H4 ES
HEAT TREATMENT SYSTEM

USER MANUAL

CorroVenta®

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User Manual Heat Treatment System H4ES

Intended use

The Heat Treatment System H4ES, containing an insulated tent with floor insulation and collapsible frame and the intelligent H4 ES heater is developed and intended for indoor heat treatment of insect infested material such as beds, sofas and clothing.
The H4 ES machine has a graphical display that presents the user with all required information including the temperatures measured inside the tent. It offers both a manual mode and an automatic mode of operation where it switches off as soon as the process is finished. This, in combination with the remote monitoring and control features of the SuperVision®, provides all the means necessary to ensure quality with a documented process and also to maintain a very high throughput.

• High capacity	• Energy efficient
• Low noise	• Digital interface with remote control capabilities

Manufacturing Directive

The H4ES system is CE approved.

Waiver of Liability

- Faulty, incorrect installations and/or incorrect use can cause damage to property and human injury.
- The manufacturer assumes no responsibility or liability for damages or injuries caused by non-compliance with the instructions herein, use for other purposes than the intended, or failure to observe its warnings. Such damage, injuries or liabilities are not covered by the product warranty.
- The product warranty does not cover consumables or normal wear and tear.
- It is the responsibility of the buyer to inspect the product at time of delivery and before use to ensure its good function. The product warranty does not cover damage resulting from use of faulty products.
- Changes or modifications to the equipment must not be made without written consent by Corroventa Avfuktning AB.
- The product, technical data and/or installation and operation instructions can be changed without prior notice.
- This manual contains information that is protected by the Intellectual Property laws. No part of this manual may be copied, stored in an information system or transferred in any form or in any way without the written consent of Corroventa Avfuktning AB.

Any comments on the contents of this document shall be sent or addressed to:

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Safety information

This equipment can be used by children aged eight (8) years or above and people with reduced physical, sensory or mental capabilities or with lack of experience and knowledge provided they have been given instructions and information on how it is safely used and that they understand the hazards involved.

Children must not be allowed to play with the equipment. Cleaning and maintenance must not be performed by children without supervision.

Electrical installations made in connection with the installation of the H4 ES shall be made by authorized personnel in accordance with local and national regulations.

Furthermore, the following warnings and instructions shall be read and observed:

1. The machine is intended for indoor use only.
2. The machine must not be powered until the installation is finished in accordance with this manual.
3. The powered machine must not be covered as this can lead to overheating and fire hazard.
4. The machine must not be used to step or stand on or used as table, trestle pallet or stool.
5. Never use the machine without the filter installed as this can cause damage to it. Ensure that the filter is clean. A cluttered filter can cause the machine to overheat.
6. The machine must not be used in spaces where explosive gases can be present.
7. Do not stick objects into the air outlets or intakes as this can cause damage to the machinery as well as human injury.
8. Install the machine steadily and leveled so that it cannot fall over.
9. If the machine is broken, if the power connector or the cable is damaged, contact the retailer. Do not repair the equipment if you have not received specific training by the manufacturer.
10. Be careful not to damage the power cable. The cable must not go through water or pass sharp edges.
11. Never carry or tow the machine by its cable.
12. To use electrical equipment in humid or wet environment can be dangerous. Never power the machine if it is standing in water.
13. The machine must only be connected to grounded power outlet with voltage and frequency in accordance with machine nameplate.
14. A residual-current device / ground fault circuit interrupter should be used to minimize the risk of electric shocks.
15. Water must not come in contact with the electrical components of the equipment. If this has happened, ensure that the equipment is dry before it is used again.
16. The power must always be disconnected before the machine is opened.
17. Repairs and maintenance of the electronics and the electrical system of the machine must only be made by qualified electrician.
18. Air hose/pipe that is used and connected to the dehumidifier must be able to withstand 80°C heat.
19. The machine must never be used with any other accessories than those listed in this manual or those specifically approved by Corroventa Avfuktning AB.

For further advice on product safety and use, please contact the supplier.

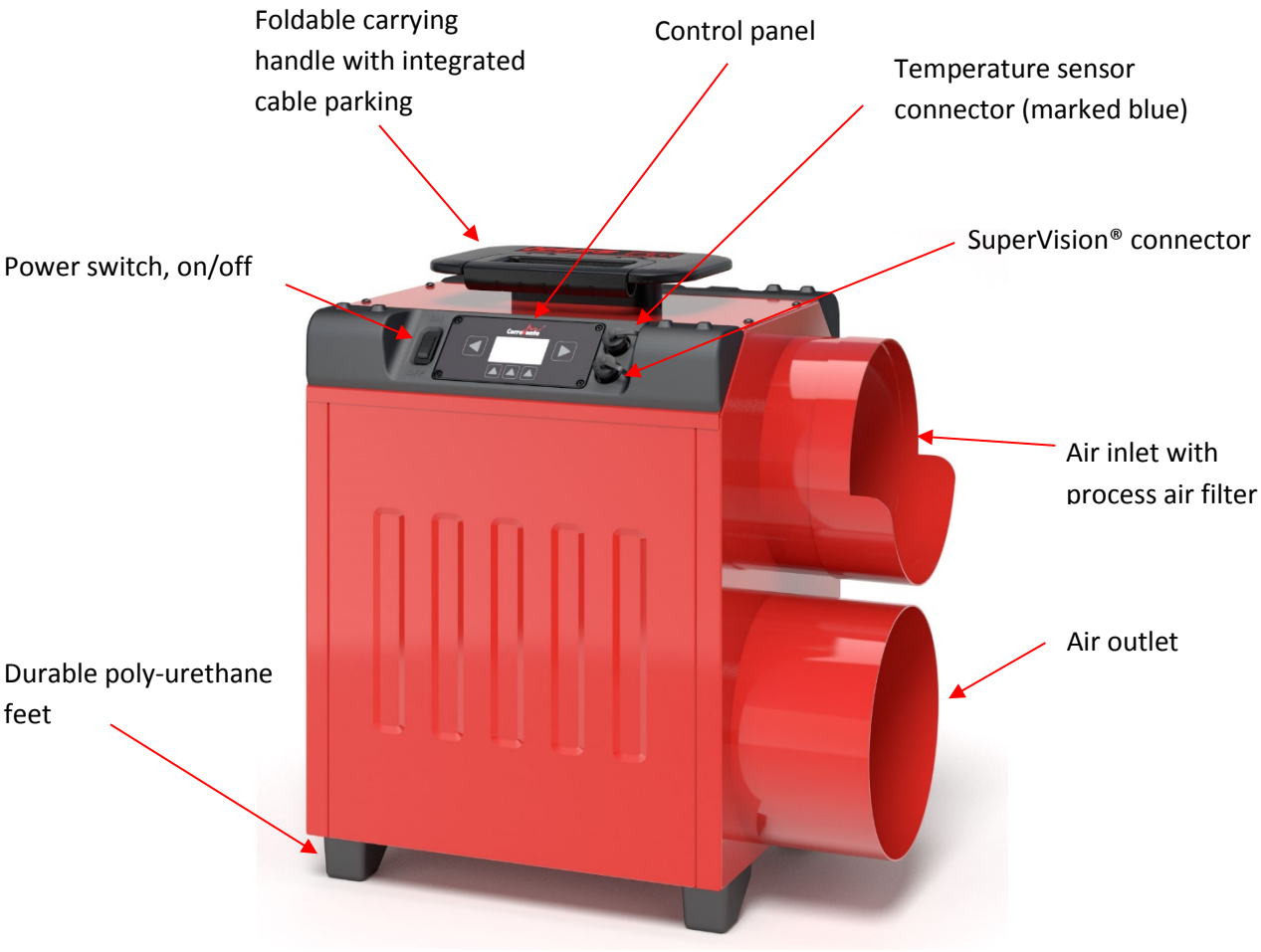
Delivery inspection

Heat Treatment System H4 ES is delivered with the following items included:

H4 ES	1 pc
Tent temperature sensor assembly	1 pc
Tent	1 pcs
Collapsible tent frame	1 pc
Floor insulation mats	2 pcs

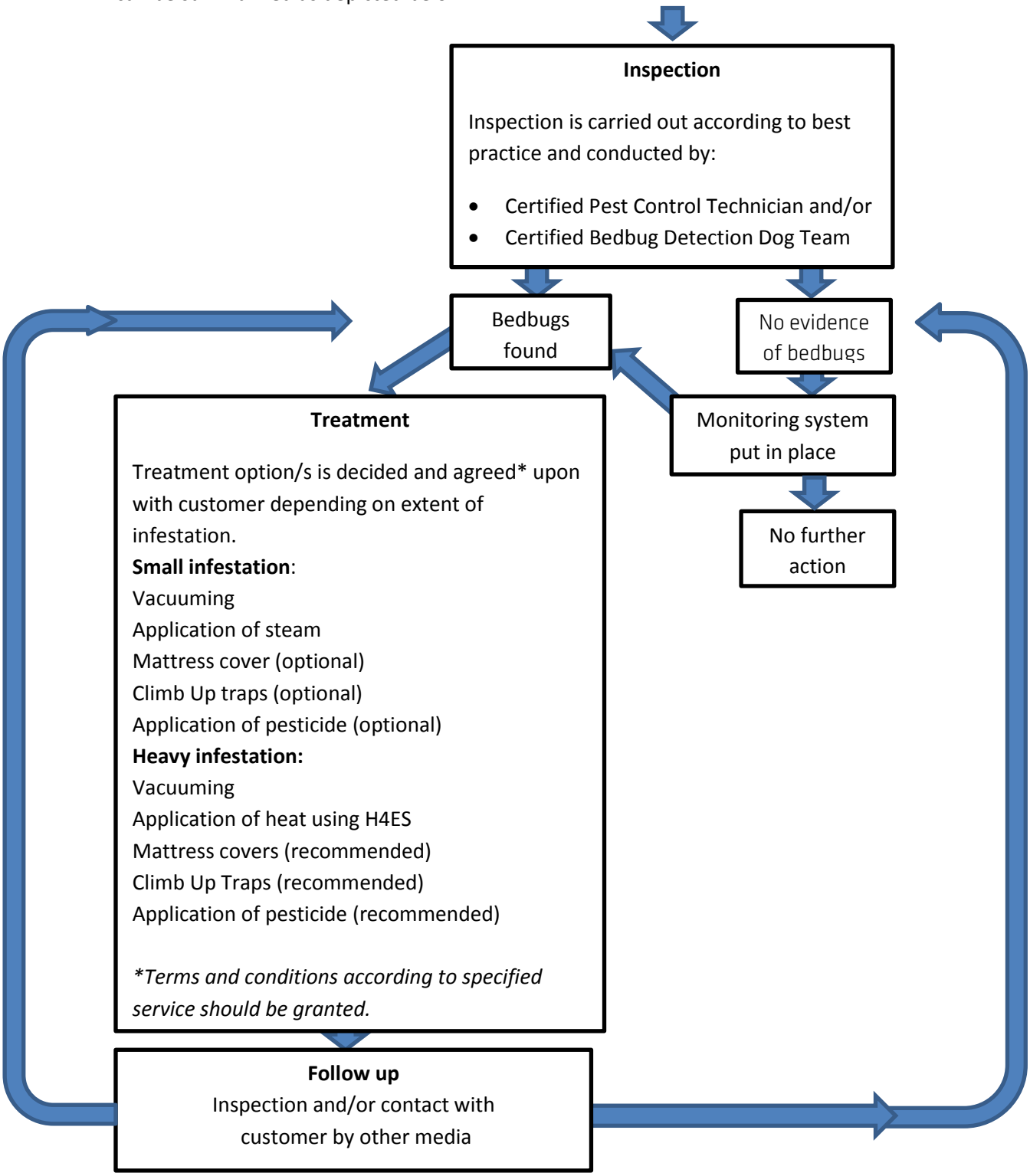
Product Overview

Below pictures present H4ES ES with all its external features and controls.



Bedbug Decontamination – Standard Operating Procedure

The use of the H4ES system is one important step in decontamination process that, in its entirety, can be summarized as depicted below.



Installation

The Heat Treatment system is installed as follows (for a more thorough description please refer to section “Illustrated installation description” in the end of the manual):

- Erect the tent:
    1. Ensure an area of at least 2.5 m by 2.5 m is available for the tent. Use the insulated floor mats as a template if necessary
    2. Extend the tent frame fully, so that it forms a 2.5m by 2.5 meter square. Leave the telescopic legs in their lowest position.
    3. Unfold the tent and place it on the insulated floor mats. Take care to place the door in the intended direction.
    4. Use the straps at the respective top corners of the tent to secure them to the tops of the telescopic frame legs.
    5. One by one, extend the legs of the frame to bring the tent to its full height.
    6. Use the straps at the lower corners of the tent to the fix the corners to the frame.
- Open the tent up and bring in all of the material to be treated, noting/observing that:
    7. No material is placed beyond the red indicators on the floor, leaving 20 cm free so that the air can circulate. Leave space also by the ceiling.
    8. Ensure that air can move freely also over the floor, preferably 100 mm of free space beneath all material and pieces of furniture etc.
    9. To the extent possible, separate all the items from each other. Put clothes on hangers. Do not leave bags and suitcases packed and closed.
    10. For heat sensitive material and to avoid discoloring etc, put very heat sensitive material at a distance from the machine. The outlet from the machine is the hottest spot in the tent. If in doubt regarding heat resistance of an object, select an alternative treatment method.
- Install the machine as follows:
    11. Check the filter and clean it if necessary.
    12. With the tent still open, place the machine by the tent inlets. Push the tent over the inlet and the outlet stub of the machine and secure it with the straps so that it does not come off.
    13. Place the four sensors in positions where the temperature will rise slowly so that they will serve as indicators of when all the material in the tent has the correct temperature.
    14. Open the sensor cable gland in the tent, insert the blue marked sensor cable and connect it to the blue marked connector on the machine. Close the gland.
    15. If remote control is to be used, connect the SuperVision® Gateway to the machine with the system cable.
    16. Connect both power cables to the machine to two separately fused power outlets of 230 VAC 50Hz, max 16A.
    17. Flip the power switch to the left of the control panel to start the machine.

18. When the machine has powered up, push Start button to start the machine with factory default settings or push Resume to start with previous settings. Verify the target temperature setting and, for Auto mode, the process time setting.
19. Verify that the SuperVision symbol is visible at the top of the screen and that the Gateway has reception.

To Use H4 ES, menus and operation

The H4 ES has an easily understood user interface with a display and five push buttons. The two larger buttons on the respective sides of the display are used to select between the different menus – no changes to the setup can ever be made with these buttons as they are for navigation only.

The three smaller buttons below the display are used for selection and editing and their respective functions are always presented in text and the bottom of the screen. At the top level menus, the left of these buttons is named Home and a push on this button will immediately lead back to the default view. In many of the views there is an Info button which presents information that may be of use to the inexperienced user.

If the backlight of the display has timed out, the first button push serves only to light up the display.

After 10 minutes, if no button is pushed, a key pad lock is activated. The machine is then unlocked by simultaneous push of the two upper buttons, something that is presented in text as well as picture on the display. The keypad lock function is selectable on and off under Setup and Maintenance.

Top left and right buttons – Menu navigation only. Never changes any settings.	
Home button	**Return to the default view**
Info button	**Presents information. On-board manual**

Operation mode

MAN – Manual means that the machine will operate until manually switched off.

Auto – In auto mode, the machine maintains target temperature for a selected duration, process time, whereafter it automatically switches off the heaters.

SuperVision

Visible when the machine is connected to SuperVision for remote monitoring and control.

The machine needs to be set to Master, have a network created, in order to communicate with the Gateway.

Timer

Visible when machine is set to operate on Timer.

Slaved – indicates that the machine is controlled by other machine.

Heater indicator

Animated, moving, when both heaters are active. First level heater is always active.

Alarm

Machine has detected an error.

Fan indicator

Moving when fan is running.

Stop

Center button in the default view, stops the process. If After cooling is selected, the fan will continue operating in which case a second push of the same button will stop that too.

A.C – Aftercooling

Indicates that After cooling function is active. The fan will continue to run for a while after the heaters are switched off.

The H4 ES will, when started, go into Heat Up and remain there until target temperature is reached with all four temperature sensors inside the tent. When target temperature is reached, the machine enters the Processsing phase where it will strive to maintain target temperature. If set to Manual mode, the machine will continue this operation until manually switched off. If the machine is set to Auto mode, the machine will maintain target temperature for the duration of the selected processing time and thereafter it will switch off the heaters and, if After cooling is selected, continue to run the fan for another 60 minutes before switching off completely.

When the machine in Auto mode enters the Processing phase, in the default view, it will present how many minutes remain until the processing is finished.

Regardless of selected mode, Man or Auto, in the tent temperature sensor screen the machine, in addition to the current temperatures, the machine also presents the status of each temperature sensor, LOW or OK, and if OK, also for how many minutes the temperature have been at or above the target temperature.

Start up view

When the H4ES ES starts up, the display presents the user with two options:

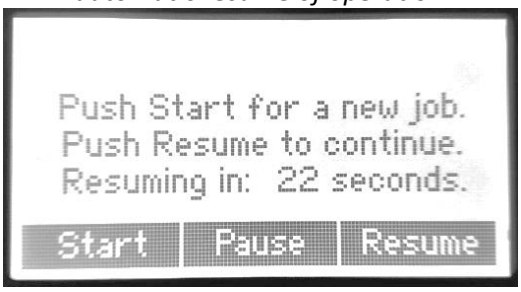
Start: Starts the machine with default settings, continuous operation with maximum capacity. Previous settings made such as the use of sensor control, Timer etc..

Resume: The machine resumes operation with the settings it had last time it was used.

If, last time it was used, the user never pushed stop before the power was cut, the machine will automatically resume operation when the countdown has reached zero.
A push of Pause button will stop the countdown and the machine will remain in standby until manually started.

Normal start

Start after power out –
automatic resume of operation

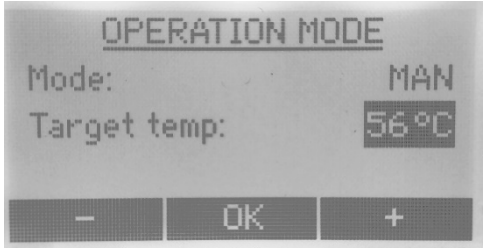


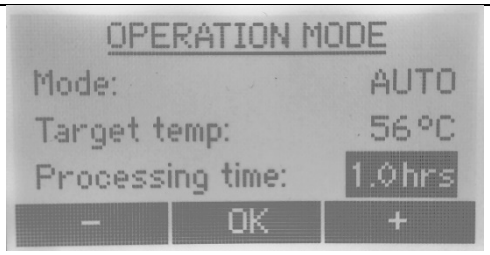
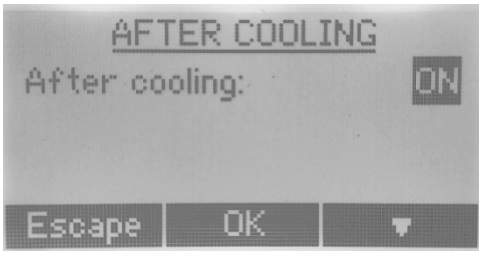
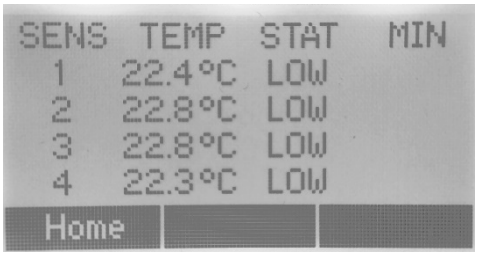
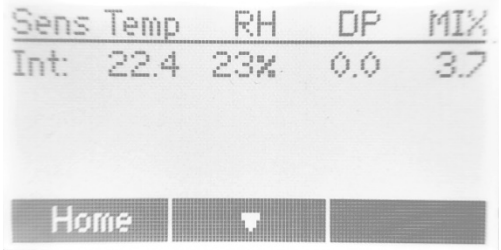
Control Mode

The Control Mode determines how the machine operates.

In Manual mode, the machine will maintain target temperature until manually switched off by the user.

In Auto mode, the machine will maintain target

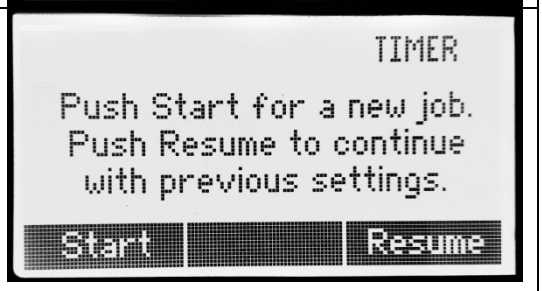


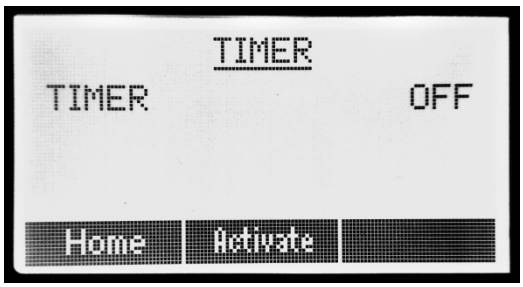
temperature for selected duration, process time, and thereafter it will automatically switch off the heaters.	
After cooling The After cooling function allows the fan to continue operating for a while after the heaters have been switched off. The air circulation makes the temperature drop even	
Tent temperature sensor screen In this screen, all four temperatures measured inside the tent are displayed along with their corresponding status. Each temperature is presented as “Low” until the machine’s target temperature has been reached. When this temperature is reached, the status switches to “OK”. In the far right column, the machine presents how many minutes have passed since the corresponding sensor passed the target temperature level.	
Internal Relative Humidity and Temperature sensor screen This screen presents the values measured by the internal RHT sensor placed in the machine’s inlet. The temperature is a good indication of the air temperature inside the tent.	
SuperVision® This menu is only presented when a SuperVision® Gateway is connected to the machine. When used with the H4ES, as external sensor nodes are not used with the SuperVision, only the first row, the signal quality, is of interest.	

Timer

If the start of the process needs to be delayed for some reason, the best way to do that is to use the SuperVision® Gateway and start the machine from remote when appropriate.
The second option is to use the built-in timer function. When setting the time for operation, be sure to set the interval so that the process will have time to finish before the Timer switches it off. Remember also that unless manually switched off or disconnected, the machine will start the following day as well.

Remember that the machine must be started before leaving the site in order for the Timer to take effect, the screen showing the text TIMER STANDBY.





Network

Note: Connect the SuperVision® Gateway to the machine before powering up.

To use the SuperVision® Gateway with the H4ES, enter the Network menu and select to created network by pushing the lower center button. When creation is finished, with some delay, at the bottom of the screen the text “SuperVision connected“ will appear.
At the top of the default view, there will also be the word Master presented.

Setup and Maintenance Menus

Under Setup and Maintenance, functions that are not required for normal operation are found.

Date and Time: Setting of system date and time.

Language: Selection of language for the interface.

Menu System: The menu system is by default set to Advanced with all functions visible and accessible. If set to Basic, the more advanced functions are removed from the menu system.

Key Pad lock: Possibility to activate/deactivate the key pad lock.

Run built-in test: A built-in self test that is available for service technicians.

Reset Service Time: The machine is set to give a service reminder once every 12 months. When service has been performed, this service reminder can be reset using this function.

View sensor data: Functionality intended for service technicians.

Counters

This screen presents the hour counters.
At the top, the resettable work counter is presented, followed by the date at which the counter was reset. After the date, the number of hours elapsed since this

<table>
<tr>
<td>reset is presented so as to allow for a quick comparison.

To reset the work counter, push Reset. Acknowledge the intent to reset the counters by push of OK in the following confirmation screen.

At the bottom, the machine life time counter is presented. This counter is not resettable.</td>
<td>
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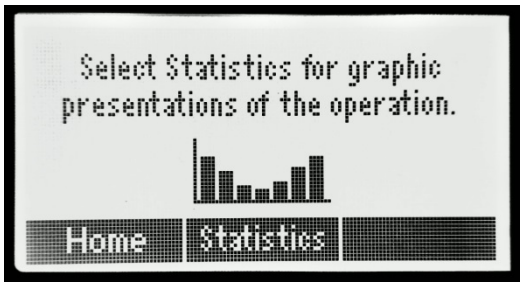
<tr>
<td>Statistics

Under statistics, the machine presents how many hours per day it has been in use for the last 14 days. The value to the far right is that of the current day.</td>
<td> 
</td>
</tr>
<tr>
<td>Alarms

In this screen, the machine presents identified alarms. As soon as an alarm is identified, this is also presented as a pop-up screen. Furthermore, as long as the error condition remains, in the top right corner of the default view there is a warning symbol.

The alarms presented need not be erased by the user. Instead, as soon as the machine detects that the functionality is again in place, the alarm will disappear automatically.</td>
<td>
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</table>

Alarms

If the machine detects an error, this information is presented in a pop-up screen and for as long as one or more problems exist, there is a warning symbol in the top right corner of the default view.

The alarms that can be displayed are the following, each presented with recommendation on what to do.

Alarm	Action / Advice
Temperature sensor failure	Check the sensor assembly for damage. For as long as this error remains, as the temperature of the material is not known, the machine will continue its operation until manually switched off.
All temperature sensors have failed.	Check if the temperature sensor assembly is properly connected to the machine. For as long as this error remains, as the temperature of the material is not known, the machine will continue its operation until manually switched off.
Power Supply Failure	Check that power cable two is connected to the outlet and, if necessary, check the fuse to see that there is power available. Loss of power to this second power cable means that the heater capacity is reduced to approx. 50%.
Mainboard connection failure	Internal error. If it remains, please contact service technician.
Internal RHT sensor failure	Internal error. If it appears after the machine has been disassembled it might be so that the sensor connector to the lid has not been correctly mounted. If not and if it remains, please contact service technician.
Failed to save the statistics	Internal error. If it remains, please contact service technician.
Failed to save the event log	Internal error. If it remains, please contact service technician.

Service Reminder

The machine is set to provide a service reminder every twelve months. The reminder is presented as an alarm but it does not affect the operation of the machine. The service reminder function is reset under Setup and Maintenance.

Maintenance and service

Filter inspection and cleaning

The process air filter shall be inspected and, if necessary, cleaned before each new cycle.

Accessories and consumables

The following articles are available as accessories and consumables to the H4 ES machines:

Article number	Name
1003493	Process air filter
1003383	Heat treatment tent
1003489	Collapsible Tent frame
1003429	External temp. sensor assembly
6000631	Tent floor insulation
1003544	Gateway incl. system cable 0.5 m

Fault finding

Symptom	Probable cause	Action
The machine is showing “Power Supply Failure” alarm.	There is no power in the outlet used with power cable no. 2.	Check that power cable no. 2 is connected. Check the fuse to see that power is available through the outlet.
The machine is showing “All temperature sensors have failed” alarm.	The temperature sensor assembly is not properly connected. The sensor assembly is damaged.	Connect temperature sensor assembly to the machine. Replace or repair sensor assembly. Note: If one or several of the temperature sensors have failed, the machine will continue to operate until manually switched off, regardless of whether it is in Auto or Man (Manual) mode.

Technical data

H4 ES

Typ LAF 50 LAF 50E LAF 50E2 LAF 100 LAF 100E LAF 150 LAF 150E

Voltage	**230 VAC / 50 Hz**
Rated power (W)	**Power cable 1: 2100W** **Power cable 2: 2200W**
Air volume m3/h	**950**
Height x width x length (mm)	***533 x 320 x 497***
Operating sound level (dBA)	***< 70***
Weight, kg	***22 kg***

Tent

Height x width x length (mm)	**2100x2400x2400**
Weight, kg	**17 kg**

Frame

Height x width x length (mm)	**2100x2500x2500**
Weight, kg	**12 kg**

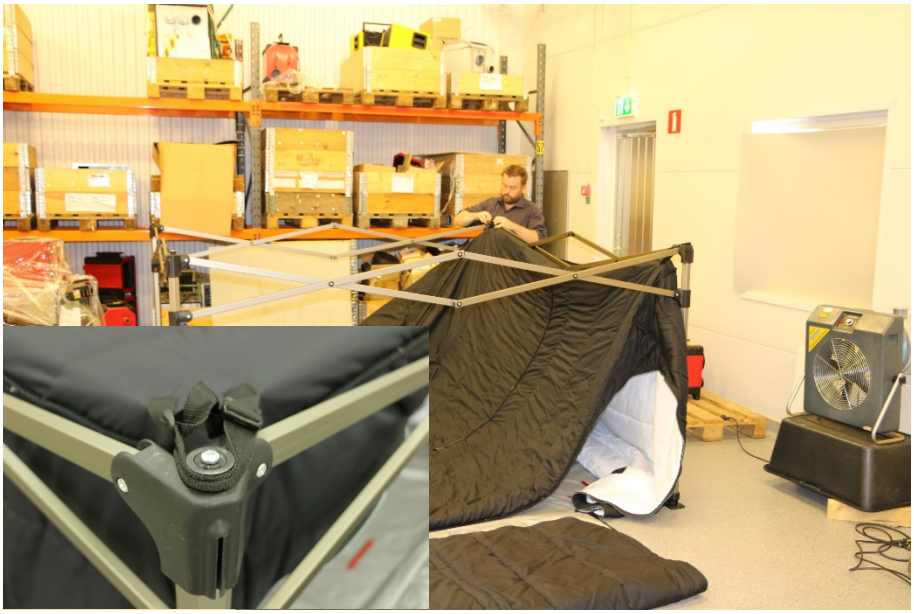
Illustrated installation description

1. Ensure an area of at least 2.5 m by 2.5 m is available for the tent. Use the insulated floor mats as a template if necessary

2. Extend the tent frame fully, so that it forms a 2.5m by 2.5 meter square. Leave the telescopic legs in their lowest position.

3. Unfold the tent and place it on the insulated floor mats. Take care to place the door in the intended direction.

4. Use the straps at the respective top corners of the tent to secure them to the tops of the telescopic frame legs.



5. One by one, extend the legs of the frame to bring the tent to its full height.
6. Use the straps at the lower corners of the tent to the fix the corners to the frame.
   The frame has two different height settings (2000/2200 mm) to accommodate various ceiling heights.
   The tent must be stretched at the lower edge. Secure the tent's lower straps at low ceiling heights and the upper straps at high ceiling heights.

- Open the tent up and bring in all of the material to be treated, noting/observing that:

7. No material is placed beyond the red indicators on the floor, leaving 20 cm free so that the air can circulate. Leave space also by the ceiling.

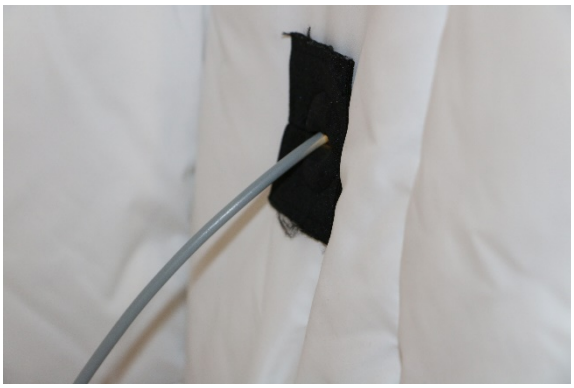
Leave this space free so that air can flow freely by the tent perimeter.

8. Ensure that air can move freely also over the floor, preferably 100 mm of free space beneath all material and pieces of furniture etc.
9. To the extent possible, separate all the items from each other. Put clothes on hangers. Do not leave bags and suitcases packed and closed.
10. To avoid discoloring etc, put very heat sensitive material at a distance from the machine.

- Install the machine as follows:

11. Check the filter and clean it if necessary.
12. With the tent still open, place the machine by the tent inlets. Push the tent over the inlet and the outlet stub of the machine and secure it with the straps so that it does not come off.

13. Place the four sensors in positions where the temperature will rise slowly so that they will serve as indicators of when all the material in the tent has the correct temperature.
14. Open the sensor cable gland in the tent, pull the sensor assembly connector through and then connect it to the machine. Close the gland.



15. If remote control is to be used, connect the SuperVision® Gateway to the machine with the system cable.
16. Connect both power cables to the machine to two separately fused power outlets of 230 VAC 50Hz, max 16A.
17. Flip the power switch to the left of the control panel to start the machine.
18. When the machine has powered up, push Start button to start the machine with factory default settings or push Resume to start with previous settings. Verify the target temperature setting and, for Auto mode, the process time setting.
19. Verify that the SuperVision symbol is visible at the top of the screen and that the Gateway has reception.

DO YOU HAVE QUESTIONS OR NEED HELP?

Visit www.corroventa.com or call us to speak with an expert.
We have the knowledge and the equipment to find a solution as efficiently as possible.

Corroventa develops, manufactures, sells and rents high quality products for dealing with water damage, moisture, odours and radon. We are one of the market leaders and specialists in innovation within the industry. Our products are compact, effective, ergonomic and energy efficient. In emergency situations and during flooding, Corroventa's customers have access to one of the largest rental parks in Europe. All our products are manufactured in Bankeryd, Sweden.

www.corroventa.com

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