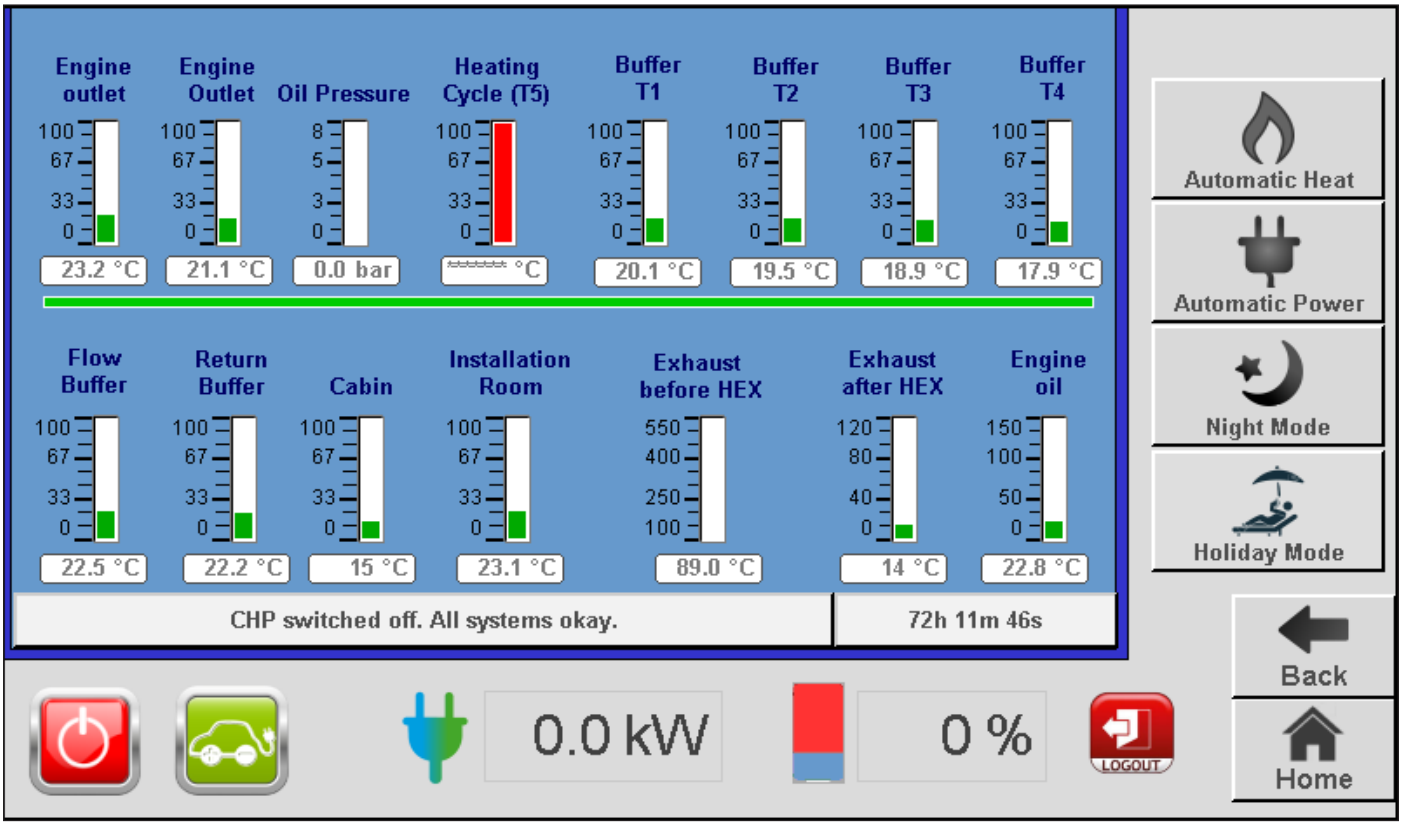
4.6 Temperatures and operating data



The “Temperatures and operating data” menu branches into the following submenus:
- Temperatures
- Operating statuses
- Logbook
- Operation hours
- Current trend (updated every second)
- 24-hour trend (the data recorded over the last 24 hours)
- 7-day trend (the data recorded over the last 7 days)
- Information

In order to switch to a certain submenu:
► Touch the corresponding button.

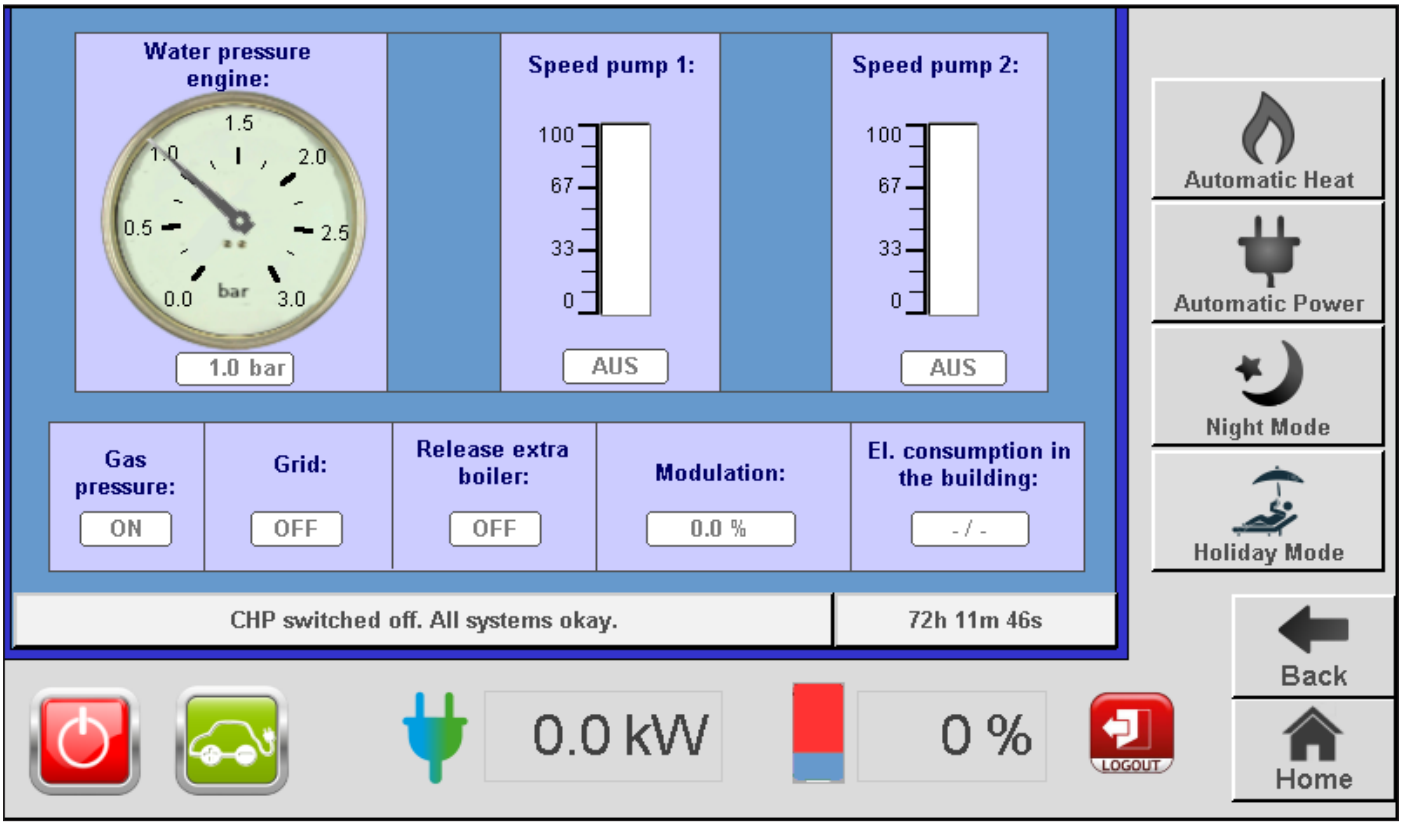
4.6.1 Temperatures



Display of the measured temperature at different positions:
- Engine outlet
- Engine inlet
- Oil pressure
- Building heating circuit (T5)
- Buffer tank temperatures T1 to T4
- Buffer supply line
- Buffer return line
- CHP interior
- Room air
- Exhaust gas before exhaust gas heat exchanger (“AWT”)
- Exhaust gas after heat exchanger (“AWT”)
- Engine oil

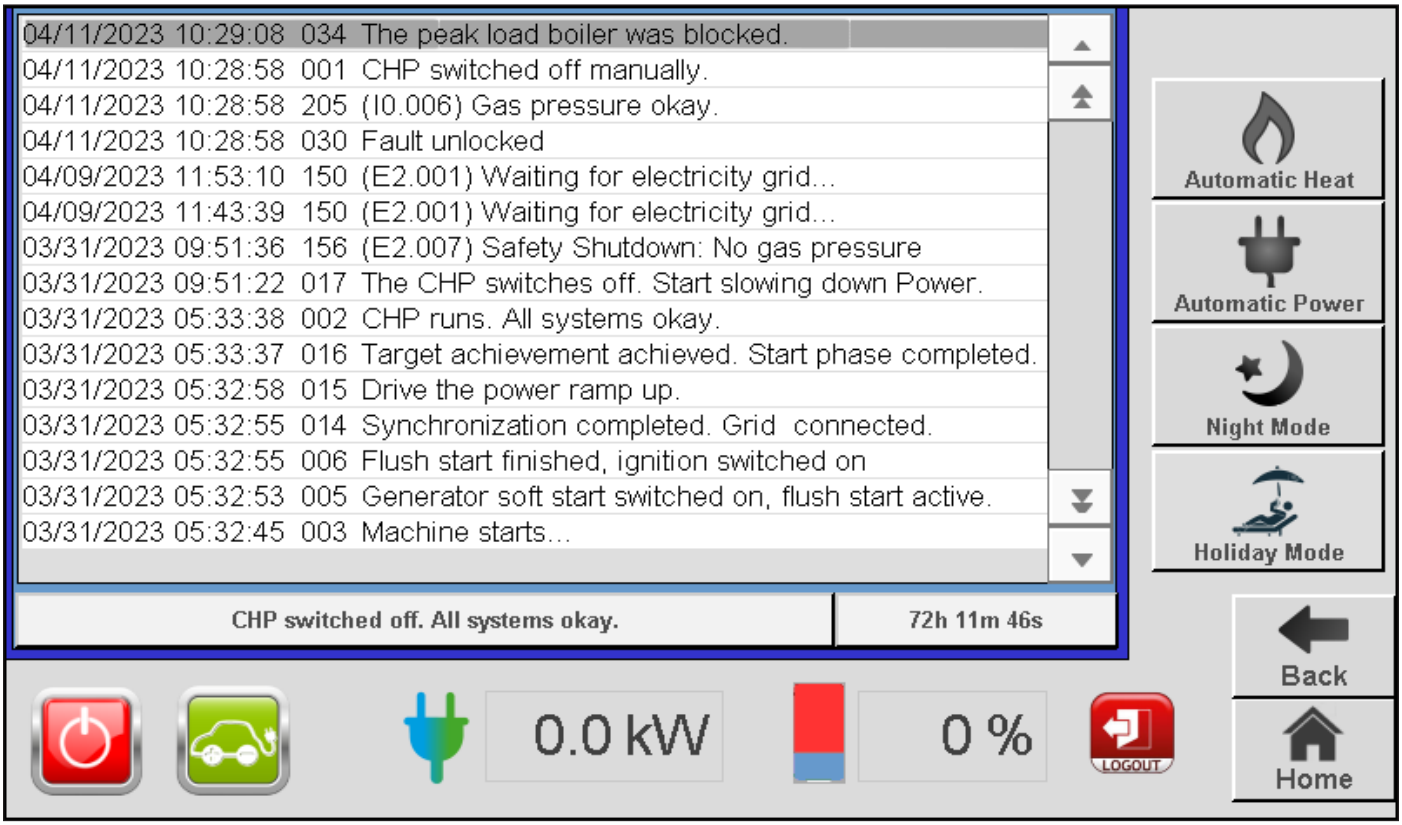
Normal temperature ranges are displayed with a green bar. If the colour of the bar changes to red then the temperature has reached a critical value.

4.6.2 Operating statuses



Display of the following values and states:
- Water pressure in the engine circuit
- Speed pump 1
- Speed pump 2
- Gas pressure (ON/OFF)
- Grid / phase (ON/OFF)
- Thermal request (ON/OFF)
- Modulation
- Electricity consumption in the building

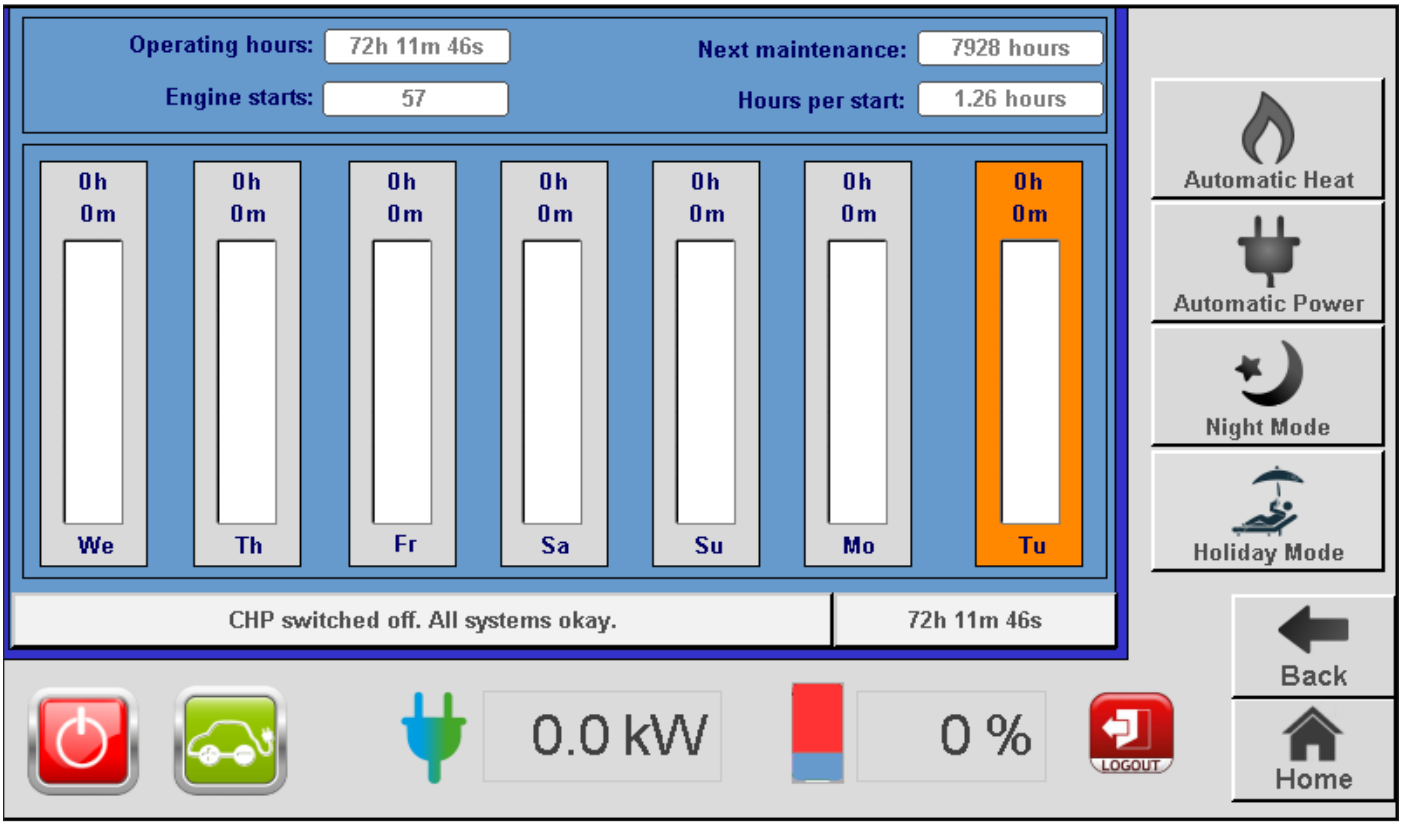
4.6.3 Logbook



The logbook records events and states to the precise second, e.g.:
- Start time after temperature request
- Reset of the maintenance counter

In order to scroll in the logbook:
► Touch the arrow keys on the right side.

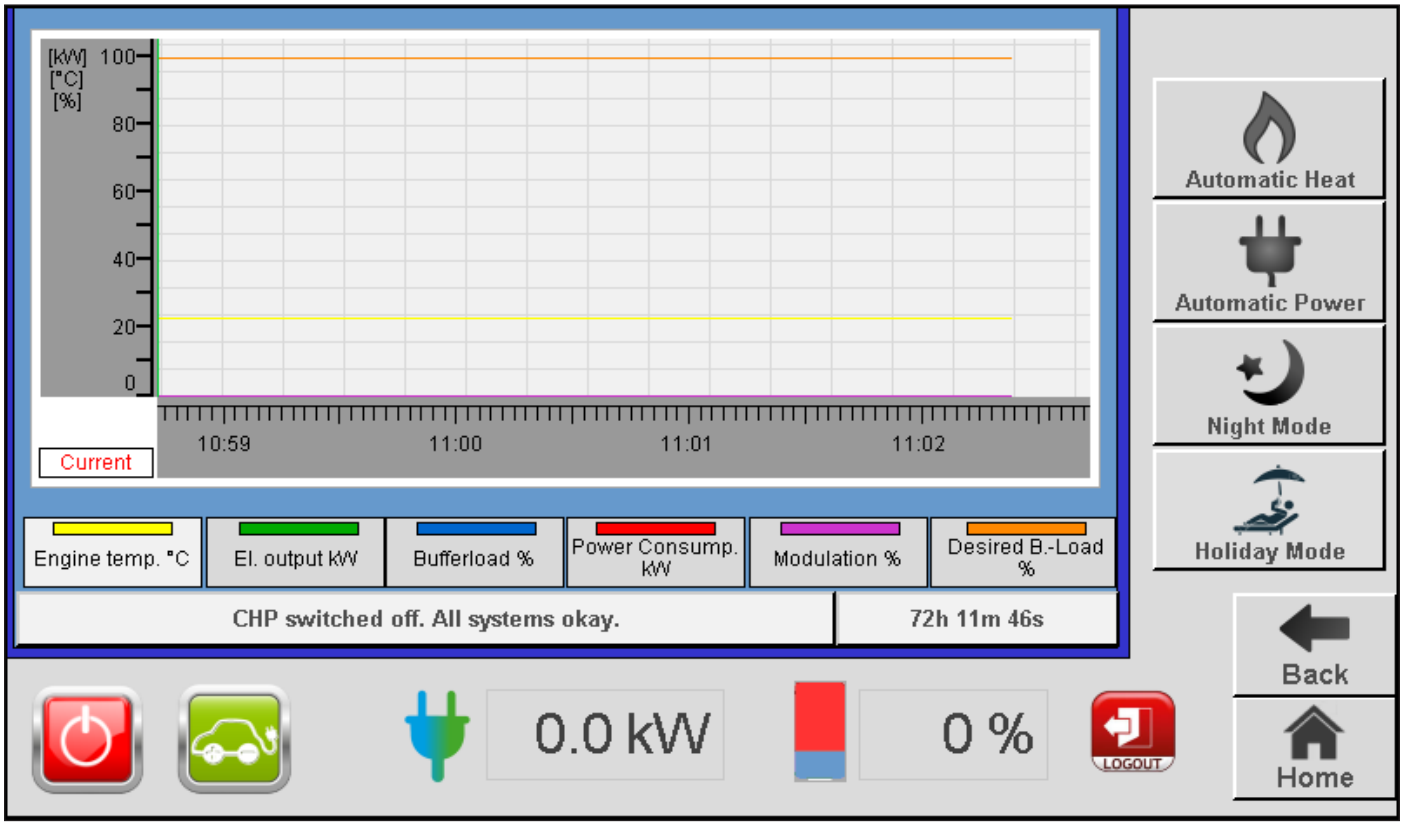
4.6.4 Operation hours



Display of the operation hours of the past seven days as column graphics and as numeric values:
- The current day is at the far right with an orange background.
- To the left of this are displays of the preceding six days.

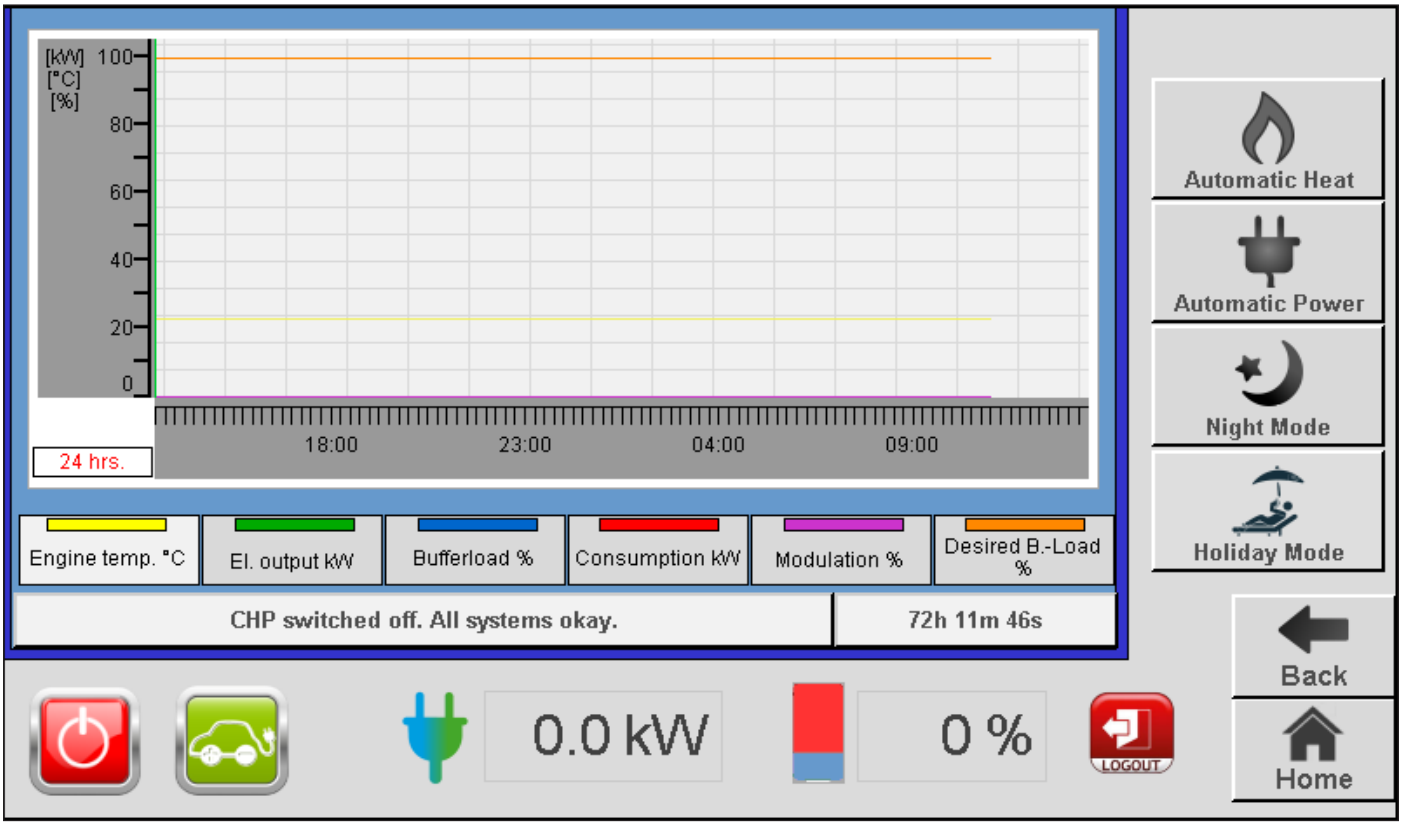
The following information is displayed by the column graphics:
- Total operating time (operation hours)
- Countdown until next maintenance due
- Number of engine starts
- Average runtime per engine start

4.6.5 Current trend



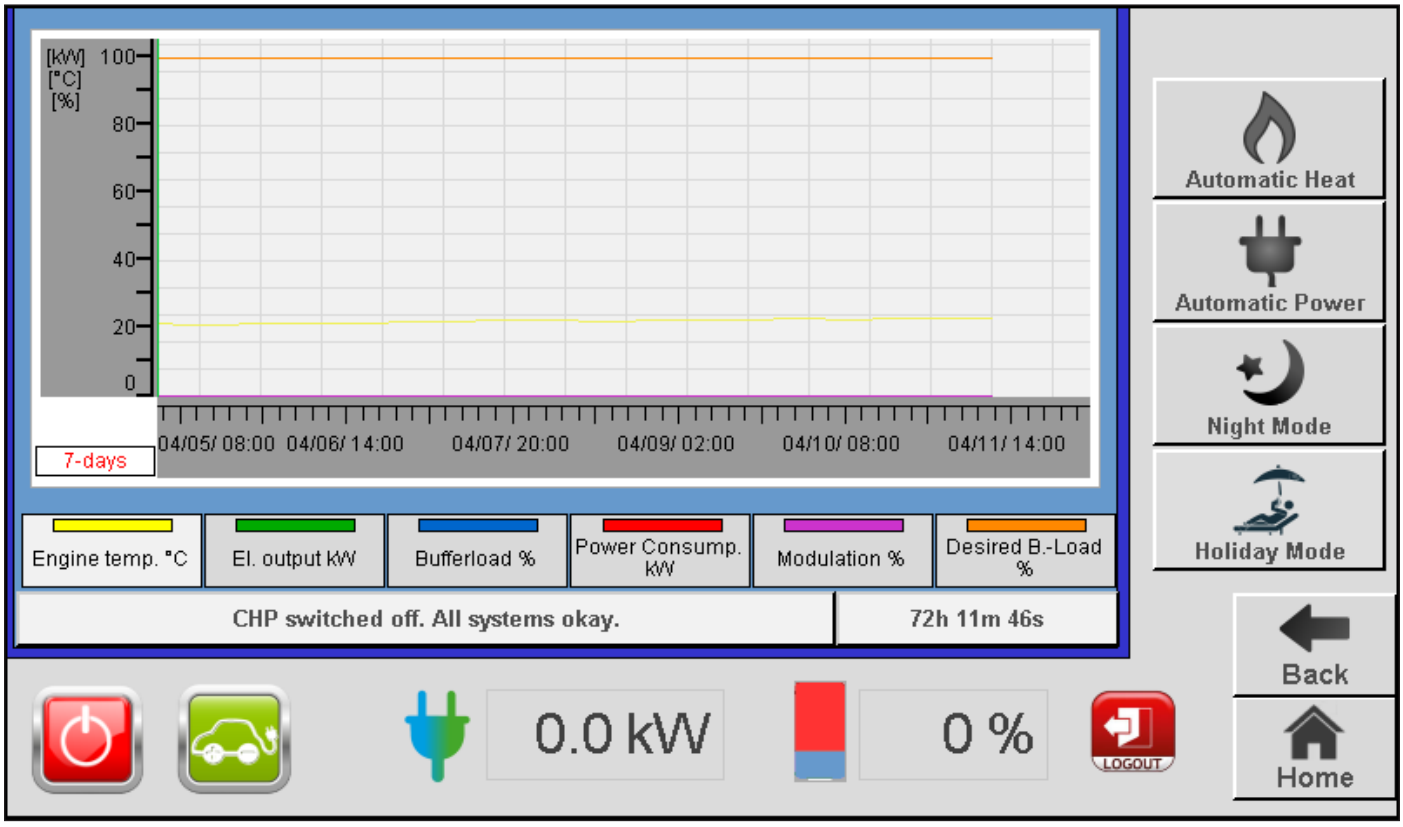
The following information is recorded and displayed in diagram form to present the trends:
- Engine temperature (yellow)
- Electrical output (green)
- Buffer storage battery charge (blue)
- Power consumption (red, optional)
- Modulation rate (purple)
- Target storage battery charge (orange)

4.6.6 24-hour trend



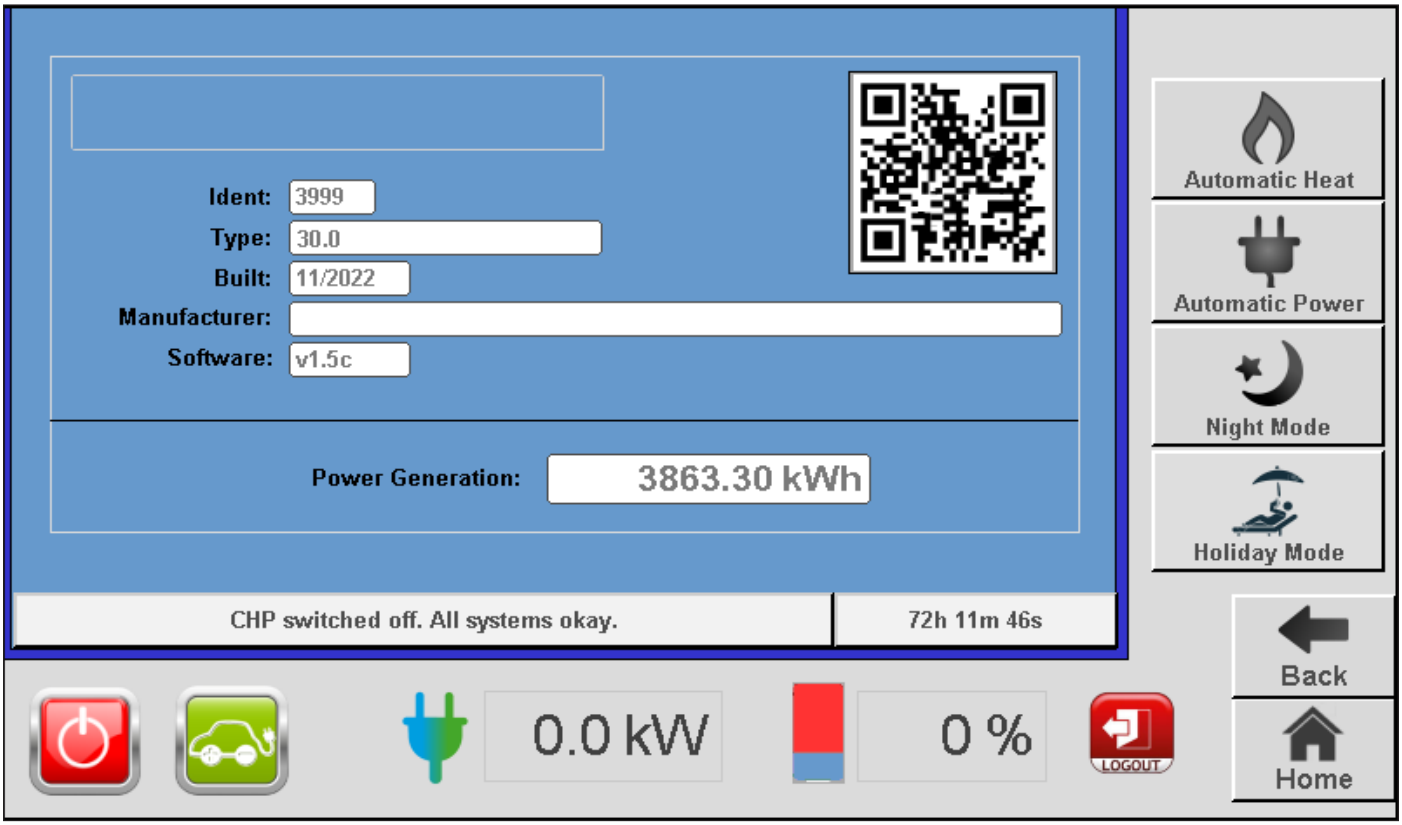
The following information is recorded and displayed in diagram form to present the trends:
- Engine temperature (yellow)
- Electrical output (green)
- Buffer storage battery charge (blue)
- Power consumption (red, optional)
- Modulation rate (purple)
- Target storage battery charge (orange)

4.6.7 7-day trend



The following information is recorded and displayed in diagram form to present the trends:
- Engine temperature (yellow)
- Electrical output (green)
- Buffer storage battery charge (blue)
- Power consumption (red, optional)
- Modulation rate (purple)
- Target storage battery charge (orange)

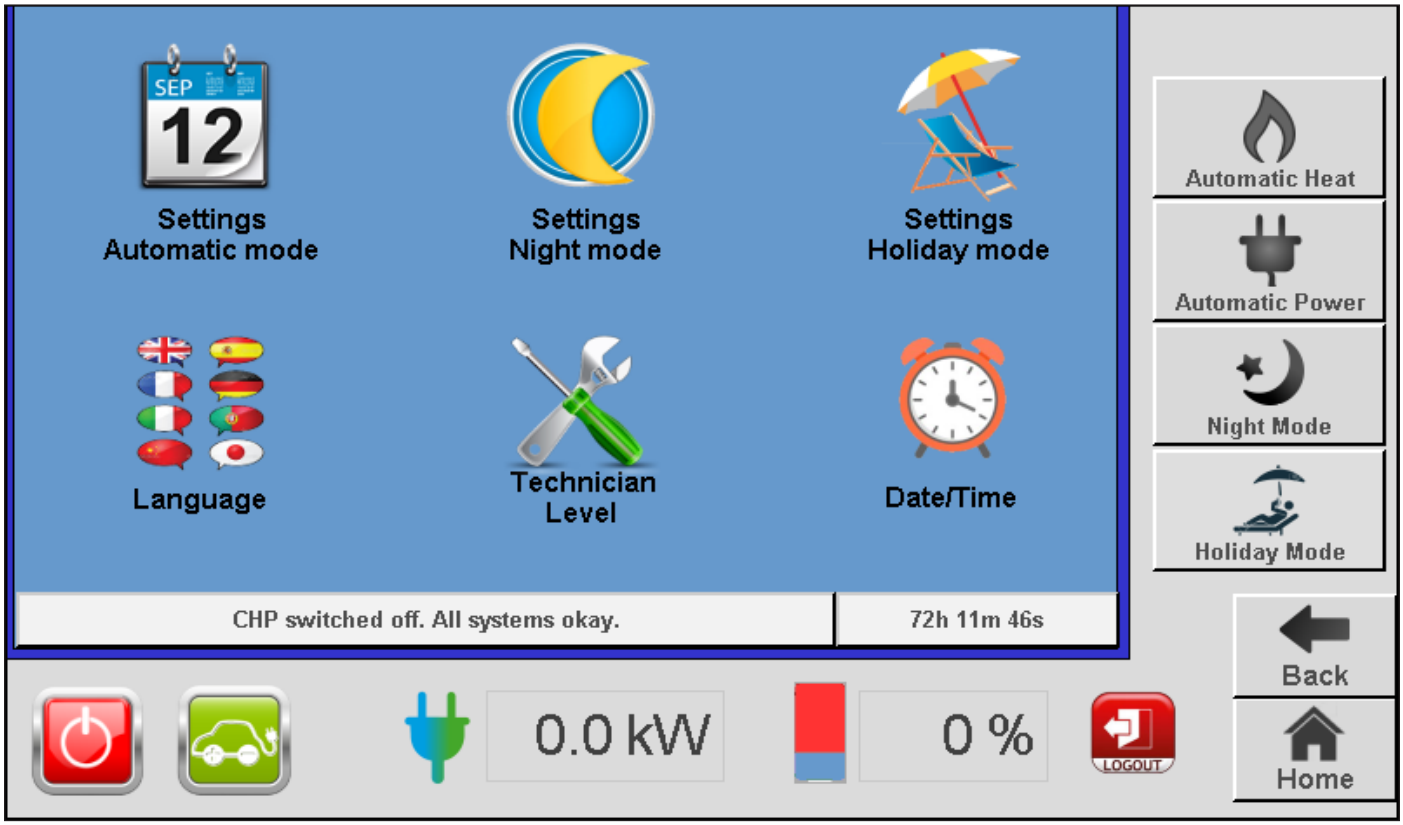
4.6.8 Information



Display of important information for identifying the system:
- ID number
- Type
- Date of manufacture
- Manufacturer
- Software status

Additionally, the electricity production since commissioning the system is also provided.
The QR code displayed enables access to the manufacturer's website.

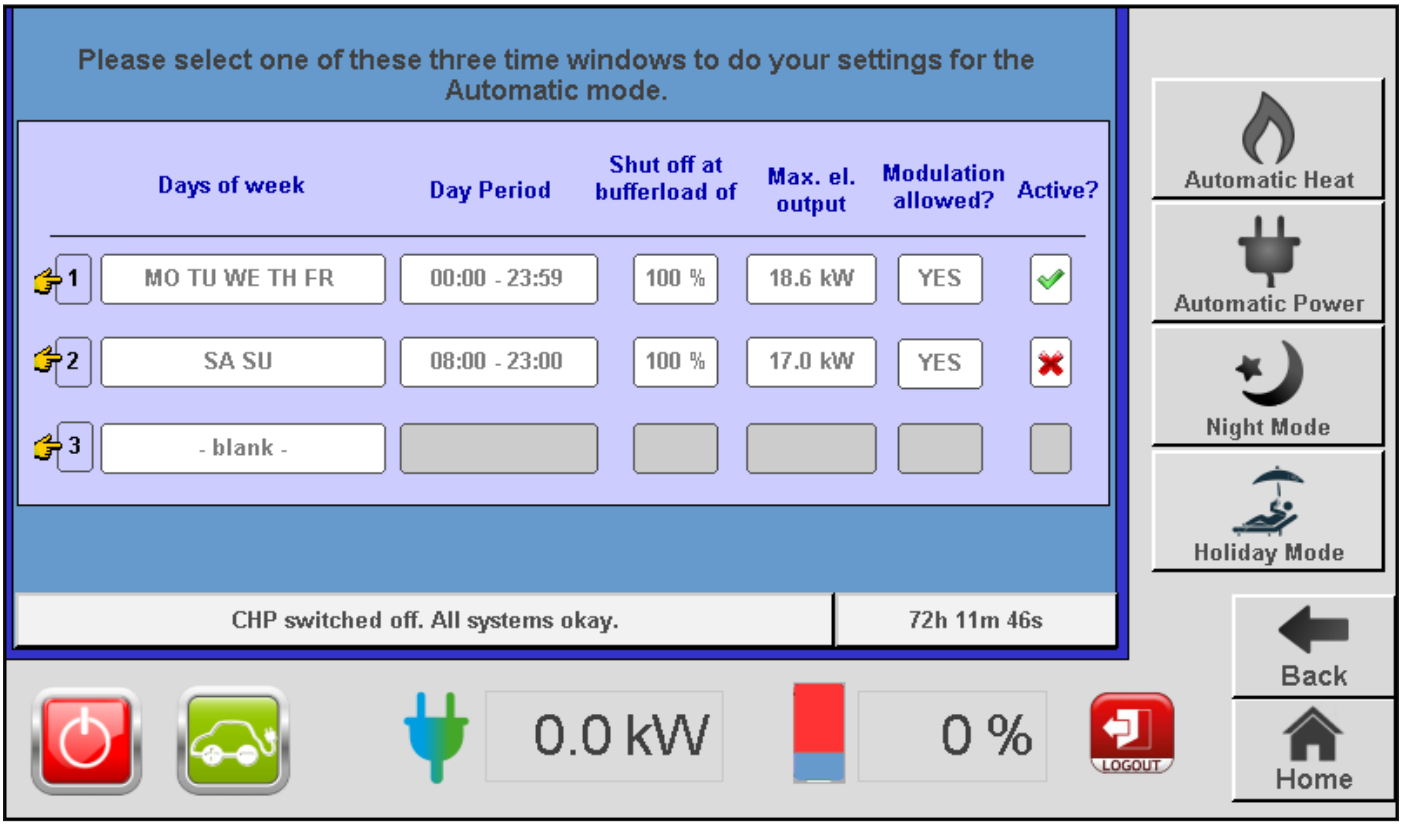
4.7 Settings



The “Settings” menu branches into the following submenus:
- Automatic mode settings
- Night operation settings
- Holiday mode settings
- Language
- Technician level
- Date/time

In order to switch to a certain submenu:
► Touch the corresponding button.

4.7.1 Automatic mode settings

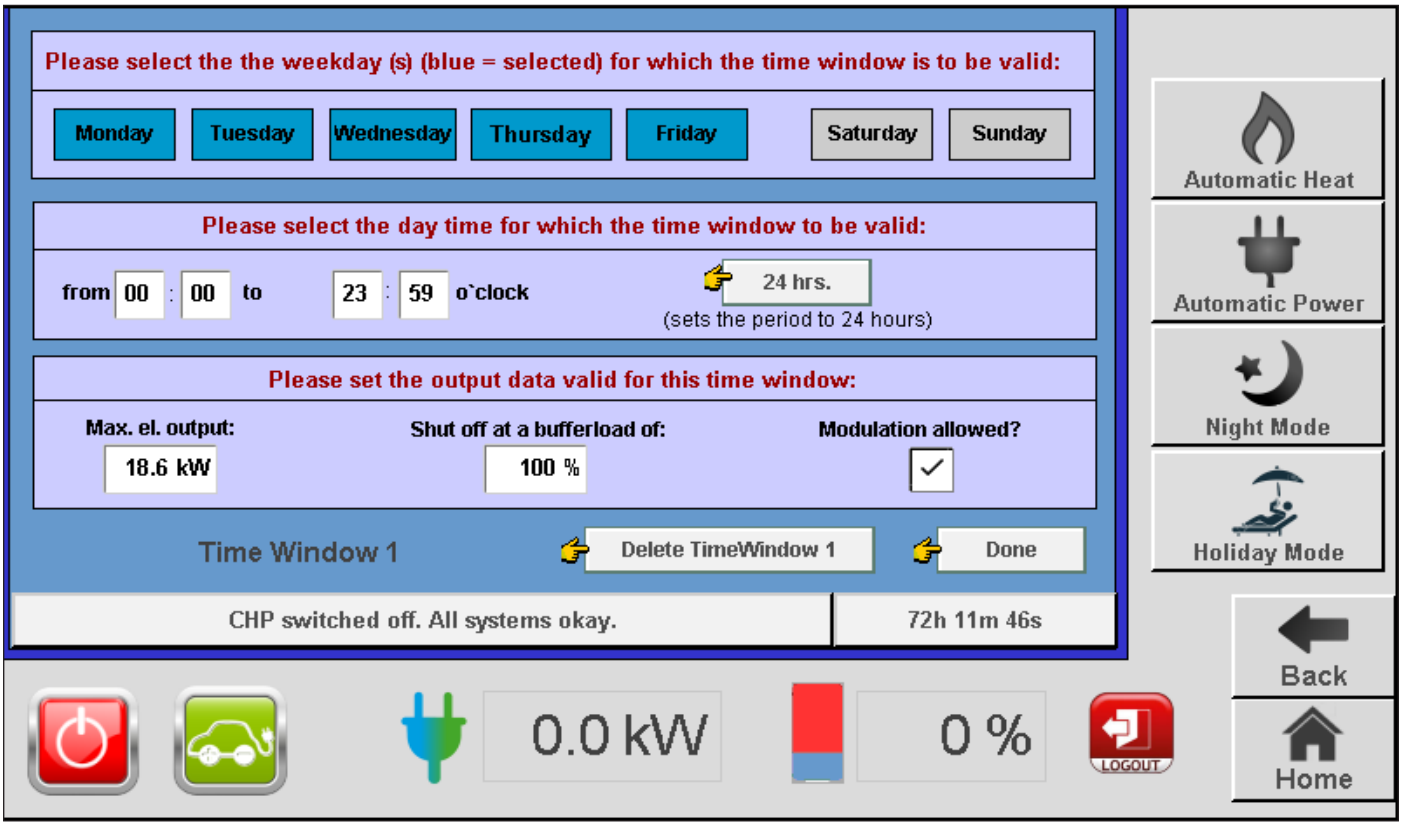


The runtime behaviour of the system is planned in the “Automatic mode settings” menu. Three time windows are available here.

In order to call up the desired time window:
► Touch a field in the respective row.

Active time windows are displayed with a green tick at the end of the row. The tick is set automatically if the conditions for the time window are satisfied.

Time window

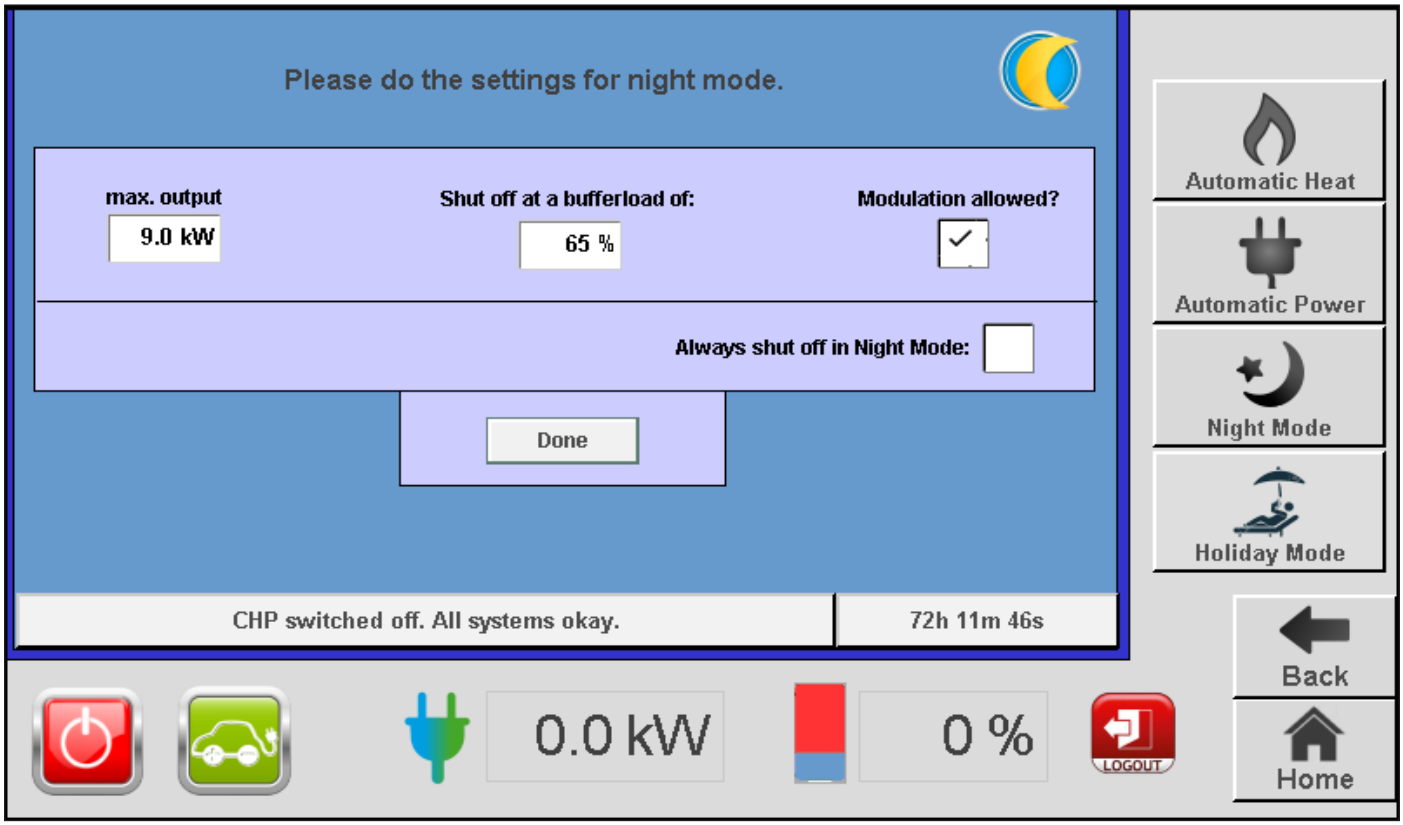


The behaviour of the system is stipulated in the time window. The following information is required:
- Day of the week (Monday to Sunday)
- Timeframe (time of day) with option button for setting the timeframe to 24 hours.
- Maximum output (in kW)
- Shut-off upon reaching load (degrees in %) of the buffer tank
- Modulation release. In modulation mode, the system adjusts its output to the current requirement. Otherwise the system always delivers the maximum output specified.

If necessary, all specifications for the selected time window can be deleted:
► Touch the “delete time window” button.

After input, confirm the settings:
► Touch the “done” button.
The settings are accepted, the display jumps back to the “Automatic mode settings” menu.

4.7.2 Night operation settings

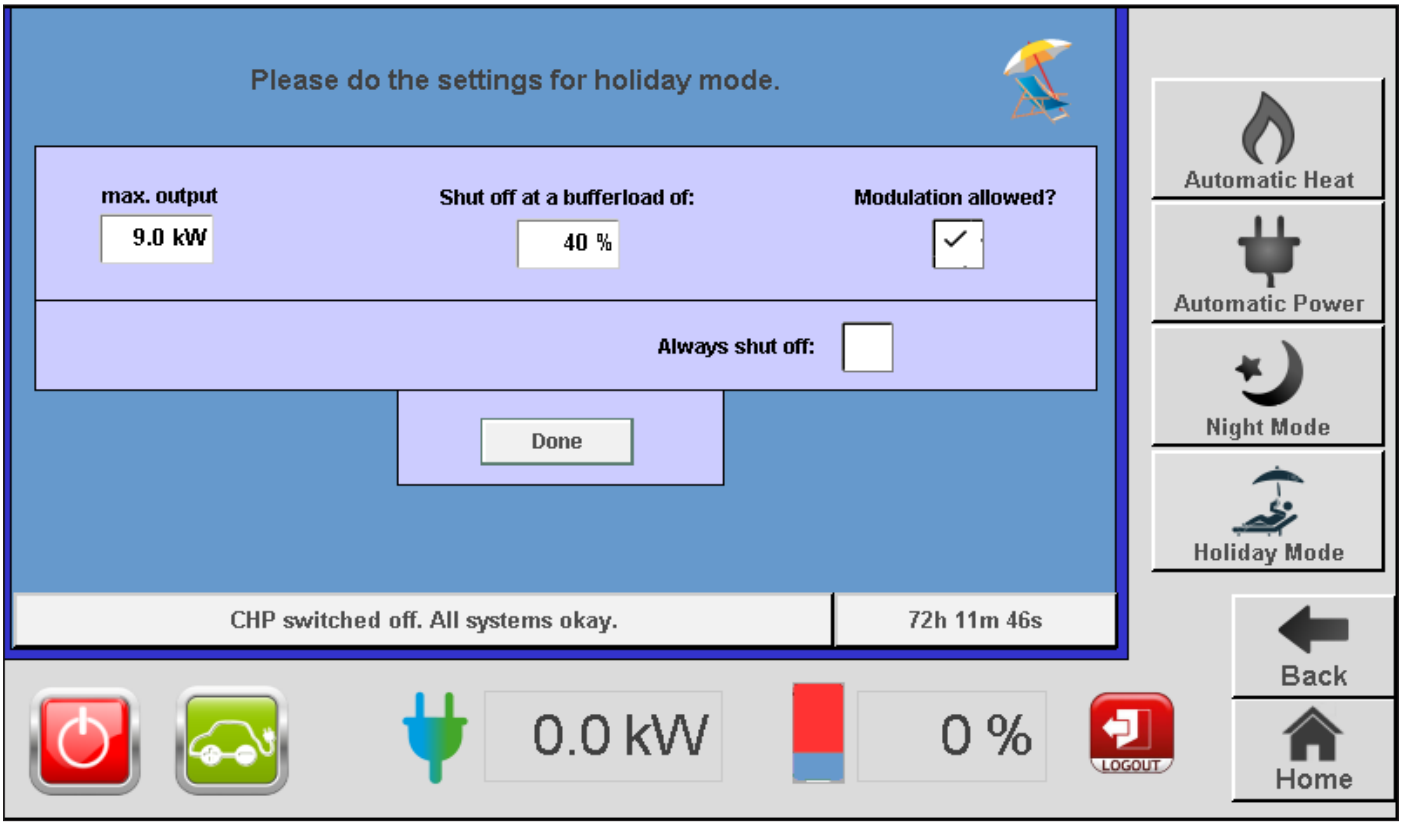


The following information is necessary, in order to specify the system behaviour in night operation:
– Maximum output (in kW)
– Shut-off upon reaching load (degrees in %) of the buffer tank
– Modulation release

Alternatively, the system can be fundamentally switched off in night operation.

After input, confirm the settings:
► Touch the “done” button.
The settings are accepted, the display jumps back to the “Settings” menu.

4.7.3 Holiday mode settings

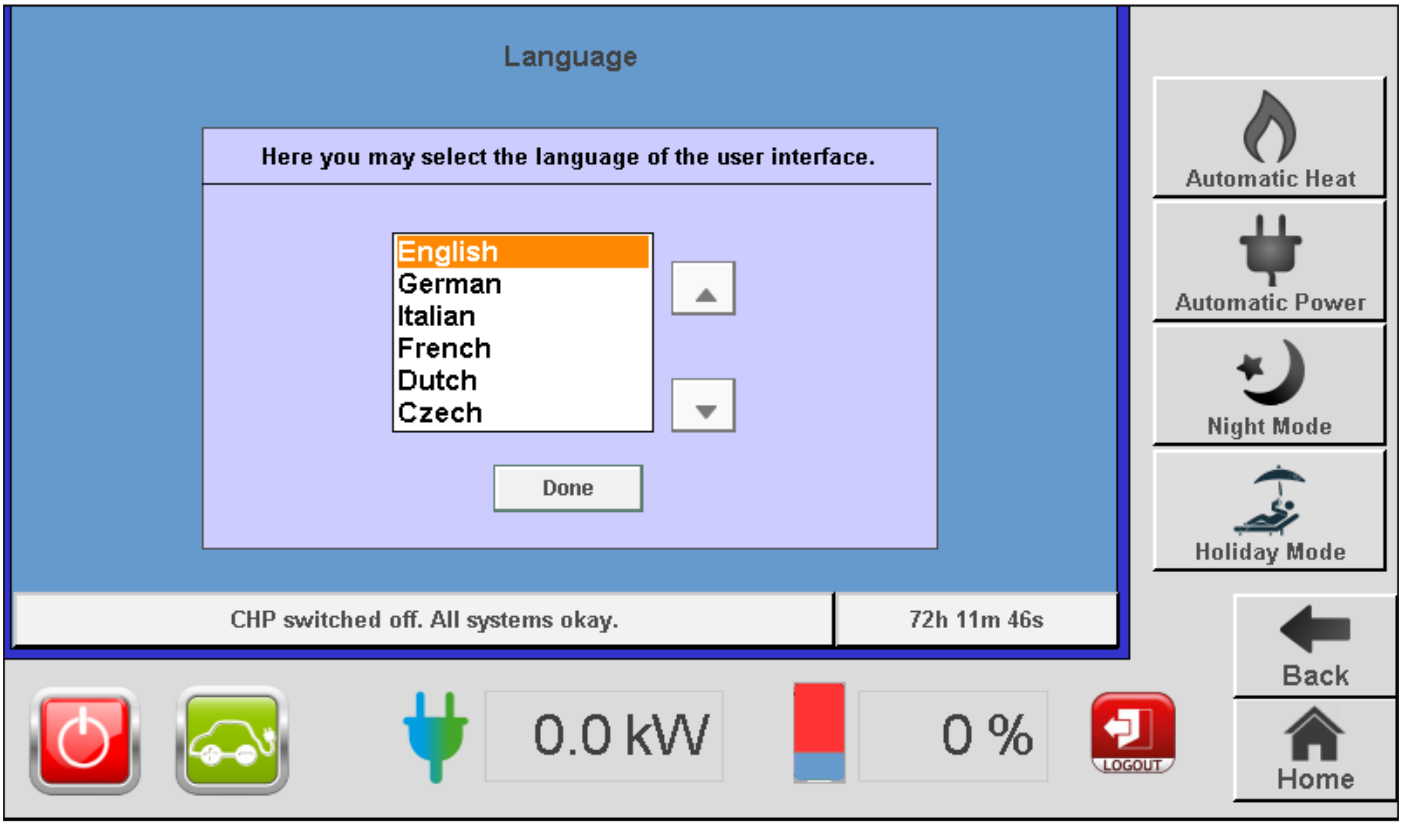


The following information is necessary, in order to specify the system behaviour in holiday mode:
– Maximum output (in kW)
– Shut-off upon reaching load (degrees in %) of the buffer tank
– Modulation release

Alternatively, the system can be fundamentally switched off in holiday mode.

After input, confirm the settings:
► Touch the “done” button.
The settings are accepted, the display jumps back to the “Settings” menu.

4.7.4 Language

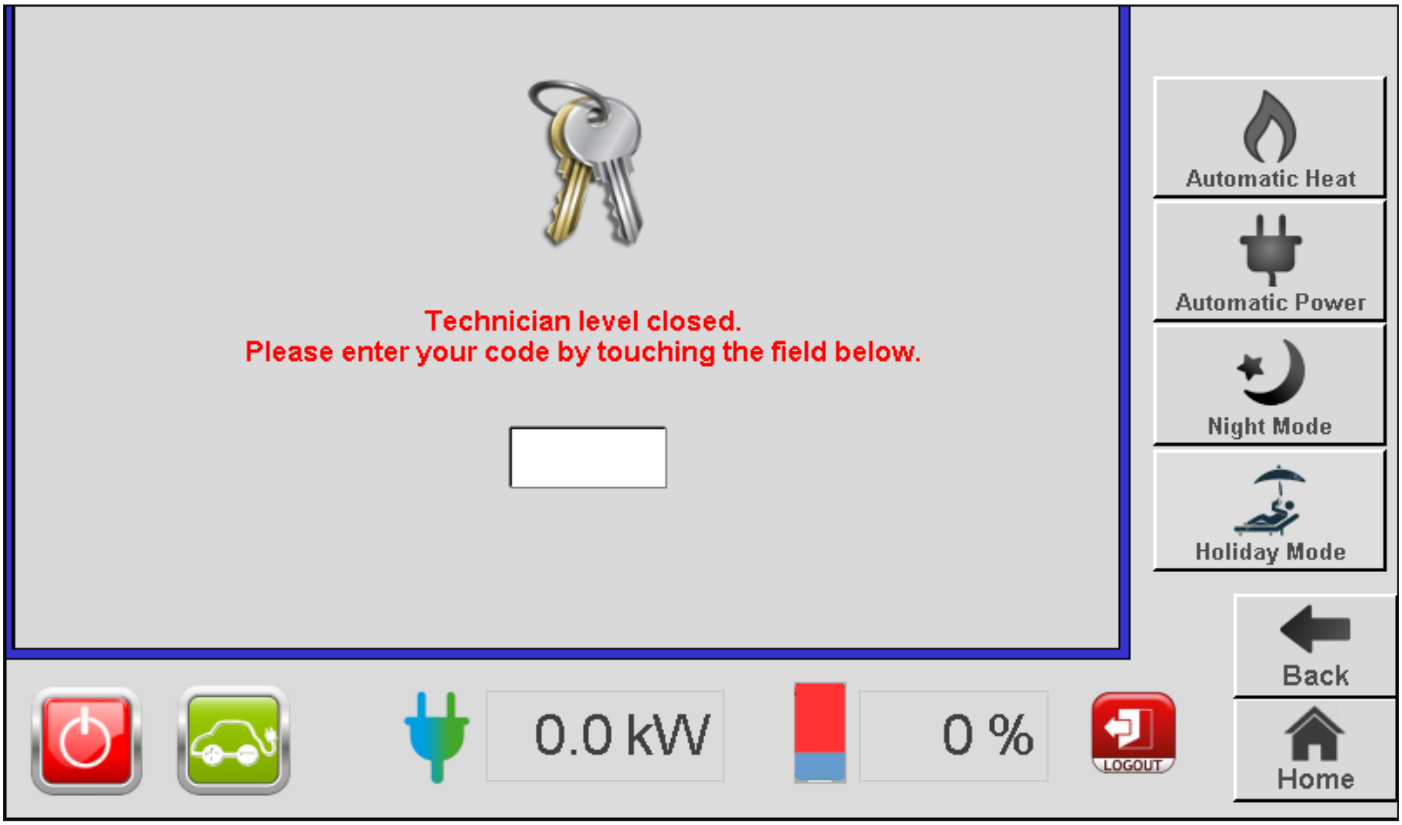


Menu for selecting the language.

► Touch the arrow keys to scroll to the desired language.
► Touch the “done” button to confirm the selection.

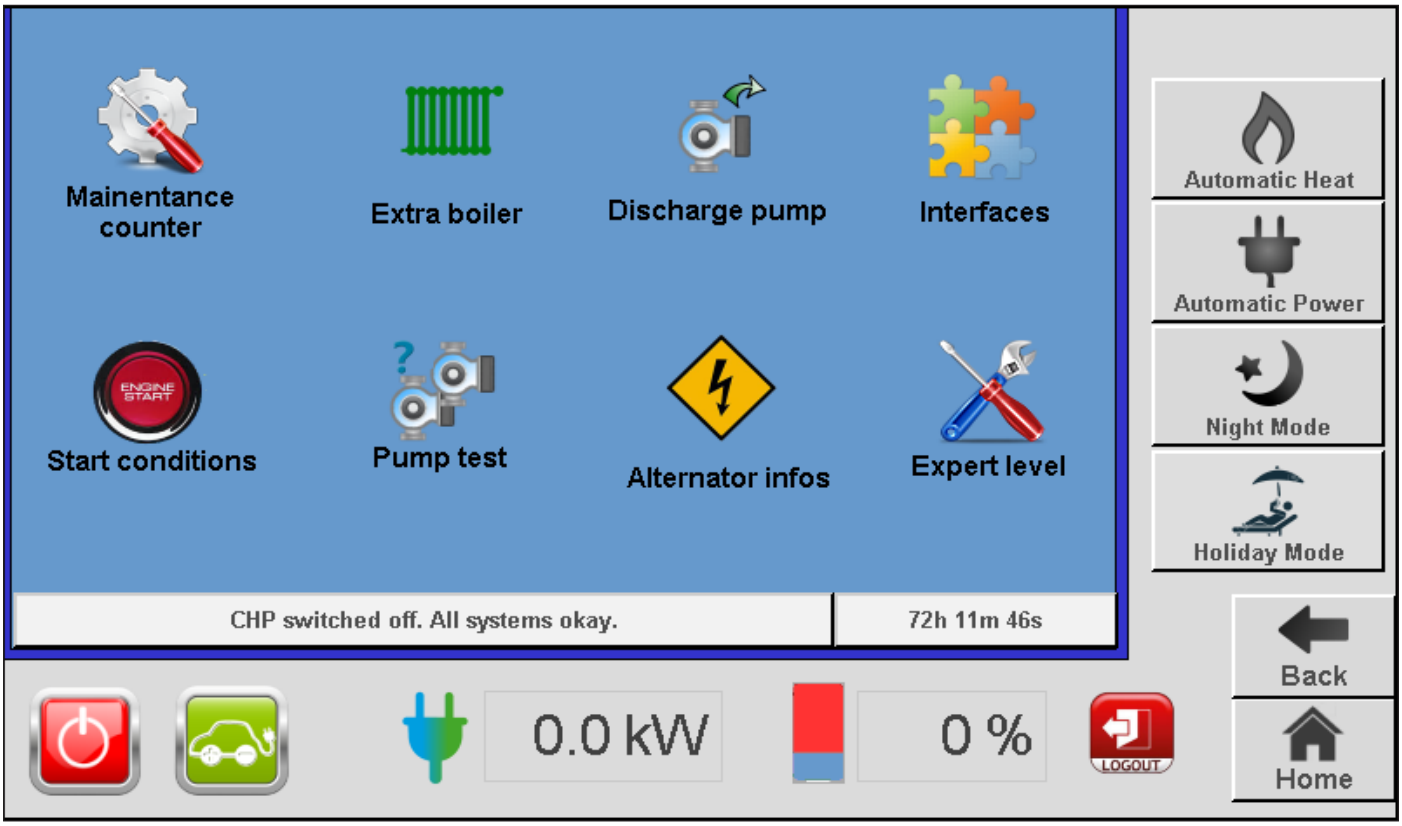
The display changes to the selected language.

4.7.5 Technician level



Only qualified personnel trained by the manufacturer have access to the “technician level” area. A code is required for access, which is provided by the manufacturer after training for example.

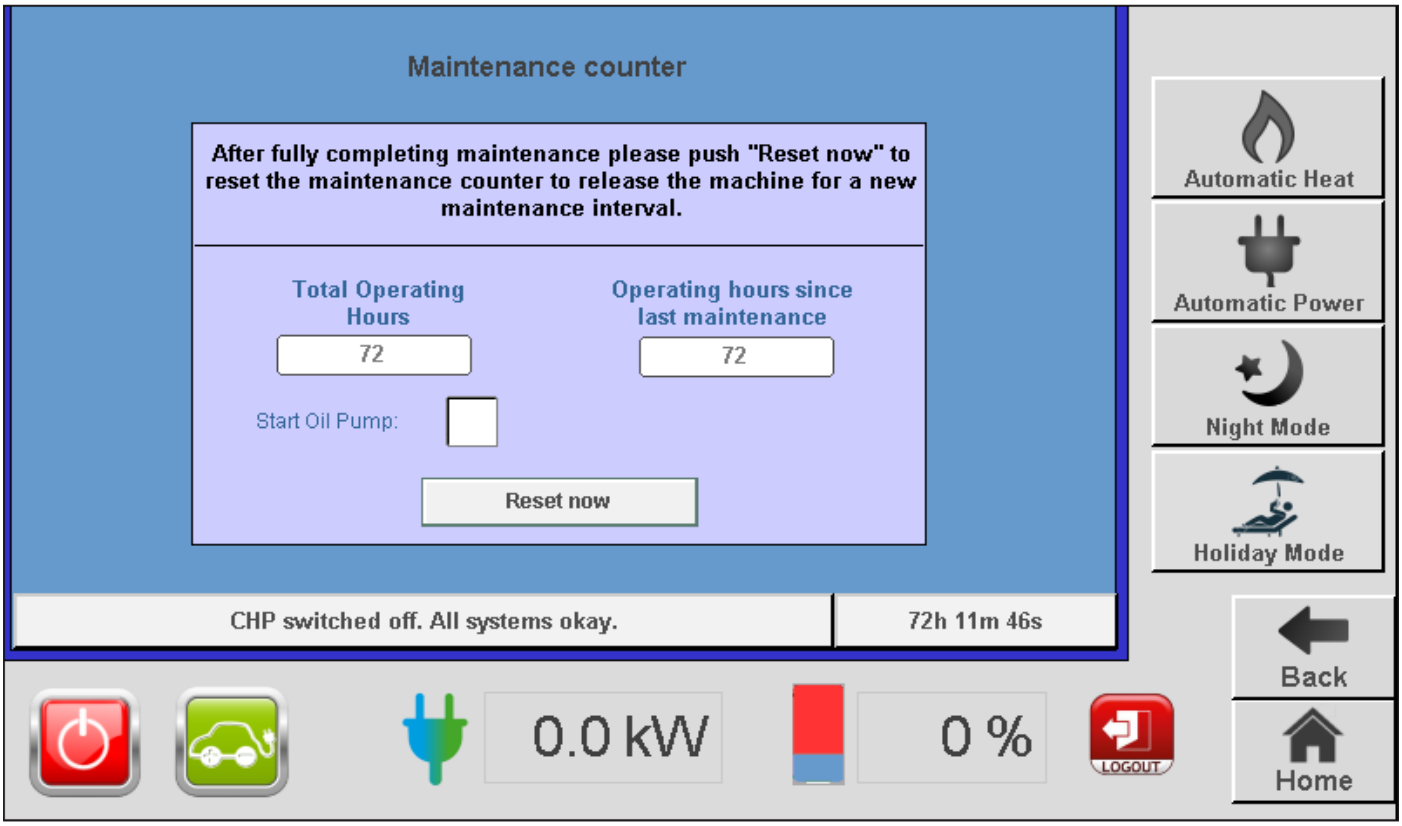
Once the correct code has been entered, the area is enabled.



The logout symbol is displayed for access to the technician level. In order to log out of the technician level:

► Touch the button.

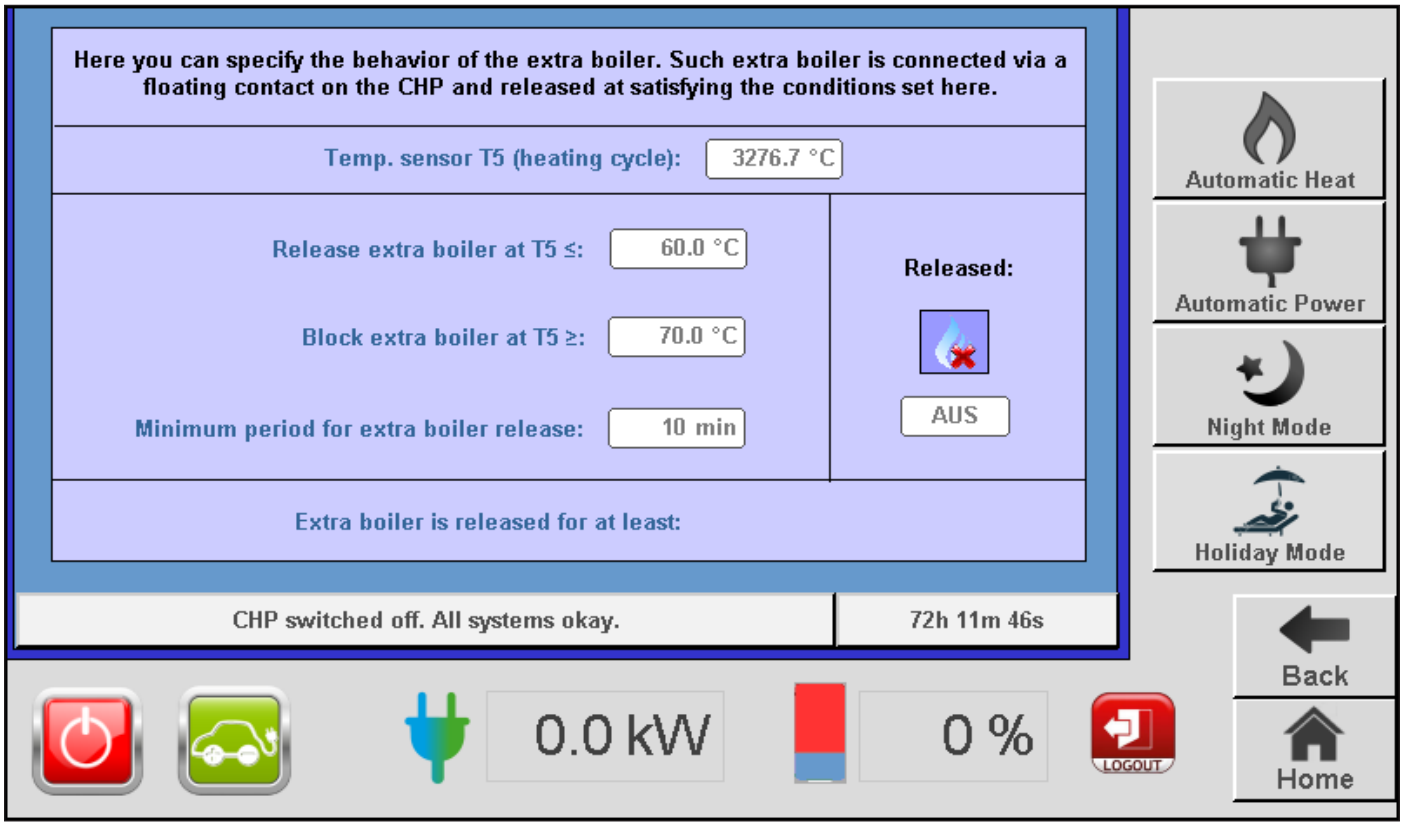
Technician level – maintenance counter



Once regular maintenance has been completed, the maintenance counter must be reset by trained specialist personnel.

The oil pump start can be adjusted, e.g. required in the following cases:
– To signal to the oil level gauge that oil has been added after maintenance.
– If insufficient oil is pumped and the machine indicates low oil.

Technician level – peak load boiler



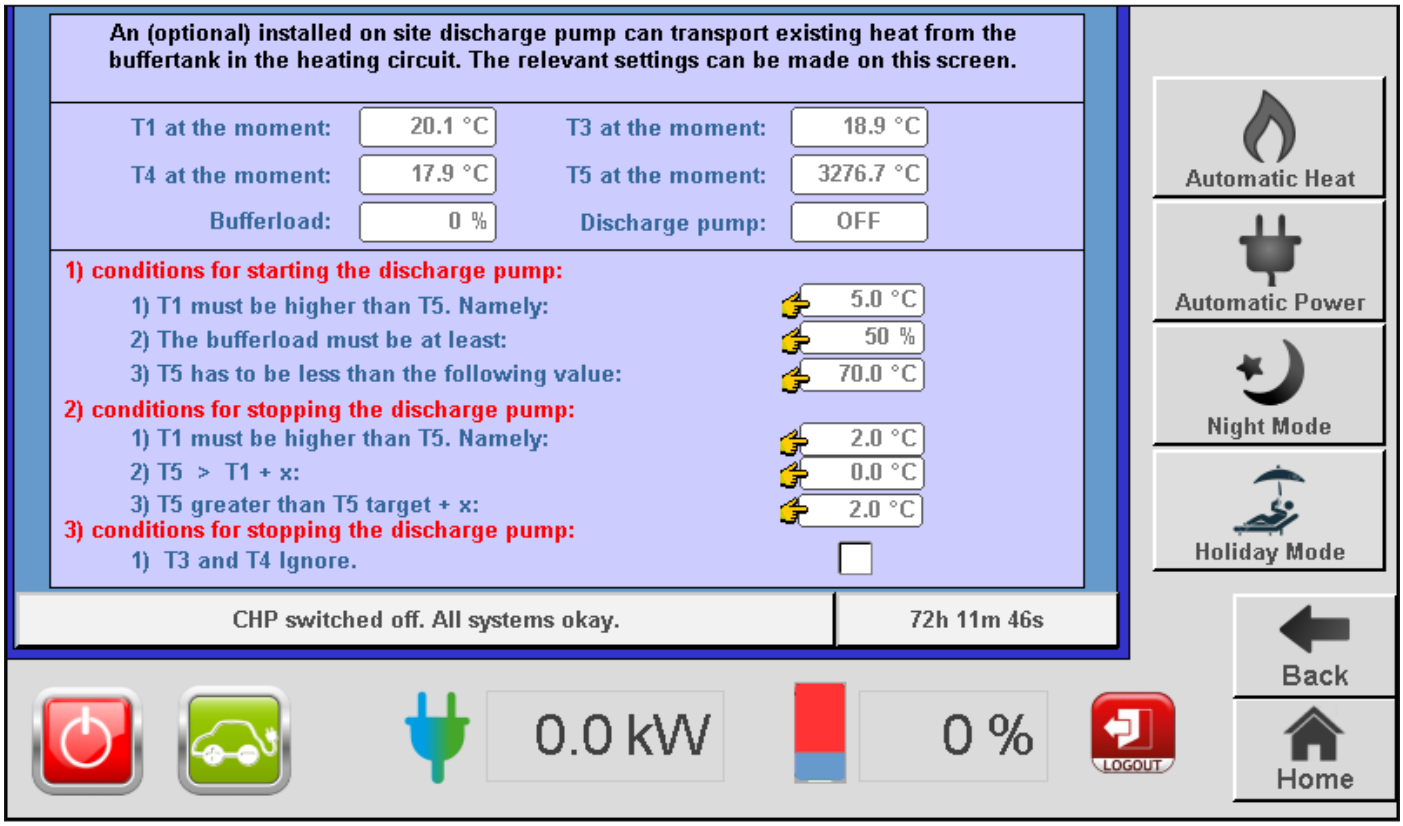
The system can control a connected peak load boiler via a potential-free contact (designed as an NC contact). Trained specialist personnel are able to stipulate the behaviour of the peak load boiler (“SLK”) in this menu.

The current temperature of the heating circuit (temperature sensor T5) is displayed.

The following values must be set:
- Temperature below T5, at which the peak load boiler is to be released.
- Temperature above T5, at which the peak load boiler is to be disabled.
- Minimum release period of the peak load boiler. This information is required in order to avoid the peak load boiler from being cycled too frequently - irrespective of the set values.
- Current release ON/OFF

The remaining time of the minimum release period is displayed.

Technician level – discharge pump



A discharge pump installed by the customer can pump available heat into the heating circuit. Trained specialist personnel are able to stipulate the behaviour of the system and the connected discharge pump in this menu.

The following information is displayed:
- Current temperature T1 (buffer tank)
- Current temperature T3 (buffer tank)
- Current temperature T4 (buffer tank)
- Current temperature T5 (heating circuit)
- Current buffer load
- Discharge pump ON or OFF

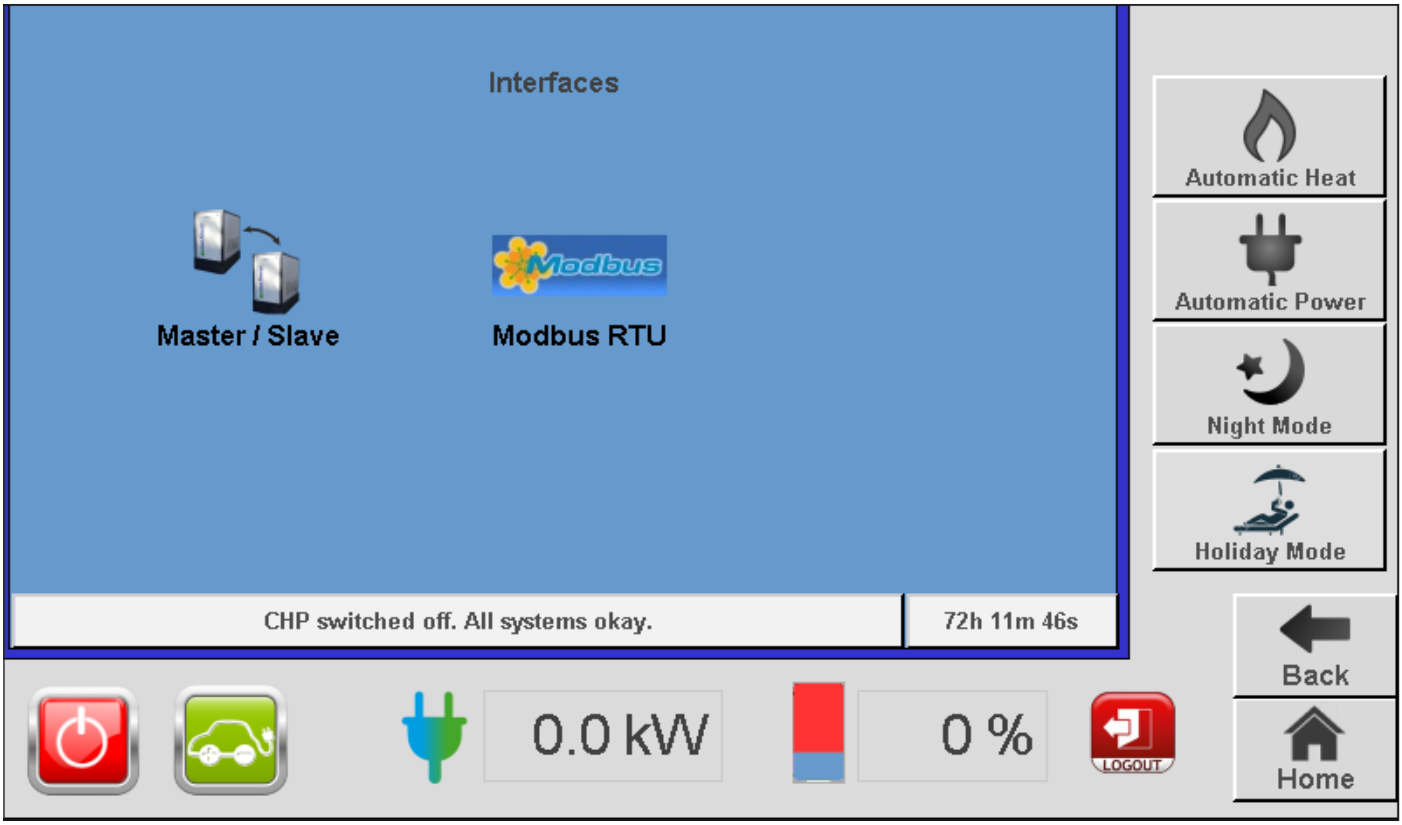
The following conditions must apply for the start of the discharge pump:
- The temperature in the buffer tank (T1) must be higher than the temperature in the heating circuit (T5). The minimum difference can be adjusted.
- The buffer load must reach and maintain a certain temperature. The load can be set as a percentage.
- The temperature in the heating circuit (T5) must be below a certain value. The temperature can be adjusted. If the temperature (T5) exceeds this value (including hysteresis) then the discharge pump is switched off.

The following conditions must apply for the discharge pump to stop, the minimum difference can be set:
- The temperature in the buffer tank (T4) must be higher than the temperature in the buffer tank (T3).
- The temperature in the heating circuit (T5) must be higher than the temperature in the buffer tank (T1).
- The temperature in the heating circuit (T5) must be higher than the set temperature in the heating circuit (T5).

The following condition can be additionally activated for starting and stopping the discharge pump:
- Ignore the temperatures in buffer tank T3 and T4.

Further conditions that apply for the start of the discharge pump are automatically monitored by the system and cannot be adjusted.

Technician level - interfaces

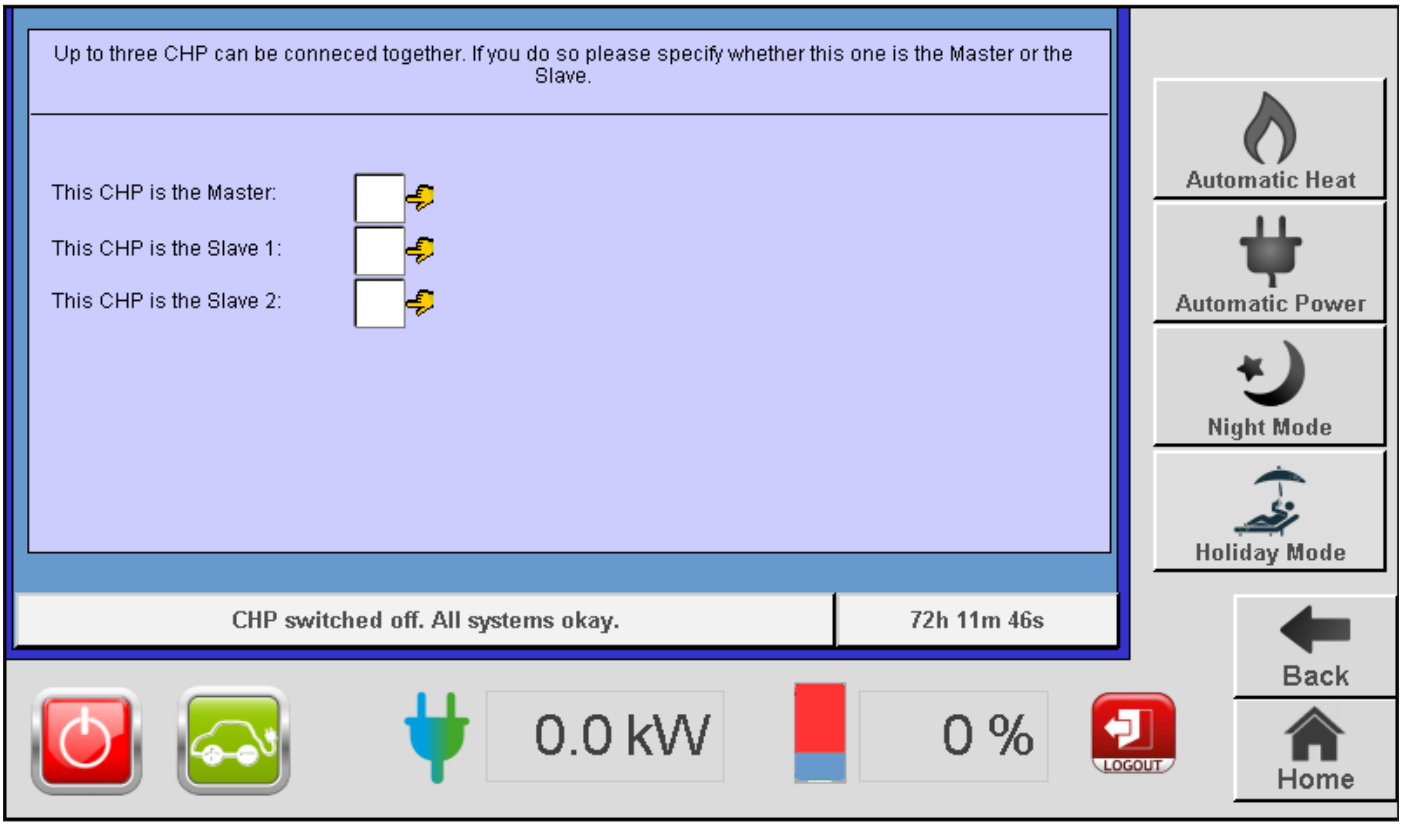


In order to read out the system values, it is possible to connect the system to the available network.
Following options are available here:
– Master/Slave
– Modbus RTU

In this menu, trained specialist personnel can stipulate how the system should be connected.
In order to implement the settings for the desired connection:
► Touch the corresponding button.

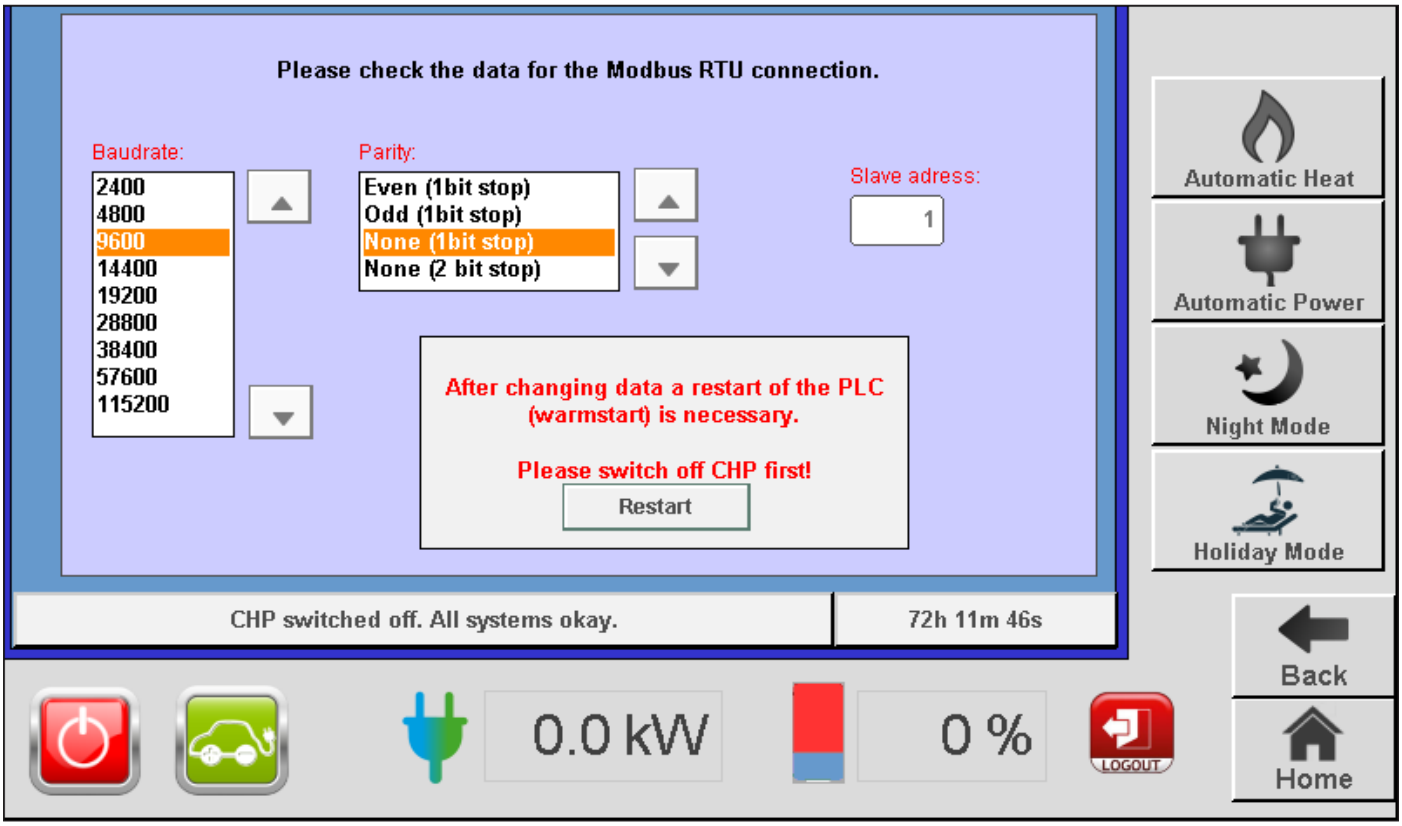
If necessary, the manufacturer can provide further information for the network connection:
Technical data sheets for interfaces.

Technician level - interfaces - Master/Slave



If several systems are interconnected, the connection of this system is defined in this menu.

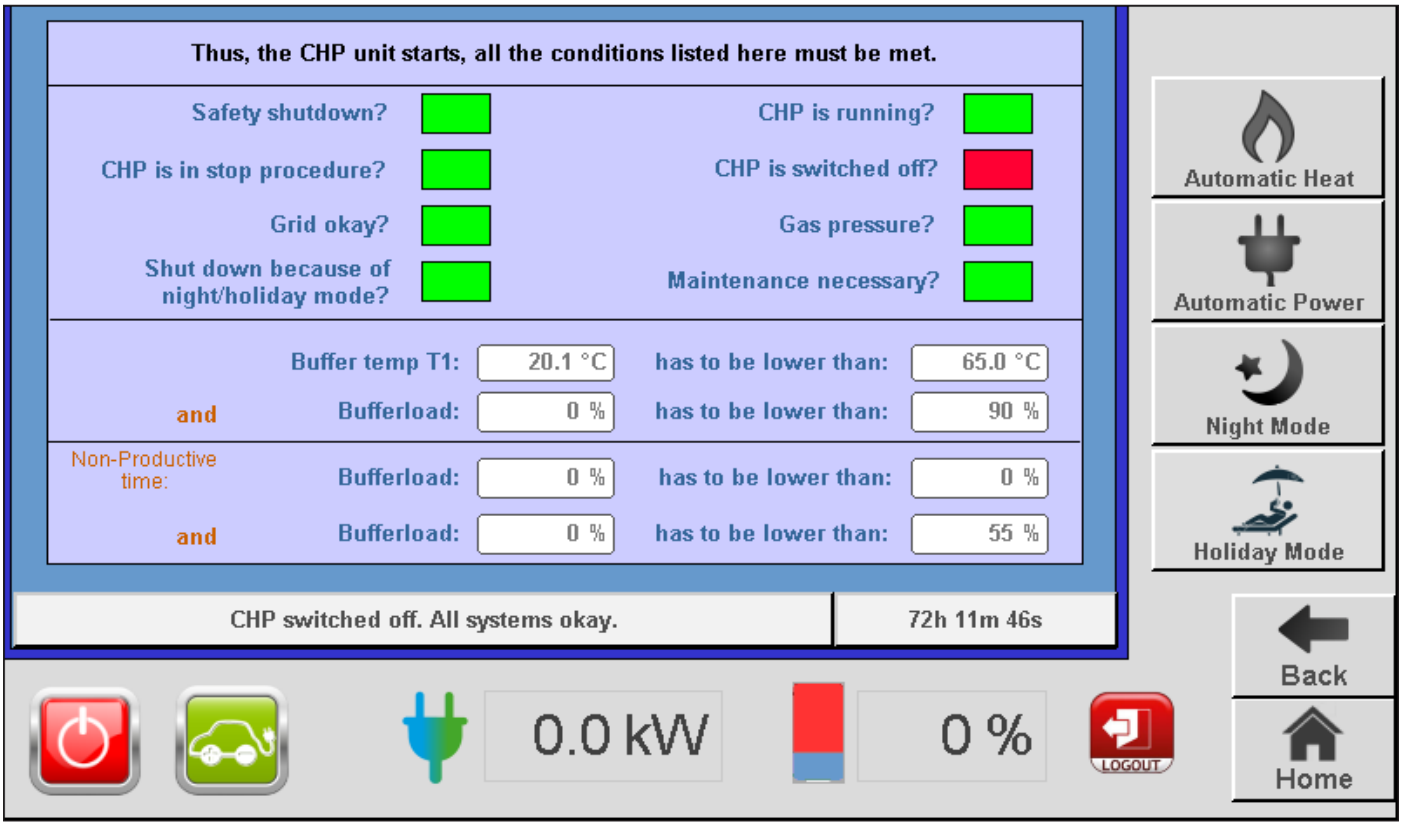
Technician level - interfaces - Modbus RTU



The following items can be set for connection via Modbus-RTU:
- Baud rate
- Parity
- Nodes

If data has been changed, a restart is necessary:
► Touch the corresponding button.

Technician level – start conditions

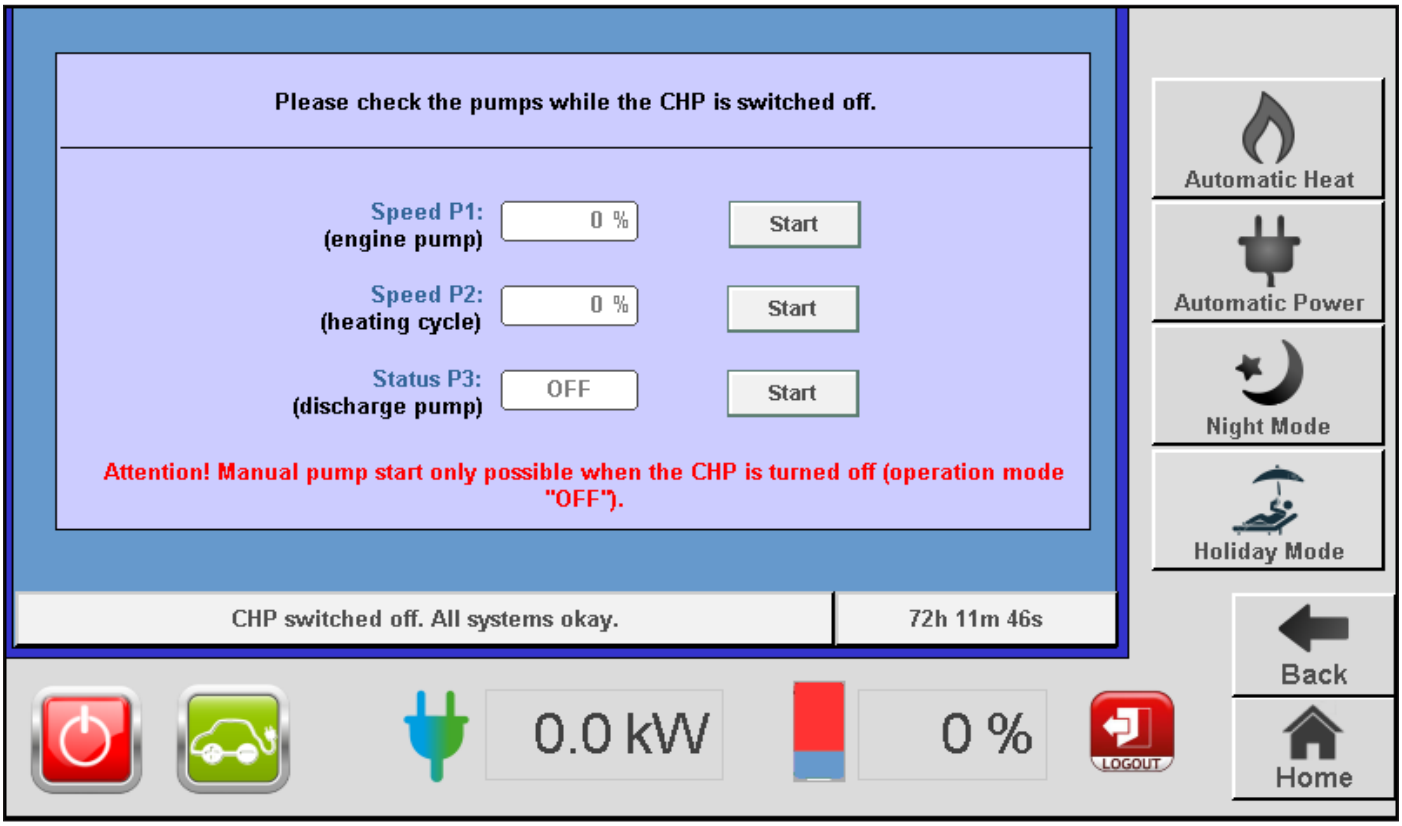


Trained specialist personnel are able to check the system start conditions in this menu at a glance.

If all messages are displayed with a green box then the conditions for starting the system have been fulfilled. Messages with a red box indicate conditions that are not fulfilled and that will prevent a system start.

Additionally, the following values are displayed for checking:
- Temperature T1 and predefined maximum value
- Buffer load and predefined maximum value
- 2x Buffer load in the non-productive time and specified maximum value

Technician level – pump testing



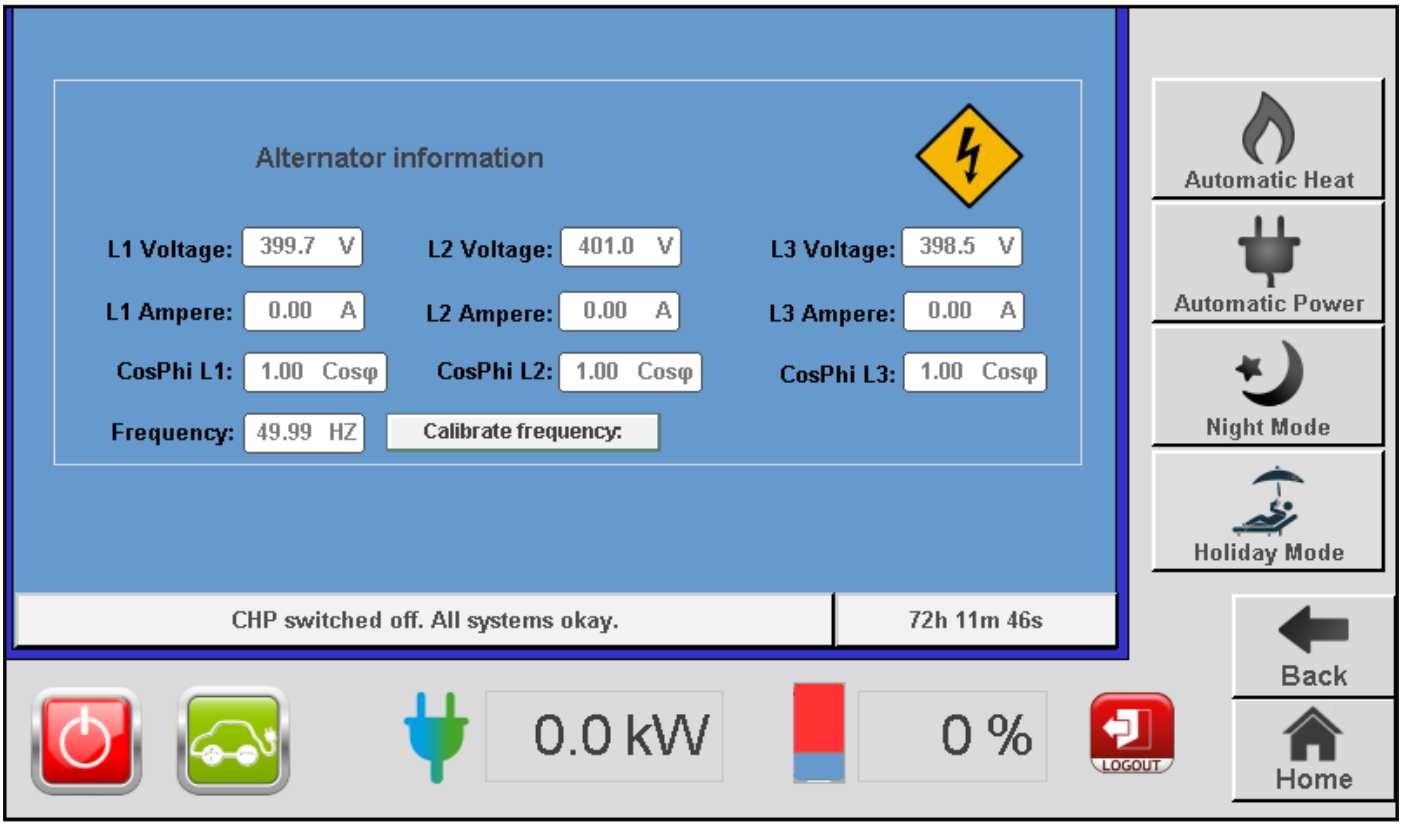
A pump test may be necessary after installation of the system, e.g. for flushing purposes. Trained specialist personnel are able to perform the pump test in this menu.

Precondition: the system must be switched off.

The following pumps can be tested:
- Engine circuit pump
- Heating circuit pump
- Tank discharge pump

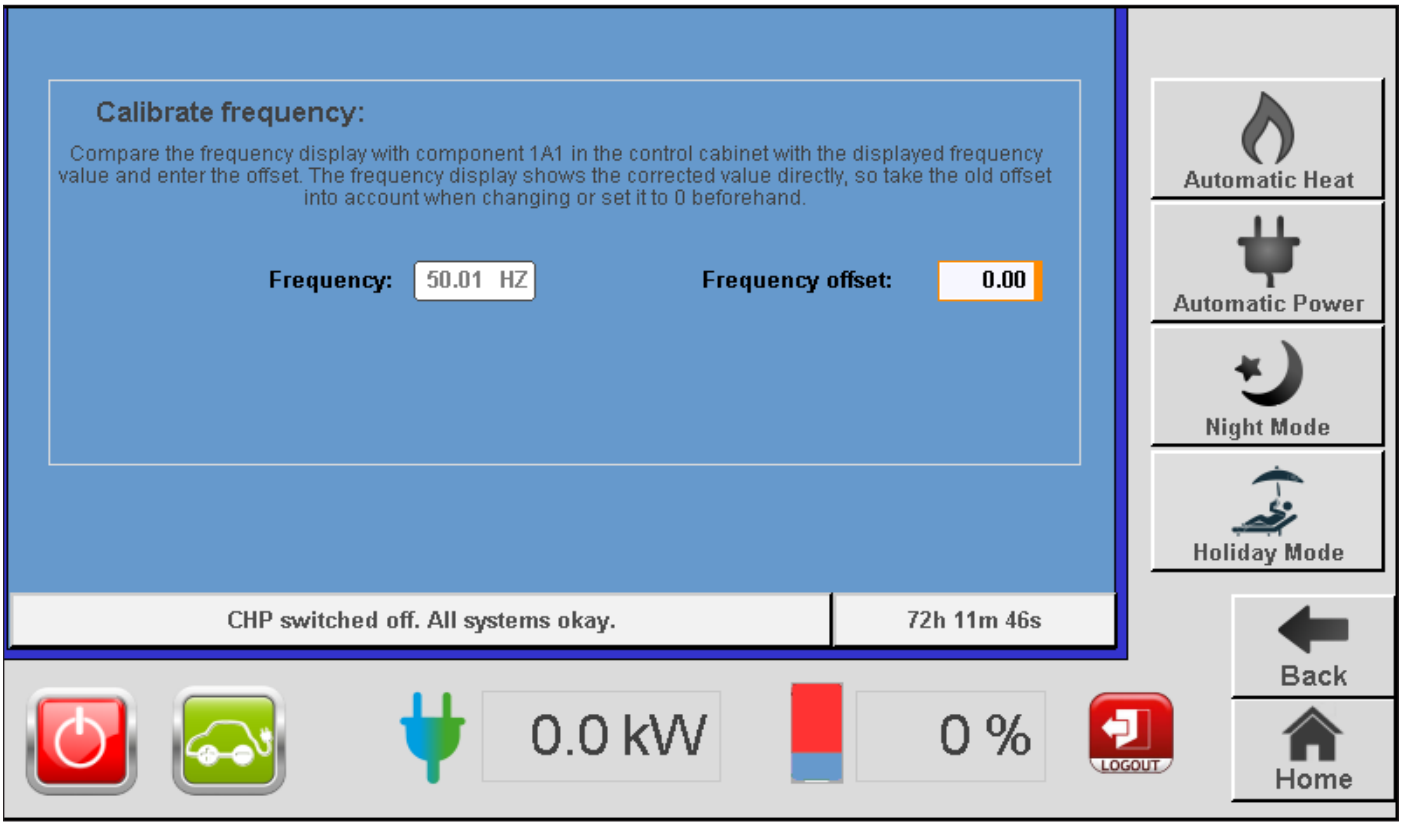
In order to start or stop the pump test:
► Touch the corresponding button.

Technician level - generator info



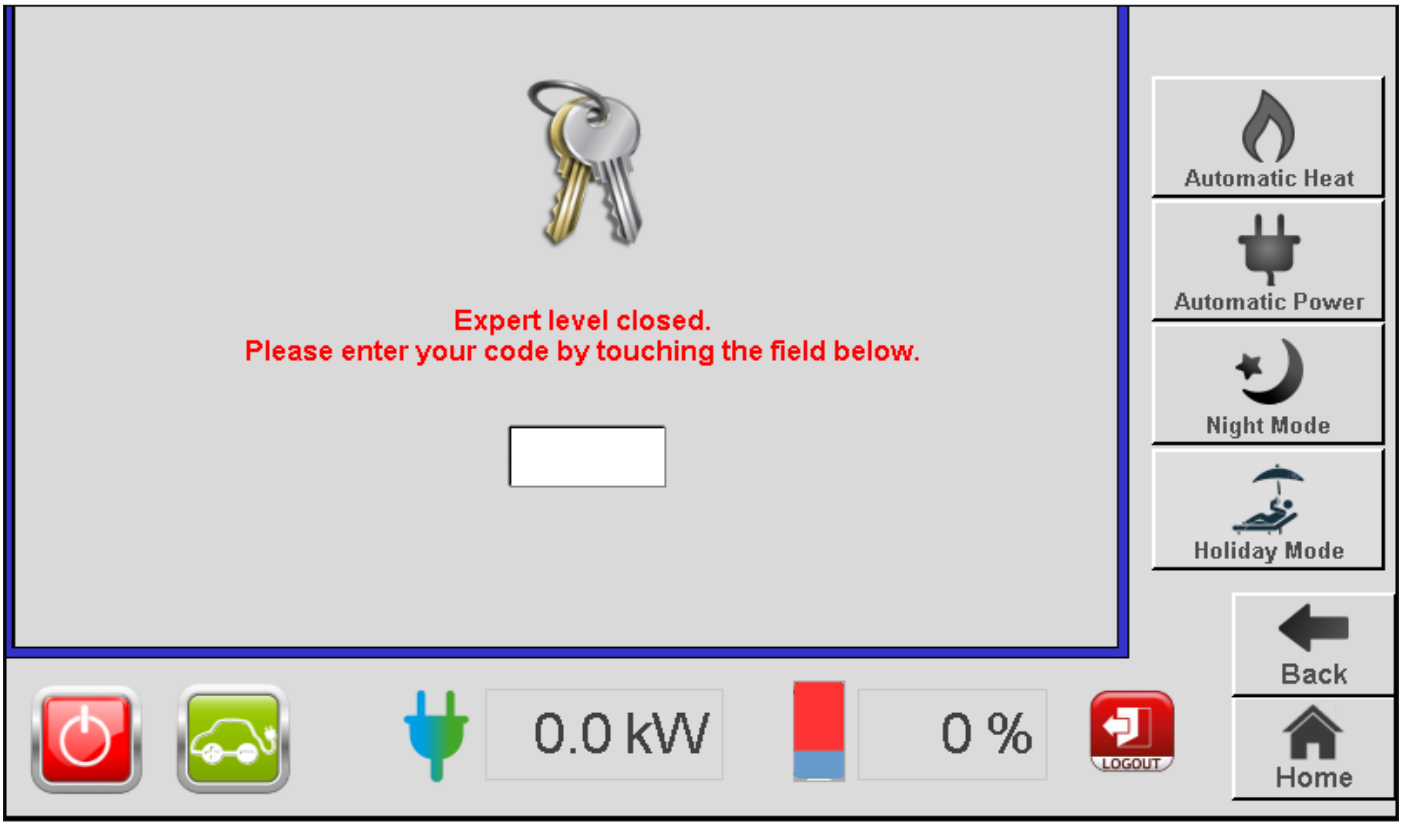
The following generator information is displayed for monitoring the generator output:
- L1 Volt
- L2 Volt
- L3 Volt
- L1 Ampere
- L2 Ampere
- L3 Ampere
- CosPhi L1
- CosPhi L2
- CosPhi L3
- Frequency with calibration button

Technician level - calibrating the frequency



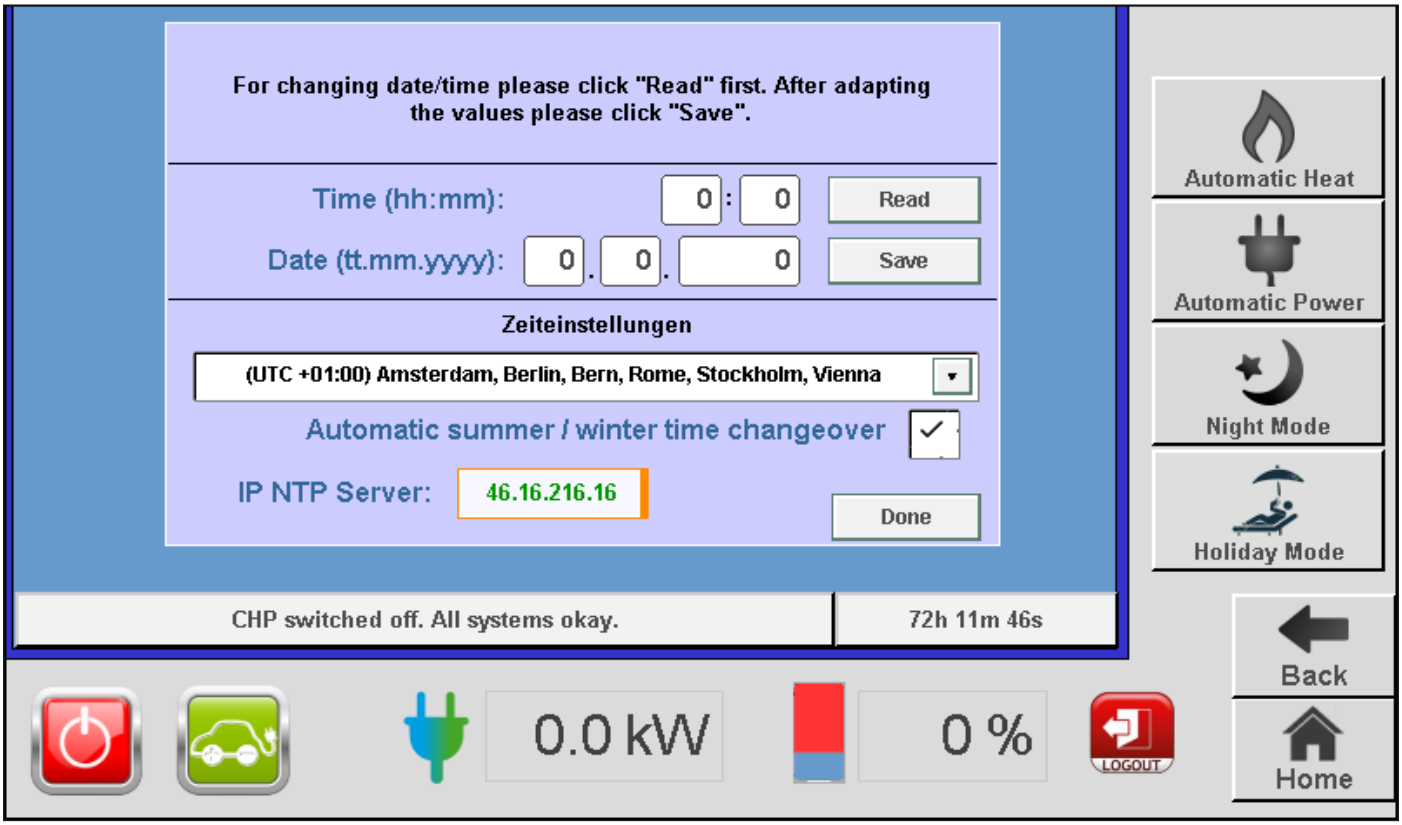
It is possible to enter and adjust an occurring deviation (offset) from the electricity meter to the screen value if necessary. The electricity meter and software calibrate to the same value.

Technician level - expert level



Only the manufacturer and authorised specialist partners have access to the "expert level" area.
After entering the code, employees of the manufacturer or specialist partner can perform various settings and tests.

4.7.6 Date/time



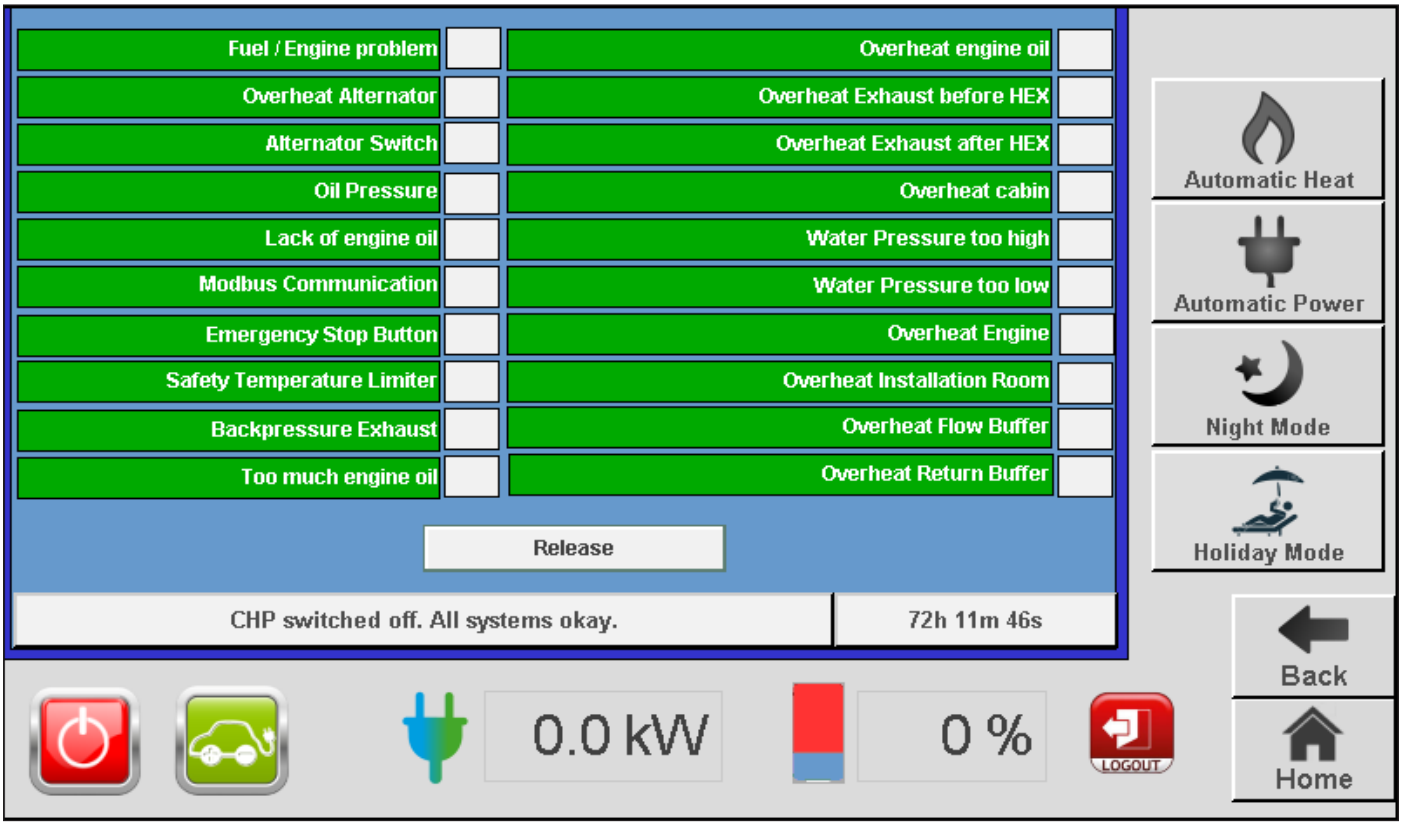
Menu for setting the date and time.

- ► Touch the “read in” button. The information is read in via the connected modem and automatically entered in the corresponding fields.
- ► Touch the “save” button to accept the information.
- ► Select the time zone.
- ► Set whether the changeover between summer and winter time should take place automatically.

The IP address of the NTP server is displayed.

- ► Touch the “done” button to exit the menu.

4.8 Safety shutdowns



The system constantly monitors different temperatures and states. If certain limit values are exceeded here then a safety shutdown takes place automatically. Possible causes of a safety shutdown are displayed on this screen. The corresponding messages have a green background.

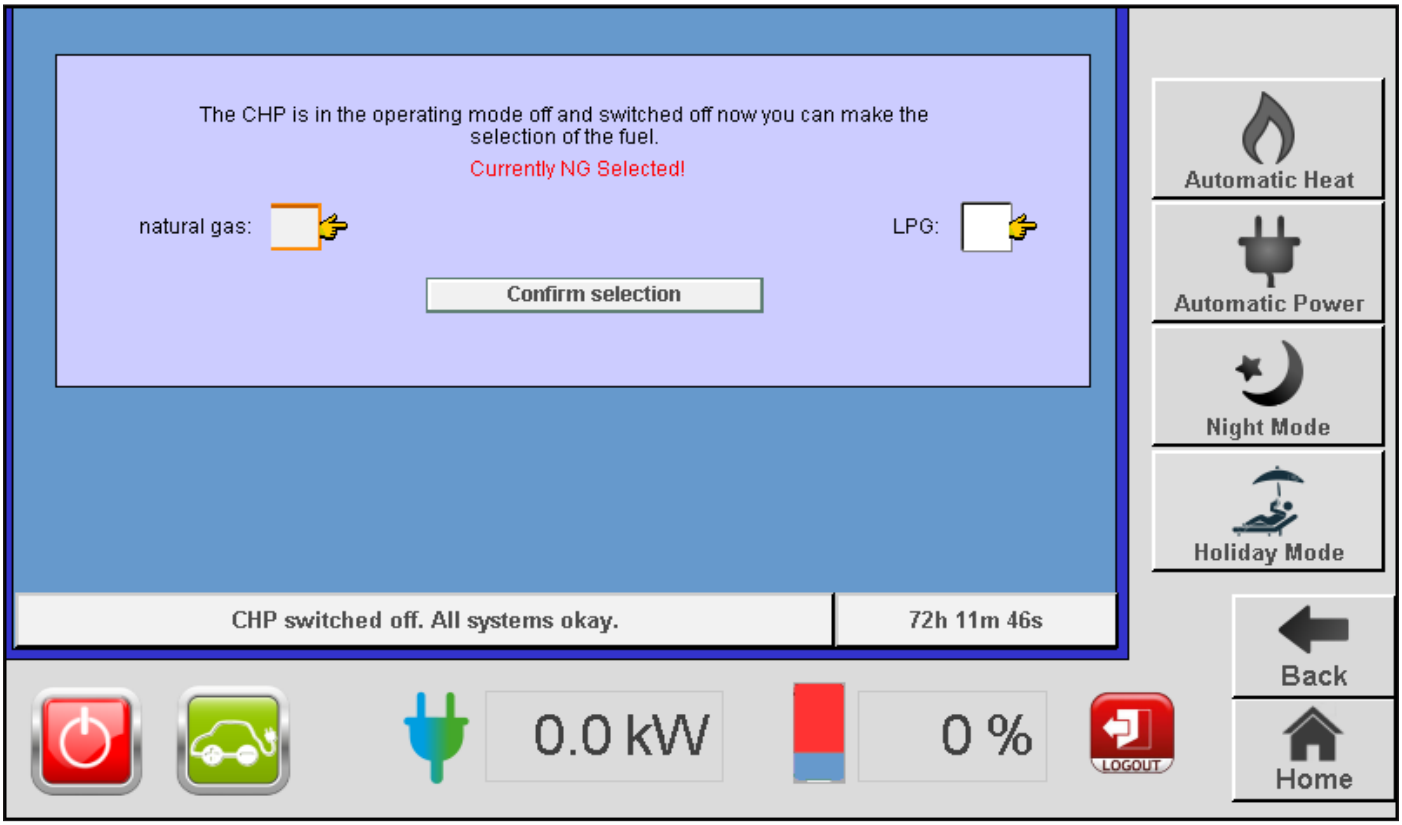
If a message has led to a safety shutdown then the message has a red background. As long as the cause of the message exists, an additional red lightning bolt is displayed.

In order to release the system again after a safety shutdown, the cause must be eliminated.
→ “5.1 Fault resolution” (Page 44).

Once the cause of the safety shutdown has been remedied, the system can be released again.
► Touch the “unlock” button.
The message is acknowledged and has a green background again.

Example
The engine oil temperature has exceeded its maximum limit during operation:
– The system switches off automatically.
– The message “overheat engine oil” has a red background.
– The red lighting bolt is displayed.
Once the engine oil temperature has cooled back down to a certain value:
– The lightning bolt disappears.
– The message retains its red background.
Only after release by touching the “unlock” button is the message acknowledged and has a green background again.

4.9 Bi-fuel selection



Menu for selecting the fuel - natural gas or LPG (liquid petroleum gas).

- ► Press the button for the desired fuel.
- ► Confirm the selection.

5. Service repairs

5.1 Fault resolution

⚠ ATTENTION!

Risk of damage to the system with a failure to observe the error messages!
Malfunctions indicate faults with the system or incorrect settings in the control mechanism. Malfunctions must be rectified immediately to prevent further subsequent damage.
► Rectify all faults immediately.

System malfunctions are displayed by the control mechanism in the operating display.

When a fault has been remedied, the message on the operating display must beacknowledged.
→ “4.7.5 Technician level” (Page 28).

In the case of malfunctions that cannot be resolved using the control mechanism:
► Initiate remote maintenance.
► Follow the manufacturer’s instructions.

Fault resolutions are described as follows:
Error message
– Possible cause.
  ► Remedial action.

Fuel/engine problem
– Insufficient or unavailable gas pressure.
  ► Measure the gas flow pressure and resting gas pressure.
  ► Check the pressure drop.
– Start values not correct.
  ► Adjust the start values.

Generator overtemperature
– Water return temperature too high.
  ► Check the water pressure.
  ► If necessary, bleed the system.
  ► Check the pump.

Generator protection
– NA protection triggered.
  ► Check the grid phases.
  ► Check the soft starter settings.

Oil low
– Insufficient oil in the storage tank.
  ► Top up oil.
  ► If necessary, check the oil circulation.
  ► Check the system for leaks.

Oil pressure
– Leak, oil circulation not correct, low oil.
  ► Top up oil.
  ► If necessary, check the oil circulation.
  ► Check the system for leaks.
  ► Check the start values and the gas pressure.

Emergency stop
– Emergency stop switch pressed.
  ► Unlock the emergency stop switch.

Safety temperature limiter (STB)
– Overtemperature interior or exhaust gas.
  ► Unlock STB
  ► Check the fan.
  ► Check the exhaust line.
  ► Check the condensate drain.

Exhaust gas counter-pressure too high
– Exhaust line blocked, condensate drain blocked.
  ► Check the exhaust line.
  ► Clean the condensate line.

Maximum engine oil exceeded
– Too much oil in the storage tank.
  ► Check the oil level with the dipstick.

Engine oil overtemperature
– Oil cooling insufficient, water temperature for oil cooling too high, flow rate too low.
  ► Check the oil circulation.
  ► Check the oil level with the dipstick.
  ► Check the coolant and heating circuit flow rate.
  ► Check the oil filter.

Overtemperature exhaust gas before AWT
– Exhaust gas counter-pressure too high or mixture too thick.
  ► Check the mixture.
  ► Check the flue gas counter-pressure.

Overtemperature exhaust gas after AWT
– Cooling output from calorific value heat exchanger too low.
  ► Check the exhaust gas heat exchanger.

Overtemperature interior
– Room air temperature increased, exhaust air insufficient.
  ► Check the room air temperature.
  ► Check the fan.
  ► Check the exhaust air duct.

Water pressure too high
– Pre-pressure on the expansion tank insufficient, too much coolant in the circuit.
  ► Check the expansion tank.
  ► Check the water pressure sensor.
  ► Check the water quality.
  ► Correct the coolant fill level (water-glycol mixture 60:40).

Water pressure too low
– Pre-pressure on the expansion tank insufficient, too little coolant in the circuit.
  ► Check the expansion tank.
  ► Check the water pressure sensor.
  ► Check the water quality.
  ► Check the system for leaks.
  ► Correct the coolant fill level (water-glycol mixture 60:40).

Overtemperature supply
– Insufficient heat output at the plate-type heat exchanger.
  ► Check the pump.
  ► Check the flow rate.
  ► Check the water quality of the cooling and heating water.
  ► Perform cleaning.
– Heating circuit flow rate insufficient.
  ► Clean the MSM adapter magnetic filter.

Room air overtemperature
– Temperature in the installation room too high.
  ► Check the air intake openings.

Buffer supply overtemperature
– Supply temperature to the buffer tank too high.
  ► Check the flow rate from the secondary circuit.
  ► Check the water quality.
  ► Check the customer’s pump control.

Buffer return overtemperature
– Return temperature from the heating circuit too high.
  ► Check the heating system.
  ► Check the system pump control.

Waiting for grid
– Fuse tripped.
  ► Check the fuse in the control cabinet.
  ► Check the customer’s fuse.

Gas pressure
– No gas pressure present (customer supply).
  ► Check the gas pressure monitor.
  ► Check the gas supply line.
  ► Measure the gas pressure.

Modbus communication
– Connection between the control mechanism, temperature input module and/or electricity meter is interrupted.
  ► Check the cable connections in the control cabinet.
  ► Check the temperature input module in the control cabinet.
  ► Check the electricity meter in the control cabinet.
  ► Check the Modbus communication module on the control mechanism.

Waiting for commissioning
– Commissioning not yet performed.
  ► Complete the commissioning request.
  ► Arrange a time and date for the commissioning.

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