R4000 MOBILE AIR HANDLING UNIT

USER GUIDE

1 PRESENTATION

1.1 Foreword

Thank you for choosing a R4000 mobile air decontamination unit developed and manufactured in France by CALISTAIR.
This technical manual must be read, understood and applied to ensure that the appliance functions correctly.
Air treatment technology by non-thermal catalysis is based on a patented procedure which destroys most chemical and microbiological pollutants in the air.
The R4000 unit is a very powerful air treatment system. It can treat up to 4,000 m^3/h.
The core technology is protected by two filter levels (G4 + F8). After decontamination, the air is finally filtered by a H14 (or even H15) high-efficiency filter at the outlet for absolute particulate filtration in order to achieve the highest expected air class levels.
It is equipped with a latest-generation PLC enabling it to manage all the programmed functions via the various built-in sensors.
Its automatic regulation system enables it to maintain the desired air flow however clogged its filters are or to adapt its ventilation airflow to the concentration of pollutants present.
This system is designed to function completely independently in the presence of people. It does not generate any additional pollutant in the environment of the room treated, subject to compliance with the usage conditions.
It can be connected to a ventilation duct network and controlled by an existing or not yet existing fixed air handling system (heating / air conditioning).

1.2 Contents of the delivery

The appliance is delivered to you in secure packaging. The delivery contains:

- 1 R4000 series air handling unit containing the elements described below in its standard version, and any options purchased,
- 8 UVC bulbs,
- 1 H14 high-efficiency filter (U15 as an option),
- 1 adsorbent filter,
- 1 G4 pre-filter,
- 1 F8 opacimetric filter,
- 3 catalytic filters,
- 1 key,
- 1 stylus for the screen,
- 1 user manual,
- 1 protective cover.

1.3 Principle

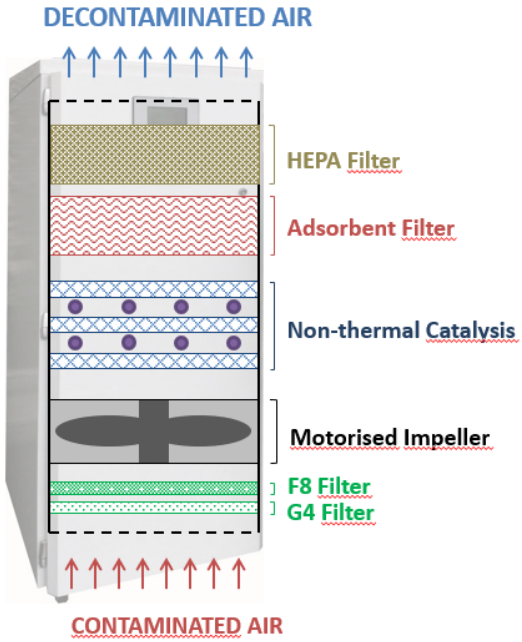

Figure 1: diagram of the R4000 and treatment modules

- The air to be treated is captured via the bottom of the machine and drawn into the R4000 unit by the fan (motorised impeller).
- The particles are trapped by the particulate filters at the unit inlet (G4 course filtration + F8 fine filtration).
- Chemical and microbiological pollutants are almost entirely destroyed by the non-thermal catalytic reactor.
- The adsorption and high-efficiency filters (H14 or U15) then complete the treatment.

1.4 Technical description

1.4.1 Design

The casing of the unit is composed of a galvanised steel double wall, with rock wool thermal and acoustic insulation (double skin). The inner and outer walls are smooth, avoiding the formation of biofilms (NF S90-351 standard). The gaskets and packings are class L2, satisfying the EN1886 standard for improved sealing. The G4 and F8 filters and the brackets for the bulbs and catalysts are mounted on rails. The adsorbent and high-efficiency filters are clamped on a seal surface via cams (no need for tightening tools). The inside of the unit is accessed via a seal-mounted door locked with a square recess key at two points for improved sealing.

1.4.2 Filtration

The R4000 is equipped with several filtration levels as standard:

- G4 gravimetric filter according to the EN 779 standard. Fully recyclable pleated polypropylene media which can be incinerated,

- F8 opacimetric filter according to the EN 779 standard with compact cells. Fully recyclable glass-fibre media which can be incinerated,
- Adsorbent filter: standard or specific depending on the sector of activity,
- High-efficiency (H14) or ultra high efficiency (U15) absolute filter according to the standard EN 1882.

1.4.3 Treatment by the non-thermal catalytic process

The patented non-thermal catalytic reactor of the R4000 is composed of an alternating arrangement of 3 stages of catalyst deposited on a support and two frames, each fitted with 4 UV-C bulbs mounted in a flat configuration. The bulb frames are electrically connected to the electrical cabinet located at the rear of the appliance. A PLC manages all the functions of the R4000 with the assistance of pressure, temperature and humidity sensors. Additional sensors, in particular for specific chemical pollutants, can be incorporated into the R4000 for particular needs.

1.4.4 PLC

The R4000 unit is equipped with a latest-generation SAIA PLC (PCD3.M90 type). It enables the air handling unit to operate independently, maintaining a constant flow however clogged the filters are. It manages all the sensors on the machine, provides traceability of all operations and warns in case of malfunction or if maintenance operations are necessary. The data can be exported via an Ethernet cable. If the appliance is connected to the network, the information can be recovered and the PLC updates performed remotely.
The PLC is integrated into an electrical cabinet at the rear of the scrubber. A colour touchscreen on the front displays all the operations and allows the user to configure the machine settings.

1.4.5 List of sensors and probes

The R4000 is equipped with sensors and probes as standard. Their type and number may vary depending on the environments and issues to be treated.

- Temperature and Hygrometry probe (air inlet)
- Pressure sensor to measure the air flow
- Differential pressure probe (G4 + F8)
- Differential pressure probe (adsorbent + H14 or U15)

The control screen displays the flow (in m^3/h), the temperature (in °C), the relative humidity (in %), the consumption of the two levels of UV-C bulbs and the motorised impeller (in W) in real time.

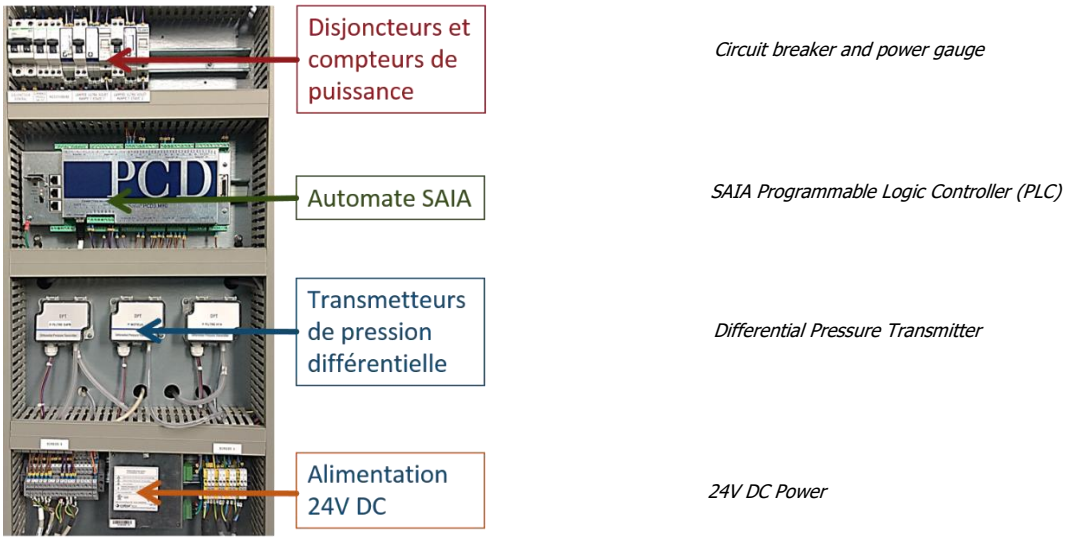

Figure 2: R4000 electrical compartment and PLC

1.4.6 Fan

The R4000 uses an electronic motorised impeller (EC motor) satisfying the fan electricity consumption reduction standards (Erp 2015 directive). It allows a very precise, quiet regulation from 0-10V, maintaining a constant flow and adapted timing according to the issues to be treated and the environment. For example, the available pressure is 950 Pa at 3,000 m^3/h.

1.4.7 Connection to a ventilation network

The R4000 is a mobile, autonomous air handling unit. In some cases (e.g. location in a class 4 hazardous zone, centralised treatment of several rooms, etc.), it can be connected to a ventilation system using an optional painted galvanised steel connection mounted on the unit by tightening on a seal. It can thus be connected to ducts of diameters ranging from 150 (DN150) to 400 mm (DN400). Other connection components are available (consult us):

- Fixed connection kit,
- Fixed suspended filter ceiling with unidirectional flow equipped with terminal filters for zone 4,
- Removable filter ceiling with unidirectional flow equipped with terminal filters for zone 4,
- Flow diffuser box for zone 3,
- Negative pressure kit,
- Mobile kit for overpressurisation with isolation panel for the fresh air intake,
- Air-mixing plenum (return air / fresh air) incorporating air heating and cooling batteries.

1.4.8 Castors

The appliance is equipped with four swivelling castors to facilitate movement. The two front castors are fitted with a brake. Their tread is specific to clean room use and is resistant to chemical products.

1.4.9 Technical data

MODEL	R4000 mobile
Total height	1,905 mm
Width	705 mm
Depth	845 mm
Max. weight	280 kg
Power of the UV-C bulbs	95 W
Number of UV-C bulbs	8
Max. treatment air flow	4,000 m^3/h
Estimated max. total power	2000 W
Electrical power supply	230 V AC (16 A)

2 OPERATION

The R4000 is designed to operate permanently to guarantee continuous treatment of pollutants and guarantee a good level of air decontamination for people working in the room(s) treated.
Your R4000 unit is always commissioned by a qualified person trained by us.
All the verifications when the unit is unpacked and commissioned are carried out by qualified CALISTAIR personnel or representatives and by your technical teams.

2.1 Installation

The appliance is delivered in perfect working order. It can be used either for simple, standalone treatment or connected to an air handling system.

2.1.1 Connection to the network (ductable version)

The R4000 can be connected to air ducts via its supply kit or its return kit. In all cases, this type of installation requires a prior study followed by a Design Qualification (DQ), an Installation Qualification (IQ) and an Operational Qualification (OQ). It is used as a real air handling unit or as a terminal decontamination unit. The screen can be removed and installed at the room entrance. The embedded PLC can manage positive or negative pressures, maintain a differential pressure cascade, be controlled by a BMS, report critical or non-critical alarms, etc.

- Ensure there is sufficient room around the unit to allow maintenance of the internal components,
- Install all the necessary measures (mastic, sealing tape, sealed connections, etc.) to ensure the airtightness at all levels of the system: in the ducts, between the unit and the air handling system, etc. For installation according to the standards, use a certified installer,
- Wear Personal Protective Equipment to carry out any operations.

2.1.2 Recycling treatment

Your unit is configured to treat the air in your rooms autonomously by recirculation. No connection to the air handling system is needed. To ensure effective treatment, ensure that:

- The unit is placed in a position which is not in anyone's way,

- No obstacle hinders the air circulation around the unit.

N.B. The power cord on the floor may cause people to trip. This can be avoided by fitting cable protection.

2.2 Using the R4000

- Connect the power cord to a standard mains socket (220-240 Volts, 16 Amps).
- WARNING: check that the amperage in the building's electrical cabinet is compatible with the unit's power (see paragraph 0).
- Ensure that the general circuit breaker and the four specific circuit breakers (24 V DC power supply, motorised impeller, 1st stage UV bulbs, 2nd stage UV bulbs) located in the electrical cabinet at the rear of the unit are up.

Figure 3: circuit breakers in the electrical compartment

- The screen on the front of the machine switches on and displays the main screen. For practical reasons, the R4000 is displayed horizontally on the screen. The air inlet (bottom of the machine) is shown on the left and the air outlet on the right. On Figure 4, a cross-section view of the unit displays the operating status of the R4000, the operating settings (air flow, filter pressure losses, temperature, relative humidity, electrical power consumed), the standard elements and the options fitted in the unit (particulate filters, non-thermal catalytic treatment module, fan, adsorbent filter, sensors, etc.), the machine's on/off switch, the date and time, the buttons to access the warning statuses, the data saved by the sensors in the unit and the machine settings.

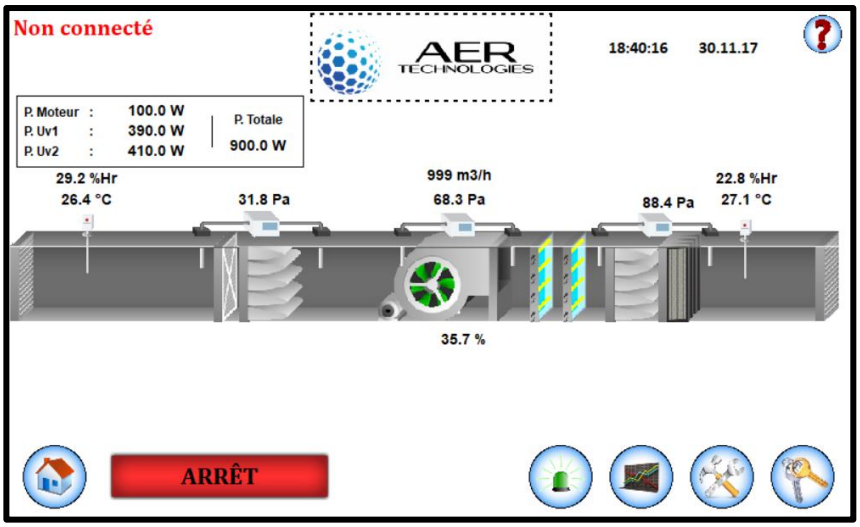

Figure 4: main screen of a mobile R4000 in its standard version

- Configuration of the machine settings is subject to three access levels. To access them, use your finger or the stylus provided to press the  pictogram at the bottom right.

Figure 5: login screen

- Enter the login and password provided. To do so, click on the corresponding box.

There are 3 access levels:

- ✓ Level 1 "User" (login **USER**) is for operational users such as heads of department, operating room senior staff or any other person who may use the machine,
- ✓ Level 2 "Technical" (login **TECH**) is for the technical personnel who may perform maintenance on the machine and who will therefore have access to additional functions,
- ✓ Level 3 "Administrator" (login **ADMIN**) is used to configure the machine for the use for which it is intended (mobile, fixed, temperature management, pressure cascades, etc.).

- It is possible to return to the main screen at any time by clicking on the  icon located at the bottom right of the screen.

Table 1: settings accessible according to the access level

		Level 1	Level 2	Level 3
	Not connected	**USER**	**TECH**	**ADMIN**
On/off	✓	✓	✓	✓
Software information	✗	✓	✓	✓
Alarms log	✗	✓	✓	✓
Traceability	✗	✓	✓	✓
Basic operating settings	✗	✓	✓	✓
Network settings	✗	✗	✓	✓
Advanced settings	✗	✗	✓	✓
Physical configuration	✗	✗	✗	✓

2.2.1 Settings accessible as "User" (Level 1)

"User" level is the first level providing access to certain functions of the R4000.
The first step therefore consists in logging in as a user.

2.2.1.1 Logging in

- Enter "**USER**" in the login tab , then enter the password you have been given in the tab
- Then click on the icon which appears in the greyed "Connection" part to connect and return to the main screen.

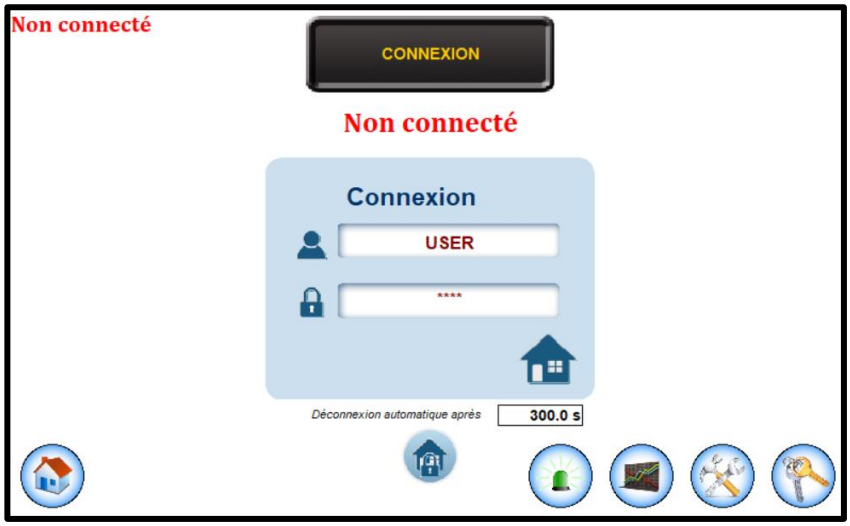

Figure 6: connection by login and password

N.B. The user is automatically logged out after a period of inactivity which can be configured (in the previous example in Figure 6, it is 300 seconds). It is also possible to log out manually by clicking on the icon.

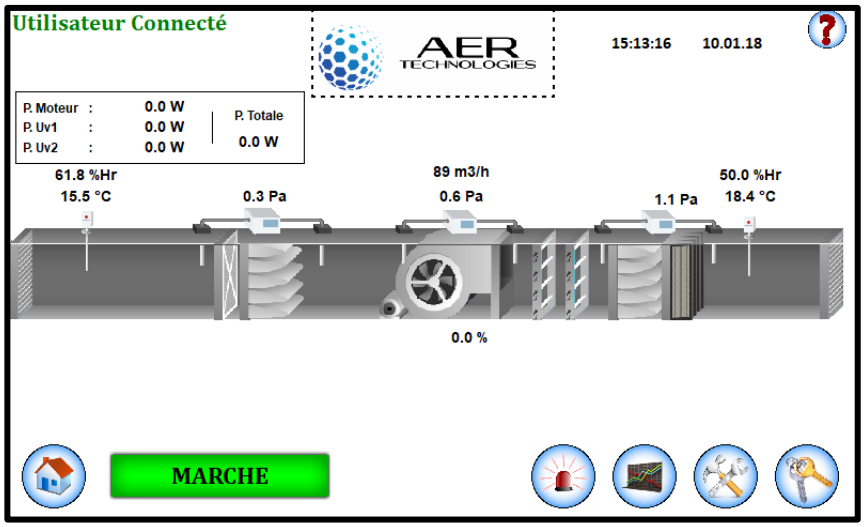

Figure 7: main screen once logged in in "User" mode

- "*User connected*" status then appears in green at the top left of the screen.

N.B. Even when the R4000 is stopped it is normal to notice differences in temperature and humidity between the return (air inlet at the bottom of the machine) and the supply (air outlet at the top of the machine)

because heat rises naturally. As the R4000 is in vertical position, the temperature probe on the supply (located in the top of the machine at a height of 1.9 m, shown on the right on the screen) therefore naturally displays a higher temperature than the temperature probe located at the return (at the bottom of the machine at a height of 0.2 m, shown on the left on the screen). This temperature difference creates a light flow of ascending air which sometimes results in slight differences in pressure loss in the filters.

2.2.1.2 Settings configuration

- Click on the "Tools" icon  to configure the settings for the air treatment flows during the day and night *"impeller flow setpoint day" and "night"* on the machine and programme the time slots "*Day/night time slot management*".

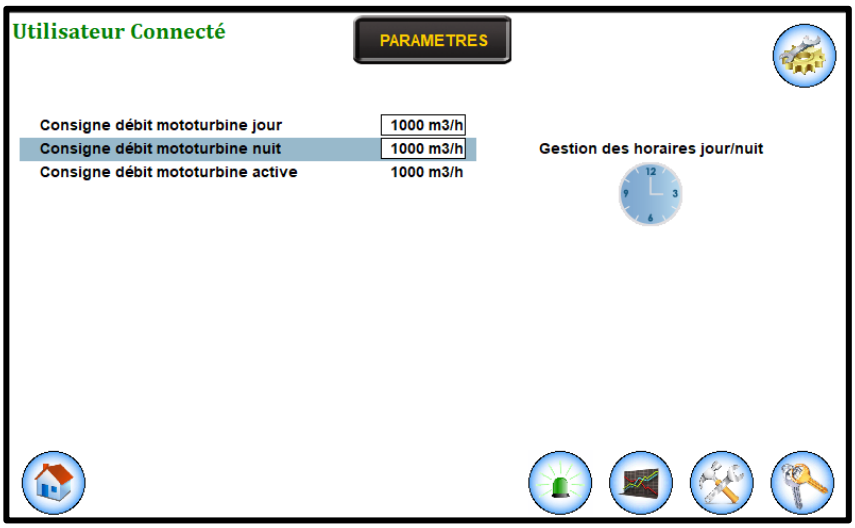

Figure 8: configuring the flow settings and programming the time slots

- Click on the "advanced settings" icon  to know the software versions and network settings. The latter can only be modified if you are connected as technical personnel ("TECH"). This page can also be accessed by clicking on the  icon on the main screen.

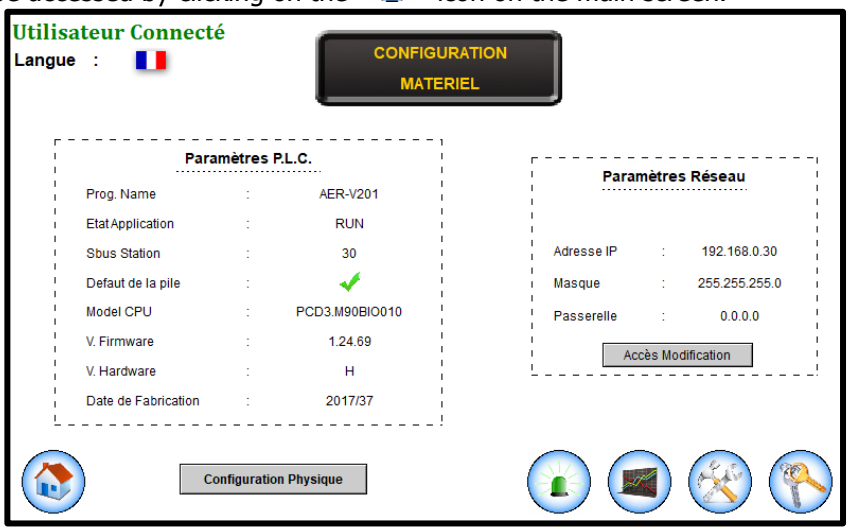

Figure 9: information screen concerning the software versions and the R4000 network settings

- The "Physical Configuration" is factory-set according to your usage (mobile, fixed, temperature and pressure cascades, optional additional sensors and probes, etc.). You can only access this level and alter the settings if you are logged in as administrator ("ADMIN").

2.2.1.3 Traceability

- To go to the R4000 traceability screen (graphs showing performance over time) directly, click on the  icon then on the criterion you want to view.

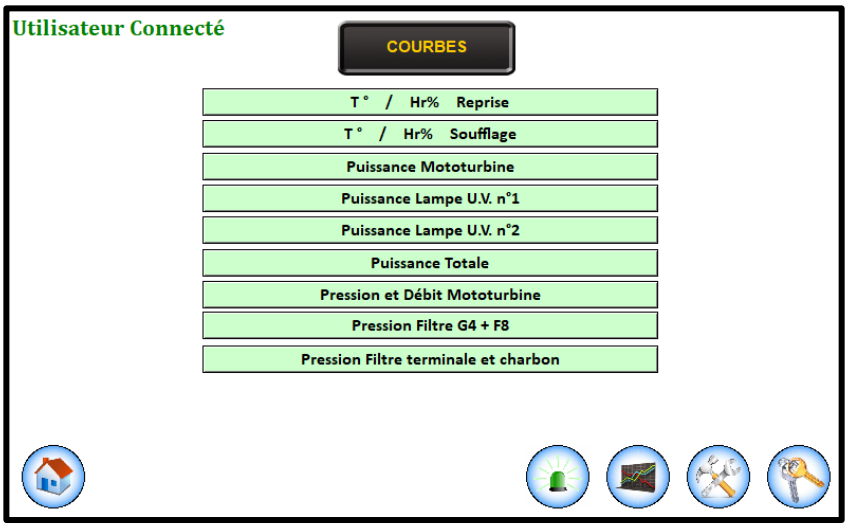

Figure 10: standards traceability criteria

- Traceability criteria are indicated in Figure 10. These are basic criteria to be found on all mobile R4000 units. The measurements of the temperature and humidity made at the inlet (also called "return") and at the outlet (also called "supply") of the air, consumed power of the fan (motorised impeller) and the UV bulb stages (stages 1 and 2) the pressure and air flow of the fan and the pressure losses of the various filters can thus be monitored. Other criteria can be added and the related sensors can be managed by the PLC such as temperature and humidity on the supply air, the air quality monitoring sensors (CO_2, VOC, specific gas), differential pressure probes in the rooms, a sensor measuring the particulate concentration for monitoring ISO class, etc.
- To view how these criteria develop over time, simply click on one of the criteria. E.g. by clicking on "*Motorised impeller pressure and flow rate"*, it is possible to monitor the flow rate graph for the air treated by the R4000 and thus see when the machine stopped working for example. It is then possible to zoom in or out on a desired period, move around the time scale, save the log, etc.

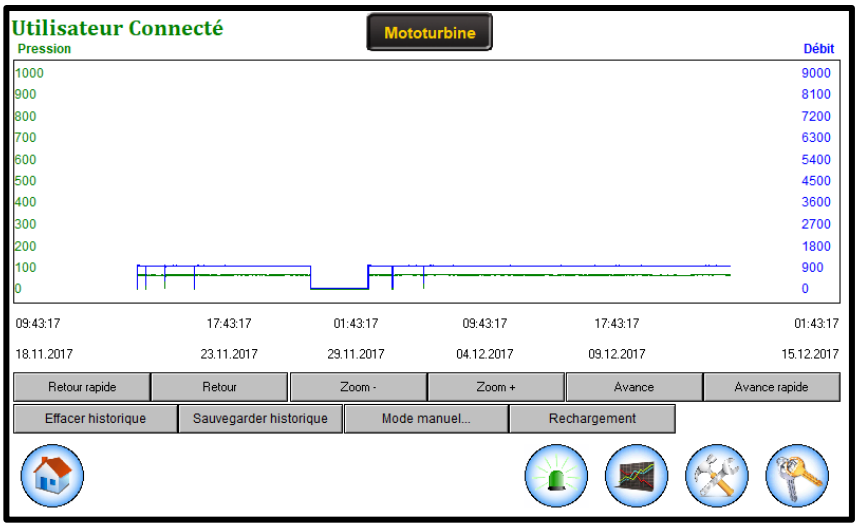

Figure 11: monitoring of the air flow treated by the R4000 over time

N.B. The procedure for extracting data from the PLC (in order to plot the curves in an Excel spreadsheet for a report for example) is described below in paragraph 2.3.

2.2.1.4 Alarms

- When alarms are triggered, the  icon flashes alternately red and green. Click on it to access the alarms log. In the example below (Figure 12), we have simulated the failure of the energy meter for a bulb stage. The log displays an alarm on the UV bulbs of level 2 (fault no.9) and instantly determines that the failure is linked to the energy meter (fault no.18). Following this, we stopped the R4000 to simulate a repair and the "machine stopped fault" appeared (fault no.19).

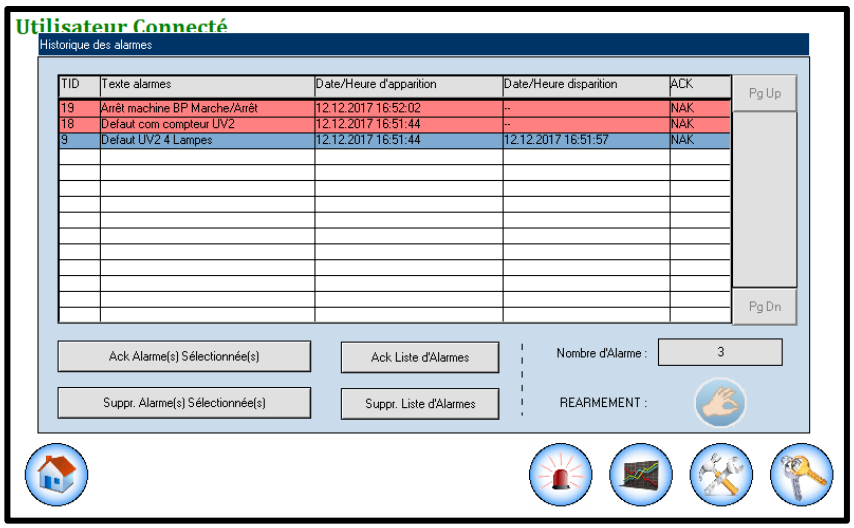

Figure 12: alarms log

2.2.1.5 Start-up and shutdown procedure

- Return to the main screen to start up the R4000. Click on the green "*ON*" button at the bottom left of the screen. The machine starts up and the button changes colour. It is displayed in red with the word "*STOP*". The fan starts up gradually until it reaches the requested flow rate and stabilises. When the UV bulbs start up they will be displayed in yellow.

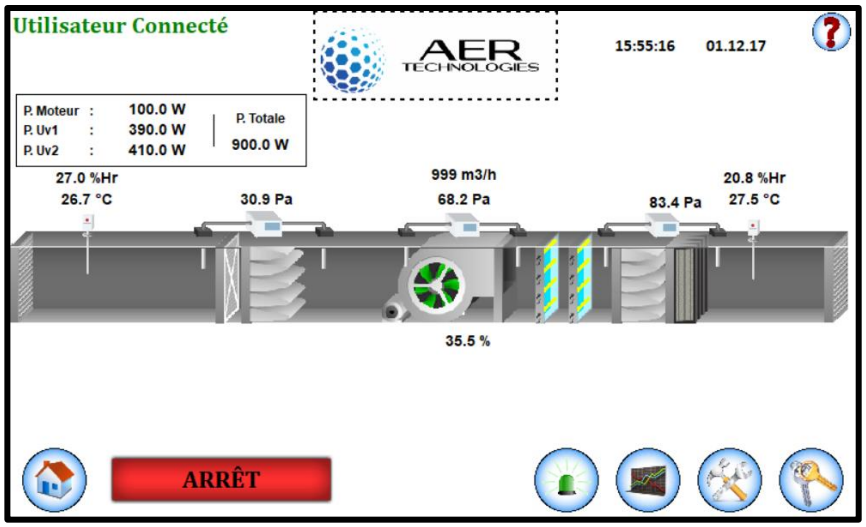

Figure 13: starting up the R4000

Switching the appliance on and off repeatedly can damage the bulbs and reduce their life time. You are advised not to switch the appliance on or off more than twice a day.

- To shut down the R4000 simply click on the red "*STOP*" button. You are advised to shut down the machine using this procedure before unplugging it.
- In the event of a power outage, when the power returns, the R4000 restarts according to the last operating settings. No physical intervention is necessary.

2.2.2 Settings accessible as "Technical Personnel" (Level 2)

In the following example, we will log in as Technical Personnel. This connection gives access to more functions (in addition to those accessible as a User) such as network settings and advanced settings.

2.2.2.1 Logging in

- Enter "**TECH**" in the login tab , then enter the password you have been given in the tab.
- Then click on the icon which appears in the greyed "Connection" part to connect and return to the main screen.

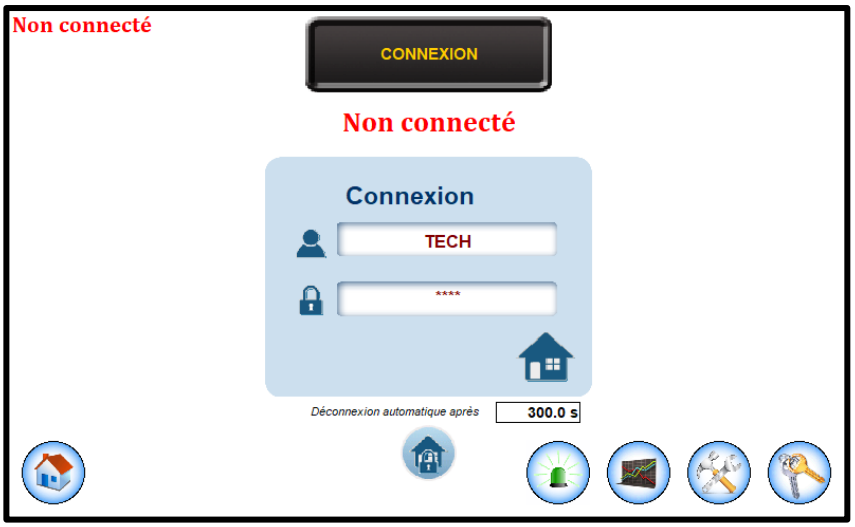

Figure 14: connection by login and password

- "*Technician connected*" status then appears in green at the top left of the screen.

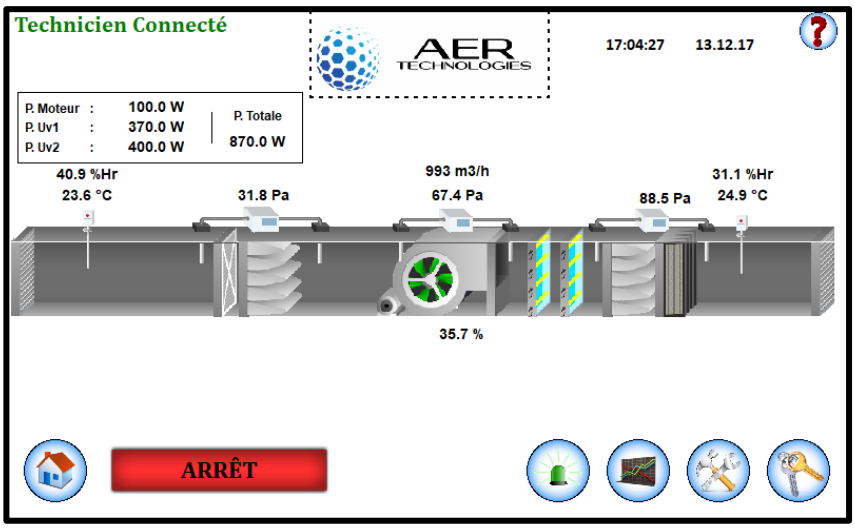

Figure 15: main screen once logged in in "Technician" mode

2.2.2.2 Settings configuration

- Click on the "Tools" icon  to access the advanced settings.

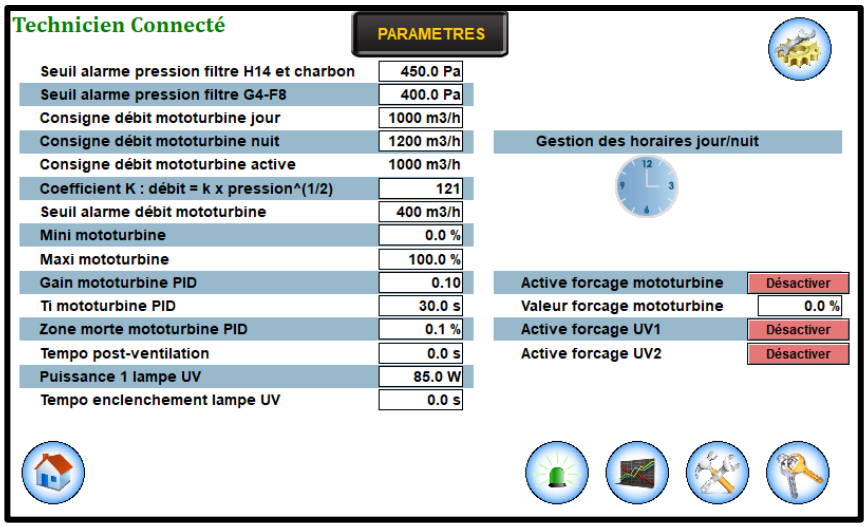

Figure 16: advanced configuration of the R4000

This page is used to configure the threshold values for alarm triggering. These threshold values are those of the pressure losses of the filters H14, carbon and G4-F8 filter pressure alarm threshold, the minimum air threshold, Motorised impeller flow alarm threshold and the power consumed by the UV bulbs Power of 1 UV bulb.
It is also possible to adjust the K coefficient (K coefficient: flow= k x pressure^(1/2)) which is specific to the fan model and takes into account pressure losses on the network in the case of a fixed installation.
The R4000 can also be configured according to its electricity consumption by adjusting the maximum power percentage Motorised impeller maximum or minimum power percentage (*Motorised impeller minimum*)) for the fan or a fixed operating value for the fan (*motor impeller override active)* and the UV (UV1*and UV2 override active*).
It is also possible to set a time to switch on the UV bulbs (*UV bulb 'on' timer*) switch off the fan (Tempo post-ventilation / *Fan "off" timer*) and to define the speed at which the airflow rate increases and decreases (*PID motorised impeller Ti*).

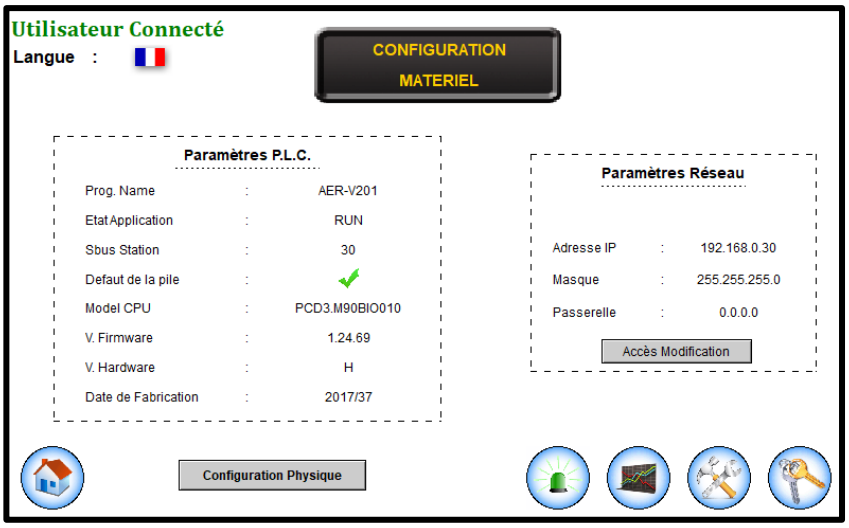

Figure 17: information screen showing the software versions and R400 network settings

- The "Physical Configuration" is factory-set according to your usage (mobile, fixed, temperature and pressure cascades, optional additional sensors and probes, etc.). You can only access this level and alter the settings if you are logged in as administrator ("ADMIN").
- In the "*Network settings*" box, click on "*Change access*" to change the R4000 network settings in order for its data to be accessible remotely (alarm feedback, operation and remote retrieval of traceability criteria, etc.).

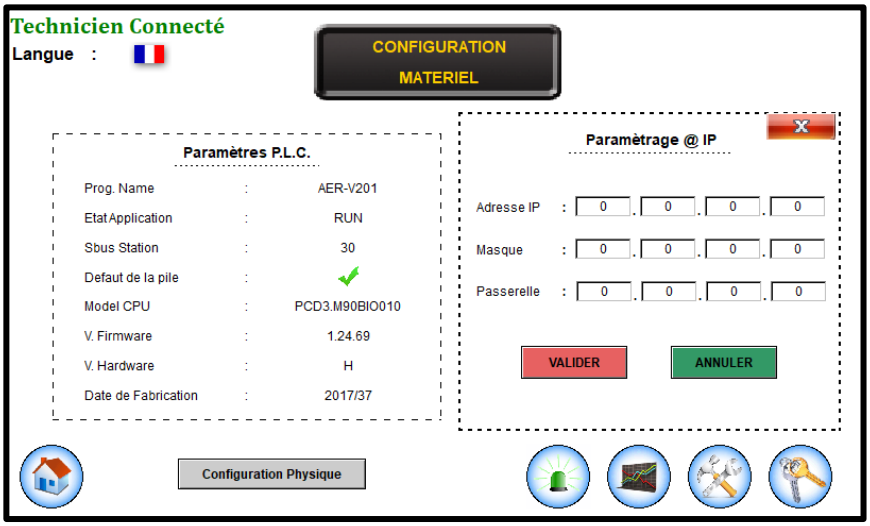

Figure 18: network settings screen

2.3 Retrieving saved data

The data can be viewed directly on the screen or can also be downloaded in Excel format to use in a report for example. To do this:

- Download the "FILEZILLA" program (from the Clubic website for example)
- On your computer: Control panel => Network and Internet => Network Connections, double-click on "Local Area Connection"
- Then double-click on "Internet protocol version 4 (TCP/IPv4)"
- Click on "use the following IP address" and enter "192.168.0.31" which is the IP address given to your computer.
- In "Subnet mask" enter "255.255.255.0"
- Click "OK"
- Connect the computer to the PLC at the rear of the machine using a standard RJ45 Ethernet cable (a category 5 straight cable is sufficient) to the "Ethernet" port (the screen cord must be disconnected in order to transfer the data or you must use a hub).
- Open the "FILEZILLA" program
- In the "Host" tab, enter: 192.168.0.30 (IP address of the PLC)
- In the "Username" tab, enter: root
- In the "Password" tab, enter: rootpasswd
- Click the "Quickconnect" button. The folders appear in the "Remote site" column on the right
- Search for the "M2_FLASH" folder then "WEBPAGES". The Excel files summarised in Table 2 below can be moved by sliding the mouse to a folder in the "Local site" column on the left, which corresponds to your computer.

Table 2: name of the Excel files relative to each traceability criterion

EXCEL FILES	TRACEABILITY CRITERIA
RETURN	T°C and RH% on the return
MOTORISED IMPELLER	Motorised impeller power
P_UV1	UV1 bulbs power
P_UV2	UV2 bulbs power
P_TOTAL	Total power
PRESS_MOT	Motorised impeller flow and pressure
PRESSURE_G4	G4+F8 filter pressure
PRESSURE_H14	Terminal and carbon filter pressure
SUPPLY (option)	T°C and RH% on the supply
GAS_PROBE (option)	% Return VOC, Supply VOC, performance (option)
PART_PROBE (option)	ISO class
DIFF1_PRESS (option)	· P room/airlock
DIFF2_PRESS (option)	· P airlock/corridor

N.B. Please contact us for other sensors or probes

3 MAINTENANCE

Some components of the R4000 must be replaced to ensure optimum efficiency. These include the G4 and F8 filters, the catalyst, the UV-C bulbs, the adsorbent filter and the H14 (or U15) terminal filter. The life time of these consumables is listed in Table 3 and Table 4 in paragraph 3.4.
CALISTAIR undertakes to regularly replace all these components and the other components (in case of failure) under a maintenance contract.
Please contact us directly for further information.

Before any operation it is essential to switch off the appliance (see procedure on paragraph 2.2.1.5).

3.1 Changing the bulbs

As the UV bulbs have a high power, their surface can be hot. It is essential to allow them to cool down before cleaning them.

- Open the unit access door,
- The two UV-C bulb frames are visible. Simple remove the bulb frame connectors,
- Remove the UV bulb frames and replace them with new ones,
- It is essential to clean the bulbs before they are installed in the unit. To do so, use a soft cloth soaked in alcohol (e.g. ethanol, isopropanol),
- Clean the entire surface of the bulbs, ensuring there are no marks remaining,
- Place the new bulb frames in the appliance.

- *Never clean the catalyst,*
- *Never use abrasive cleaning products,*
- *Avoid touching the bulbs with your hands. The grease left interferes with the proper transmission of the UV light and reduces the life time of the bulbs.*

Unbroken used bulbs are recycled. You can choose to send them to your dealer who will send them to the recycling channel or to take them to the bins available in many collection points (supermarkets, DIY stores, etc.). Broken bulbs cannot be recycled and must be disposed of in the dustbin.

3.2 Changing the particulate filters

The efficiency of the appliance depends on the condition of the particulate filters. The more clogged the filters are (and therefore the more the pressure losses increase), the more the fan has to compensate for these pressure losses by increasing its power. The electricity consumption thus increases and if nothing is done, the air flow will finally decrease and there is a risk of the motorised impeller breaking down.

The average frequency for changing the particulate filters is three to six months for the G4 filter, six to twelve months for the F8 filter, 18 months for the adsorbent filter and 36 months for the H14 absolute filter. It depends on the amount of dust and pollution in your environment and the frequency of use of the appliance. The PLC manages warnings in case of clogging of one or more filters.

- Open the R4000 access door after shutting down the appliance (shutdown procedure paragraph 2.2.1.5),
- Remove the used G4 and F8 filters,
- Replace them with new filters in the spaces provided for this purpose in the following filtration order: G4 first then F8 second. Warning: observe the airflow direction indicated on the F8 filters,
- Change the adsorbent filter by opening the cams on each side. Remove it and replace it with a new one (supplied by CALISTAIR). Close the cams on each side,
- Change the absolute filter by operating the cams. Slide the used filter in its drawer. Replace it with a new one (supplied by CALISTAIR). Slide it upwards until it is against the seal and operate the cams to guarantee that the filter is completely sealed.

Used particulate filters cannot be recycled due to the impurities they contain. To determine the type of this waste (non-hazardous, infectious, etc.), consult your Health, Safety and the Environment manager.

3.3 Changing the catalysts

The average life time of a catalyst is three years.

- Open the R4000 access door after shutting down the appliance (shutdown procedure paragraph 2.2.1.5).
- Remove the used catalyst frames.
- Replace them with new catalysts (supplied by CALISTAIR).

Do not touch the catalyst. The used catalyst is non-toxic. Therefore there are no other particular precautions to be taken. Treat the catalyst and its frame as standard metal waste.

3.4 Consumables

The CALISTAIR references of the consumables and their quantities are described in the following tables:

Table 3: reference, description and quantity of filters for each type of unit in the mobile version.

DESCRIPTION	AER REF.	DIMENSIONS L * H * thickness	· $P_{init.}$	· $P_{final.}$	REPLACEMENT FREQUENCY	QUANTITY
		(mm)	*(Pa)*	*(Pa)*		
						R4000
G4 filter	**G4-R4000**	592 * 592 * 48	105	250	3 to 6 months	1
F8 filter	**F8-R4000**	595 * 595 * 97	160	450	6 to 12 months	1
Adsorbent filter	**CA-R4000**	592 * 592 * 292	120	450	1 to 2 years	1
H14 filter	**H14-R4000**	610 * 610 * 292	250	450	3 years	1
Catalyst	**OXY-R4000**	590 * 563 * 24	25	25	3 years	3

Table 4: reference, description and quantity of bulbs for each type of unit.

DESCRIPTION	AER REF.	TYPE OF BULBS	DIMENSIONS Length	POWER	REPLACEMENT FREQUENCY	QUANTITY
			(mm)	*(W)*		
						R4000
UV bulb	**UVC-95**	UV-C	535	95	1 year	8

4 SAFETY

4.1 General points

You are strongly advised to read all the instructions in this manual before starting up the appliance. Failure to comply with the instructions within may lead to accidents.

Do not try to use the appliance before having first been trained by a CALISTAIR team or an approved dealer and/or having read and understood the Safety Instructions in this manual. Keep this user manual and consult it regularly.

The safety of this appliance complies with the technical regulations and European standards currently in force. Given the diverse range of standards in force, if the appliance is used in a different country to the country of purchase, check its usage compliance with the local authorities.

4.2 Precautions

- Connect the appliance to a protected circuit.
- Check that the voltage and current of the network correspond to those of the appliance (230 V AC. For the current, see the technical data in paragraph 0).
- Do not place the appliance in an explosive atmosphere or near flammable liquids.
- Keep the appliance away from splashes of water or other liquids.
- Always connect the appliance to an earthed socket.
- Do not disconnect the appliance by pulling on the cord unless in an emergency.
- Do not operate the appliance without the particulate filters and/or without the catalyst stages.
- Do not operate the appliance with damaged or torn filters.
- Do not operate the appliance with the circuit-breaker short-circuited (risk of high UV irradiation).
- Do not open the electrical cabinet if you do not have the required electrical authorisation.
- Do not modify the components in the electrical cabinet. Please contact your dealer for any intervention.
- Do not immerse the appliance in water or any other liquid.
- Do not block or touch the fan blades as doing so may damage the fan system and/or cause injury.
- Do not block the air inlet and/or outlet of the system.
- Do not cover the appliance while it is running.
- Do not use the appliance:
  - if it or its cord is faulty,
  - if the appliance displays any damage or abnormal operation,
  - in situations and/or for applications other than those stated in this document.
- Always switch off the appliance before opening it.
- Do not touch the bulbs with your bare hands.
- Do not place mobile objects in the appliance (chocks, papers, etc.).
- Never look at the UV bulbs when they are on, even indirectly. The indicator lights on the control panel warn you if the bulbs are on or not.
- Never move the appliance while it is running.
- The catalyst is stable and non-toxic. However, to ensure it operates correctly, avoid touching it.
- The UV bulbs used are compact, energy-saving bulbs. Like standard bulbs for lighting, they contain mercury vapour. If one or more bulbs break, you are advised to ventilate the room and use gloves to pick up the broken glass. A broken bulb cannot be recycled.
- The manufacturer and/or the dealer cannot be held responsible for non-compliant use of the appliance.

5 TROUBLE-SHOOTING

5.1 Instructions

During the entire warranty period, CALISTAIR or CALISTAIR dealers' intervenes "remotely" or "on-site".
Work done by the customer on the unit which is not supervised by the CALISTAIR technical support may void the warranty.
The PLC fully controls the autonomous operation of the unit. In case of failure, the operating screen displays all the settings and the alarms are reported in the corresponding file (see paragraph 2.2).

5.2 Warning

The appliance must not be used in the following cases (non-exhaustive list):

- noises of broken glass inside the unit,
- the bulbs are not operating: no catalytic treatment and risk of permanent deactivation of the catalyst,
- the fan is not rotating.

CALISTAIR accepts no responsibility and guarantee in case of failure to comply with the instructions for use.

The user's attention is drawn to the fact that the manufacturer accepts no responsibility in case of accident, incident or simple malfunction due to usage which does not comply with this guide, in particular if a consumable other than those recommended by CALISTAIR is used or if the technical part of the appliance has been opened. In both of these cases, the manufacturer's warranty will not apply.
It will also not apply if the system is damaged by inserting parts likely to block or hinder the proper operation of the mobile or active parts.

6 WARRANTY

Please refer to the CALISTAIR General Terms and Conditions of Sale or to your contract agreement with CALISTAIR.