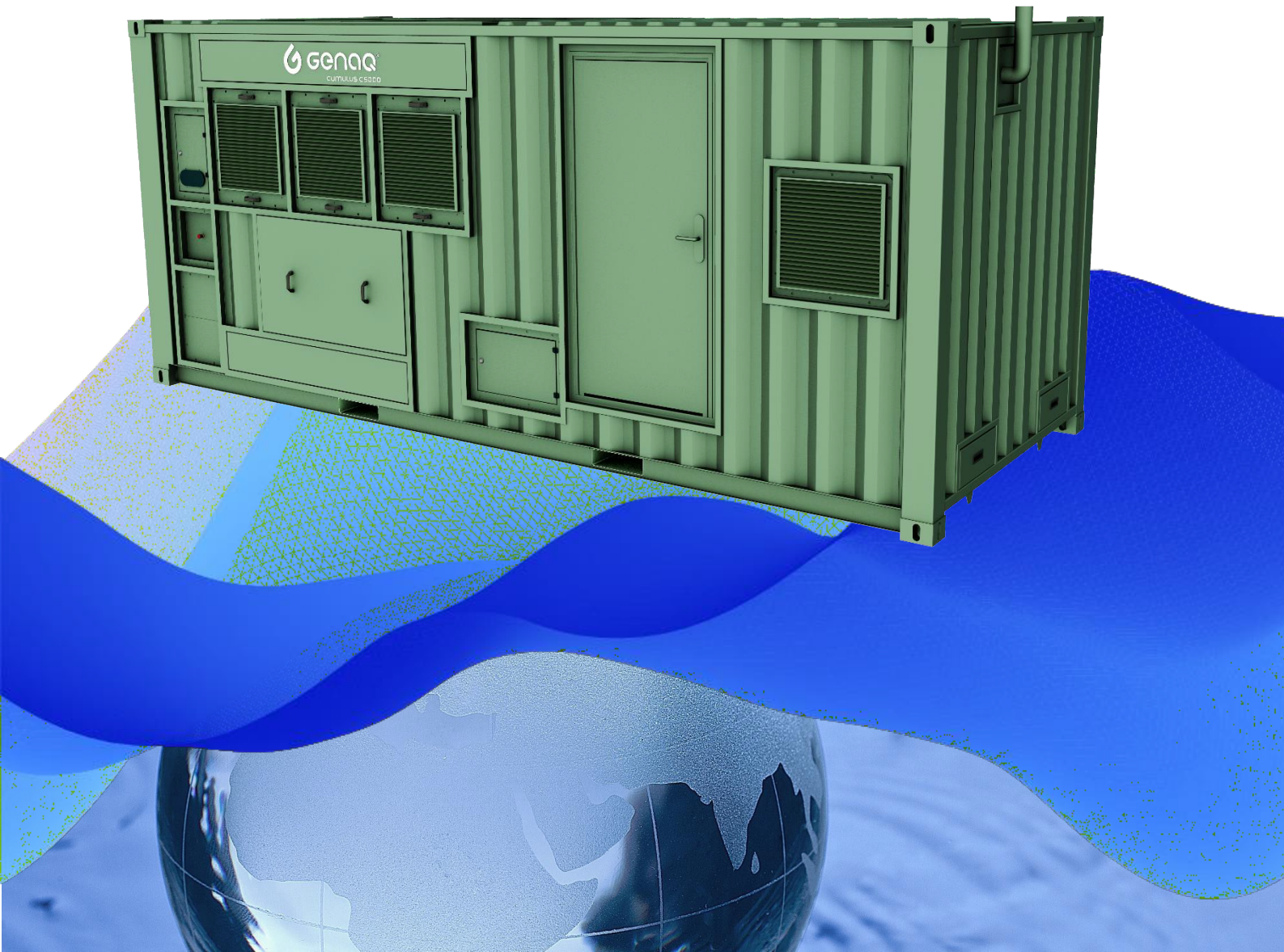
cumulus C5000

by GENAQ

User Guide

Atmospheric Water Generator
Emergency Response
Containerized
5000 liters/day



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1. General Information

1.1. Introduction

GENAQ Cumulus C5000 Containerized is an Atmospheric Water Generator built in an **Emergency Response** construction, with a nominal generation capacity of 5000 liters/day.

The Atmospheric Water Generator has been optimized to maximize the water production and minimize the energy cost per liter of produced water, as well as extend the system operating range to extreme temperature and extreme humidity conditions.

The generator operation diagram is the following:

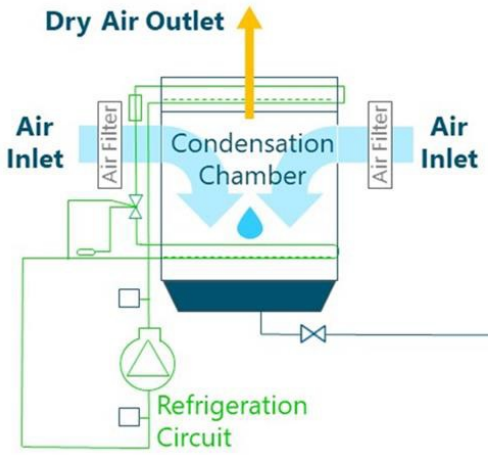


Figure 1: Atmospheric Water Generator working diagram

- The water generator takes laterally an atmospheric air flow that passes through a double air filter to the water precipitator.
- The water precipitator consists of a refrigeration cooler that cools the humid air to temperatures below its dew point, which produces water vapor condensation, present in the atmospheric air.
- When leaving the water precipitator, the air passes through an energy recovery section to precool the incoming air, so that the system energy consumption is considerably reduced.
- Finally, the air flow is carried outside, driven by radial fans.
- The hot and dry air flow is expelled outside by the generator's upper part. Due to the lower specific weight of the exhaust air, it rises naturally in the atmosphere, not interfering with the intake air.
- The condensed water remains in a tray and is pumped to the water filtration and storage system.

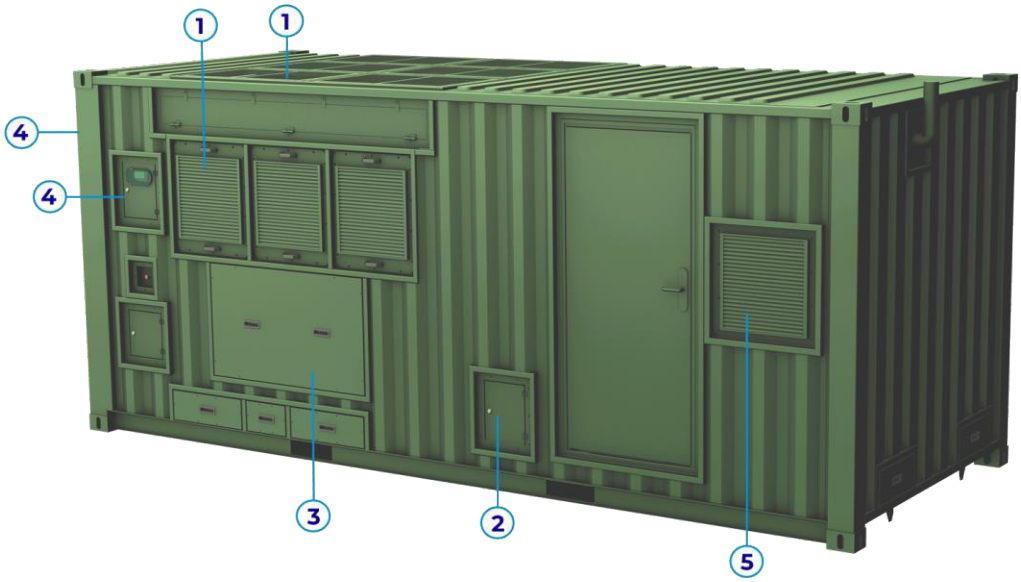
The refrigeration production for the precipitation of the water is obtained through a mechanical refrigerant compression cycle, equipped with alternative high efficiency compressors.

1.2. Specifications

Table 1: Technical Specifications

GENAQ Cumulus C5000	Version	**3.2**
	Nominal Generation, at 30ºC and 80% RH (±10%)	**5091 L/day**
	Dimensions – Only Generator (Height x Width x Depth) Dimensions – Containerized (Height x Width x Depth)	**2175 x 2270 x 3420 mm** **2600 x 2240 x 6060 mm**
	Weight – Only Generator Weight – Containerized	**2200 kg** **10000 kg**
	Color	**Green**
	Manufactured in galvanized steel sheet structure with polyester paint of high resistance to corrosion	
Power Supply	Power Supply (Other Voltages Available)	**400V-III-50Hz**
	Nominal Power	**55.2 kW**
	Plug/Socket	**Direct Connection (3x70+N+Tmm^2)**
Refrigerant Circuit	Refrigerant	**R134A**
	Evaporation coil built in copper tubes and aluminum fins	
	Condensation coil built in copper tubes and aluminum fins	
Air Circuit	Nominal Air Flow	**22000 m3/h**
	Maximum Fan Operating Intensity	**12.5 A**
	Air Pre-Filter	**Anti-insect air prefilter**
	Air Filter	**F7 fine particles air filter**
Hydraulic Circuit	Food grade low density lineal polyethylene tube	
	Nominal Water Flow	**25L/min**
	Pump Maximum Power	**0.75 kW**
	Internal Water Storage	**120 L**
	Water Treatment	**Sediment Filter (three steps), Activated Carbon, Zeolite, Mineralization, Chlorine Dosing and UV lamp**
Control and Electrical Circuit	Control	**IPG215D-12100 DIXEL**
	Control Description	**Electronic control unit with temperature display and ambient relative humidity. Remote monitoring and control (IoT, Internet of Things). Network analyzer with electric consumption meter and water meter**
	Electrical and control panel with thermal, magnetothermal and differential protection	
	Safety, Alarms, Operating and Defrosting Cycles Control	
Safety Devices	Protection against refrigerant pressure abnormal levels for high and low pressure	
	Automatic resetting thermal protections in the compressor and motor fan	
	Protection fuses and electrical panel's general grounding	
Limits	Temperature Limits	**10ºC to 45ºC**
	Relative Humidity Limits	**10% to 100%**
	Storage Limit	**-15ºC to 70ºC**

1.2.1. Circuits and Dimensions



Number	Description
1	Air circuit
2	Hydraulic circuit
3	Refrigeration circuit
4	Electrical circuit and Control
5	Power Unit (Optional)

Figure 2: Circuits

Figure 3: Dimensions

1.2.2. Safety Recommendations

To avoid all accidents risks during installation, commissioning, or maintenance, it is mandatory to follow the specific recommendations. The generator start-up, its repair and maintenance must be carried out by qualified personnel.

It is mandatory to follow the recommendations and instructions contained in maintenance manuals, labels, and specific instructions.

Before intervening in the generator, verify that the general generator power is cut to avoid electric shock

Refrigerant leaks can cause:

- Asphyxia, due to displacement of oxygen from the air, narcotic effect and cardiac arrhythmia, due to refrigerant's inhalation.

Always ensure good ventilation in the work area

- Eye irritations and burns from splashes or skin contact.

Wear safety glasses and gloves. Avoid all contact of the skin with the cooling fluid

Be careful with the cutting elements of the generator

In case of accident by coolant inhalation, act according to the following instructions:

- Move the victim to a place where he/she can breathe fresh air. The victim must remain lying down or in the sideways.
- Call emergency medical services if necessary.

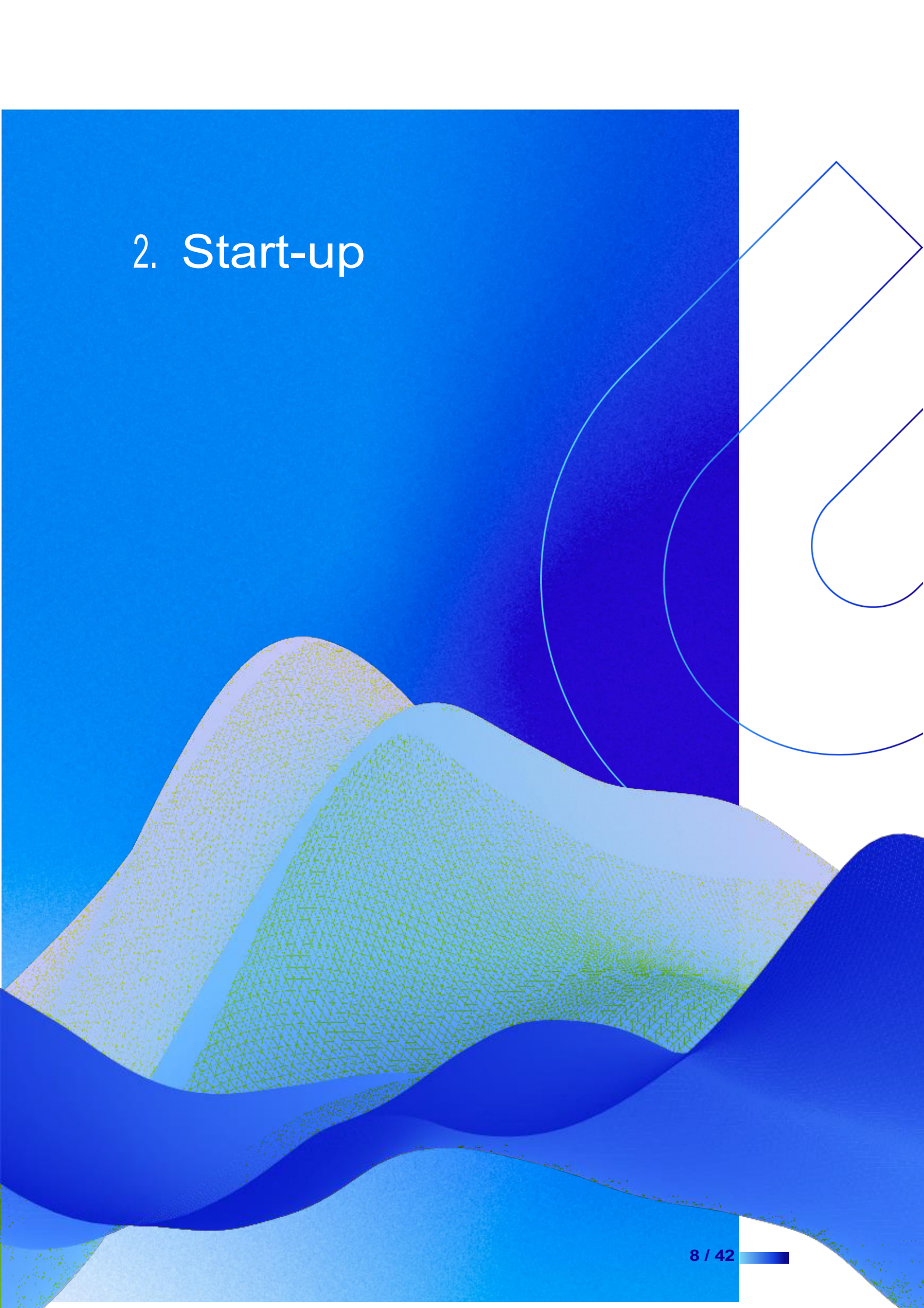
In case of eye injuries due to refrigerant splash:

- Never rub your eyes. if contact lenses are used, they must be removed.
- The eyelids will be kept open and rinsed with plenty of water.
- Then, the victim will be transferred to a specialist doctor (ophthalmologist) or to an emergency service.

In case of skin burn by coolant contact:

- Rinse the affected parts with plenty of tap water and keep applying it while removing the clothes.
- The affected parts should never be covered with clothing, bandages, oil, etc.

2. Start-up



2.1. First Start-up

The generator location will condition its functioning. For optimum performance, follow these steps:

- Once received, check that there have been no damages in the generator or its components.
- Place the generator in an area with good air renewal and away from heat sources, clearing its intakes to facilitate the air aspiration and expulsion, and avoid air recirculation as much as possible.

> ⚠ To ensure good air circulation around the generator, air inlets and outlets must be clear.

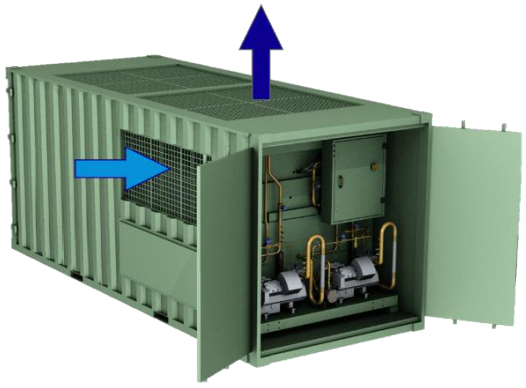


Figure 4: Air intakes and outtakes

- Turn on the electrical power at least 8 hours before start-up. After few hours of operation, the main system parameters must be checked to ensure that the system is working correctly or if adjustments are necessary.
- This operation is particularly important for start-ups at low ambient temperatures.
- Remove the compressor lock washer.

For the first generator start-up (or after long inactivity periods), it is mandatory to perform a water tank cleaning and compete filling followed by a tank complete emptying thought the Service.

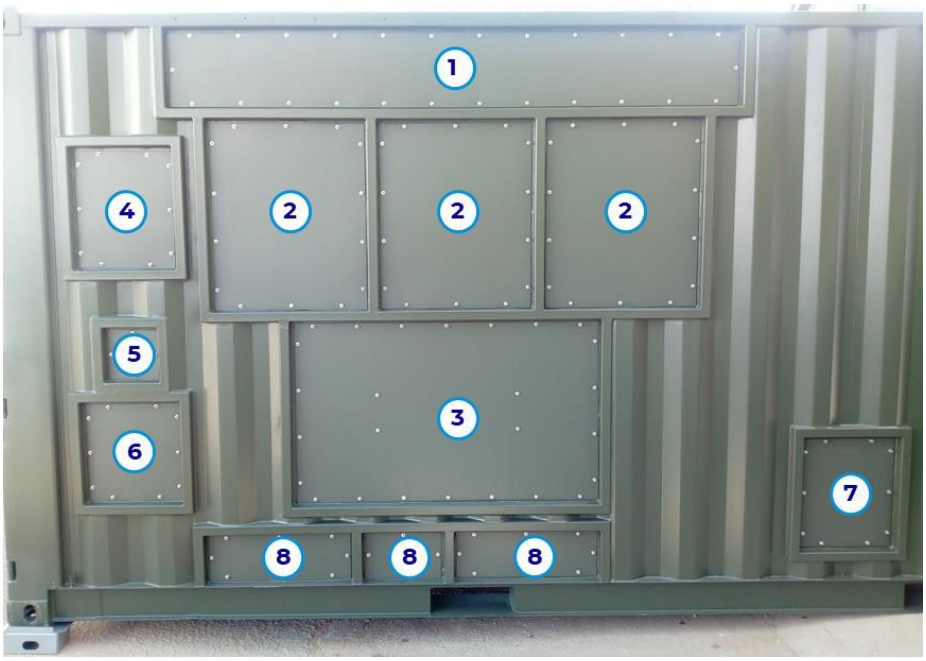
After long periods of inactivity an hyperchlorination must be carried out, as indicated in the section ***Preservation in long periods of inactivity***.

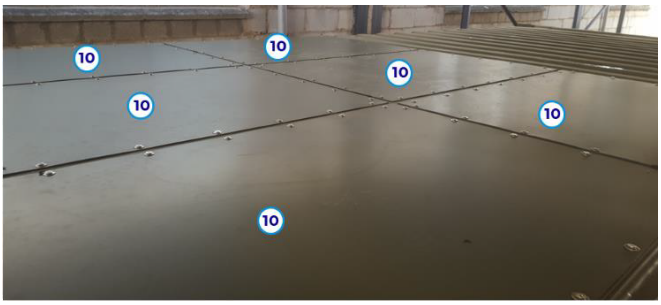
If you have worked inside the generator, check that you do not leave any object inside, that there are no gas leaks and that the hydraulic connections have been carried out properly.

> ⚠ **IMPORTANT:** In case of generator relocation, please reinstall the lock washers to avoid damage to the compressor during transportation.

2.1.1. Registers

You will receive the generator container completely watertight as shown in the following figure. According to each number, you must follow the indicated instructions:





Number	Description	Action
1	Registers to Clean the Air Outlet Filters	• No action is required
2	Air Inlet	• Remove sheet metal • Assemble the air filters in order (see instructions in **Air inlet register** assemble) • Put the outer grating
3	Condensation Chamber	• Remove screws • Turn the sheet (handles should be on the outside) • Screw back
4	Control Panel	• Remove sheet metal • Locate the door with window and screw the hinges • Assemble the door and close it with the key
5	Emergency Button	• Remove sheet metal
6	Power Supply Connection	• Remove sheet metal • Connect to the power grid • Assemble the secure sheet metal
7	Water Outlet	• Remove sheet metal • Locate the door and screw the hinges • Assemble the door and close it with the key
8	Generator Fastening Area	• No action is required
9	Air outlet/inlet of the Generating Set (Optional)	• Remove sheet metal • Assemble the sheet metal with grid
10	Air outlet	• Remove the sheet metal • Install the screws back to affix the air outlet filters
11	Chimney (in case Generating Set is included)	• Remove the sheet metal • Install chimney
12	Hydraulic Circuit	• Remove the sheet metal

Figure 5: Sealed container

2.1.1.1. Register Location

The registers and consumables kit are inside the container, all components are packed to prevent deterioration due to blows during transportation (each packaging is numbered). To access of them remove the door sheet metal (12) and open it.

Figure 6: Generator registers

2.1.1.2. Air Inlet Register Assemble

To assemble air inlet filters (2) follow these instructions:

- Remove sheet metal from air inlets.
- Open and clean the filter with damp cloth to remove dust particles.
- Assemble the filters as shown in the following sequence.

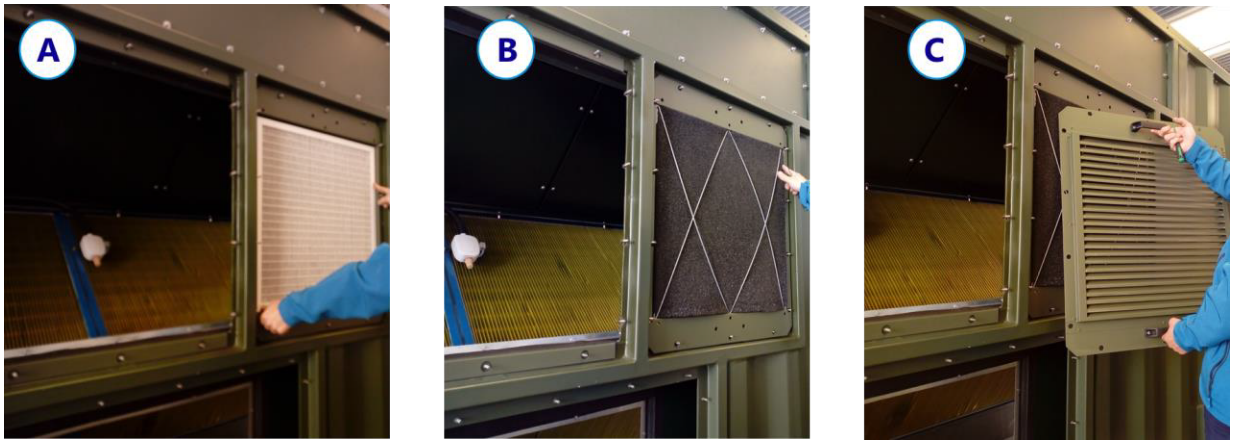


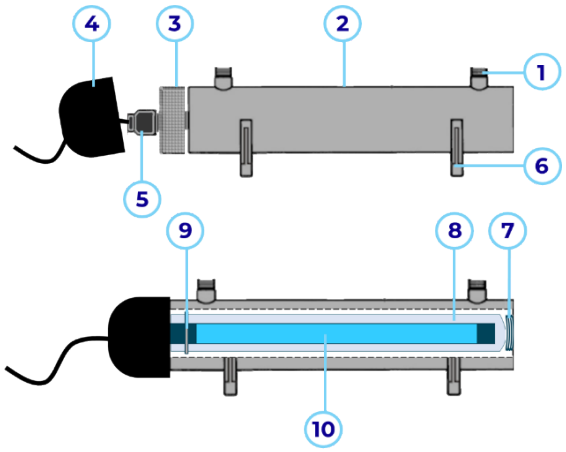
Figure 7: Assemble sequence

2.1.2. UV Lamp Installation

The UV lamp is used to prevent the appearance of microorganisms in the hydraulic system. To do this, water is recirculated from the tank periodically.

> ⚠ The ultra-violet rays are harmful to skin and eyes.

> ⚠ The UV lamp will beep in the following cases:
> - If the UV Lamp is broken
> - If the UV Lamp connector is not properly connected



Number	Description
1	Water inlet / outlet connection
2	UV Lamp body
3	Quartz sleeve lock nut
4	PVC cap
5	UV Lamp connector
6	UV Lamp clamp
7	Quartz sleeve clamping spring
8	Quartz sleeve
9	Sealing O-ring
10	UV Lamp

Figure 8: UV breakdown

You will receive your Generator with the UV lamp removed and packaged to avoid damage during transportation, it is necessary to install the Lamp **BEFORE STARTING THE GENERATOR**, make sure you have all the components before starting the assembly.
The assembly instructions are shown in the following sequence:

- Access to the hydraulic circuit.
- Extract the UV Lamp body (2) from the holder and unscrew the Quartz sleeve lock nut (3).

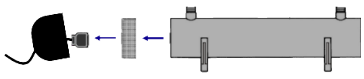


Figure 9: UV Lamp body breakdown

** Depending on the model, hydraulic connections are done with quick connectors or with screwed connectors. In the latter case, auxiliary tools may be necessary (like a crosshead screwdriver).*

Make sure that the sealing O-ring (9) is installed in the quartz sleeve. Introduce the quartz sleeve (8) into the UV Lamp body (2). Insert the quartz sleeve keeping the tube

completely straight to avoid damage the sleeve, this component is especially fragile.

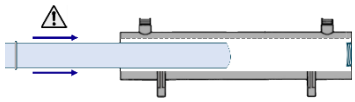


Figure 10: Quartz sleeve installation

- Screw the lock nut (3) to the UV Lamp body (2).

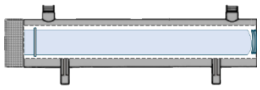


Figure 11: UV lamp lock nut

- Connect the UV Lamp (10) to the connector (5) and insert the lamp into the quartz sleeve (8). The Lamp must be inserted completely straight without damage the quartz tube.

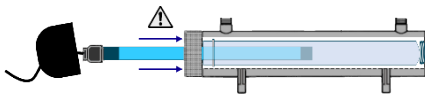


Figure 12: UV lamp installation

- Once all components are properly connected, insert the PVC cap (4) and install the UV lamp into the holder.

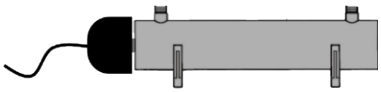


Figure 13: UV lamp

In case the UV lamp stops working, there will be a beep indicating it. In that case, the lamp would need to be replaced.

2.1.3. Power Supply Connection

> ⚠ It is advisable to disconnect the generator during long periods of inactivity.

This section details how to connect GENAQ Cumulus C5000 to power supply. Are necessary 3-phases wires (35mm section, type XLPE) + 1 ground wire (16mm section, type XLPE), please, follow these steps:

- Access to the power supply connector.

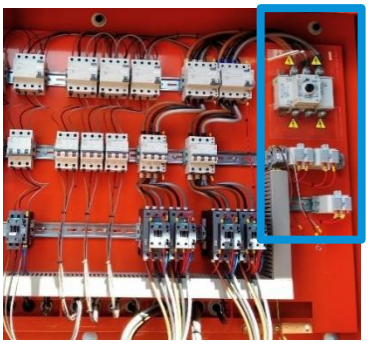


Figure 14: Power grid connection

- Remove the safety panel.

Figure 15: Extraction of safety panel

- Connect phases as shown in sequence:
  - Pull apart phase cables and ground cables, and through in each transformer.

Figure 16: Phases connection

- Unscrew nuts to connect each phase.

Figure 17: Phases pre-connection

- Connect each phase as shown in the following sequence:

Figure 18: Phases connection

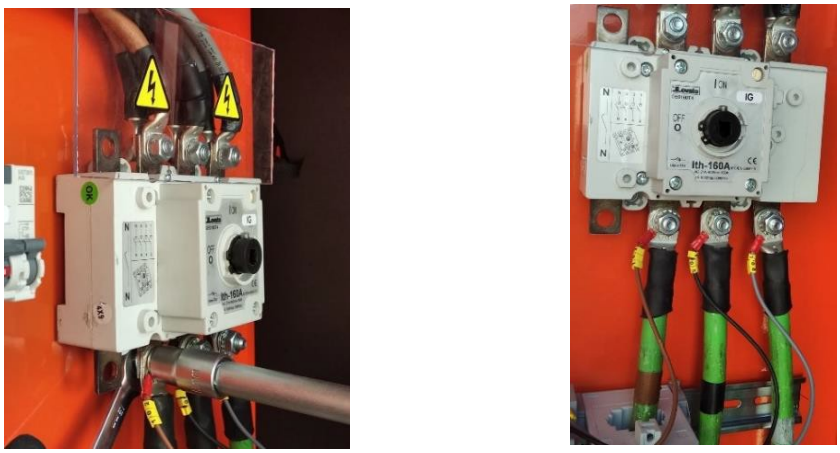


Figure 19: Phases fixation

- Screw the safety panel.

Figure 20: Electrical safety panel

- Connect ground wire as shown in the following sequence:

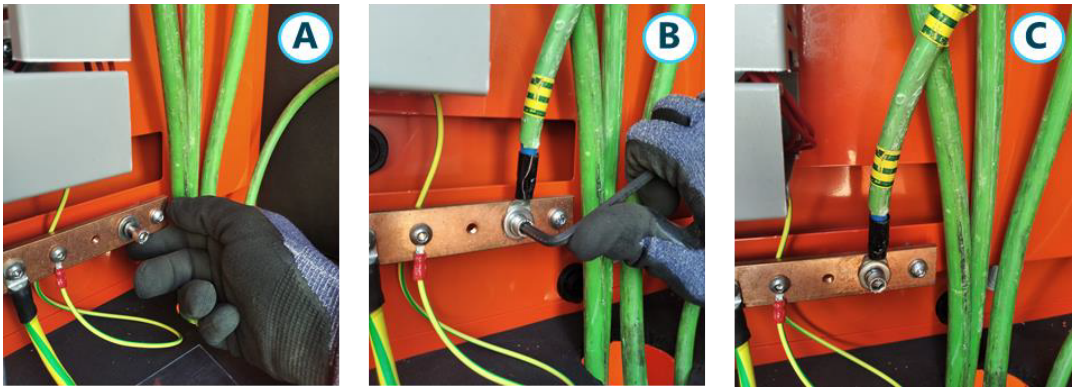


Figure 21: Ground wire connection

- Turn ON the generator by turn ON the selector located in electrical panel door.

Figure 22: General switch

⚠	It is advisable to disconnect the generator during long periods of inactivity.

⚠	**IMPORTANT:** It is recommendable to connecting the generator to the power supply and turn it on with the main switch at least 8 hours before start-up (this activates the crankcase heater). This operation is particularly important for start-ups at low ambient temperatures.

2.1.4. Pump Priming Mode

Prior to start-up the generation, make sure to prime the pump following these steps:

- With external water or generated water (wait condensation tray level buoys is activated to get it) fill sediments filters **SF1** and **SF2**.
- Screw filters and unscrew purger.

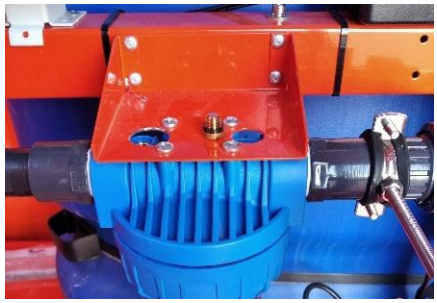


Figure 23: Purger location

- Pour water through the **FV** valve until **SF1** Sediment Filter is fill, screw the purger.
- Fill through **FV** valve until **SF2** Sediment Filter is full, screw the purger.
- Extract pump cap and fill through **FV** until see water in pump 1, close cap.
- Set the ***Standard Mode***.

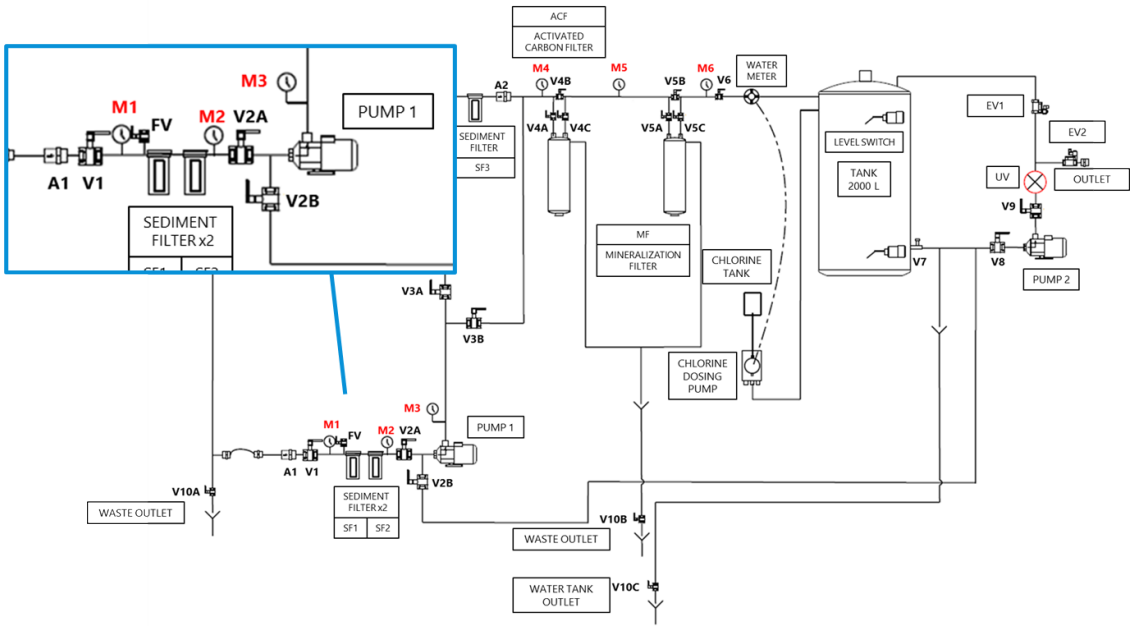


Figure 24: Pump priming location

2.1.5. Start-Up

Once the UV lamp is installed, proceed to turn on the generator by turning the general switch selector to the ON position.

Check no active alarms on the display before starting the generator.
Turn on the generator by pressing the T8 key on the screen, the generator turns on when the fan icon and the compressors show their status (% power).

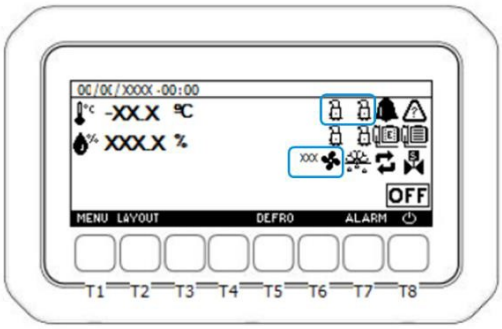


Figure 25: Display

> ⚠ Make sure do not leave any register open before Turn On the generator.

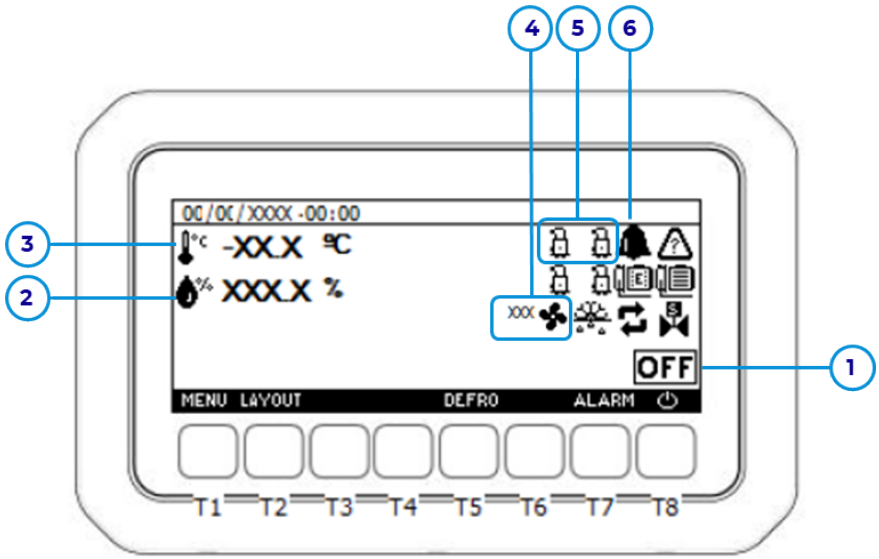
For the first generator start-up (or after long inactivity periods), it is mandatory to clean the water tank, complete filling followed by a tank complete emptying.

2.1.6. Waste Management

After the generator installation, recycle the packaging and the pallet respecting the environment.
When replacing the generator or any of its components, respect the environment, using an authorized company to remove and recycle, in accordance with the current legislation.

2.2. Quick Start Guide

GENAQ Cumulus C5000 can be managed entirely from the Control Panel on the front panel. The display has the followings functions and features:



Number	Description
1	Generator ON/OFF
2	Inlet Relative Humidity
3	Inlet Temperature
4	Fan ON
5	Compressor ON
6	Alarm signal

Figure 26: Display

Basic Functions of Control Command

Using the buttons on the control you can perform the following actions:

Table 2: Control Panel Actions

Key	Screen	Action
T1	MENU	Access to the main menu screen from where you can access the various submenus
T2	LAYOUT	Synoptic access to a computer (LAYOUT) to display computer operation
T5	DEFRO	Pressing for more than 3 seconds the button will force a manual defrost
T7	ALARM	Access to interrupt section to display active alarms or reset them
T8	I / O	Press for 5 seconds to turn the generator ON or OFF.

The symbols displayed on the screen have the following meaning:

Table 3: Display Symbols

	The number to the right indicates how the compressor works: active, anti-short circuit, % active compressor capacity… The upper symbols correspond with circuit 1 and the lower symbols with circuit 2
	The generator is doing a Defrost
xxx	The fans are active: The number on the right indicates the% of the speed at which the fan is rotating
	Alarm indicator. The generator has activated one or more alarms, for more information go to the interrupt section (T7 button)
	It is activated hydraulic pump to evacuate the water collected in the tray.
	It is activated hydraulic pump to evacuate the water collected in the external tank.
	The generator being cooled, the liquid solenoid valve is active
	Water recirculation is activated
	There is a warning: For more information you need access to subsection warning on the main menu.

Submenus Selection

The selection of the Sub selections is done at the screen MENU (T1)

Table 4: Submenus Symbols

	Parameters menu: Access to the config the generator
I/O	Input / output menu: Information of input and output values
SET	Setpoint menu: Access to the setpoint submenu
	Service menu: It permits access to the config and maintenance
REC	Data register: It permits access to the USB menu and save the alarms data
	Parameters list management: Menu access to load parameters or save the current configuration
A	Languages: Select display language
WARNING	Warning: menu access to seeing the generator warnings
	VEE Driver: Status the drivers of the electronics valves
	Adjust date / time: Adjust the internal control date and time

Table 5: Submenus Actions

Key	Screen	Action
T1	EXIT	Access to the main screen
T2	◄	Previous item
T3	►	Next item
T4	SET	Access to selected submenu

2.2.1. Serving Water

To serve water is mandatory to set the ***Standard Mode*** (see hydraulic diagram in the section ***Basic Maintenance***) and select an option:

- Free emptying (Directly from the tank):
  - Low buoy level is not needed.
  - Open valves: V7 and V10C.

- Pressurized emptying (Through the P2):
  - Low buoy level required.
  - Open valves: V7, V8, V9 and SW.
  - Set the Service Switch to the position 1 to start serving.
  - Set the Service Switch to the position 0 to stop serving.

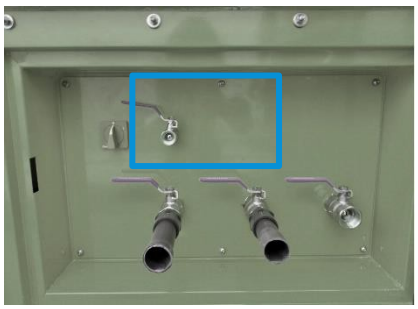


Figure 27: Serving water

3. Maintenance

3.1. Basic Maintenance

GENAQ Cumulus C5000 atmospheric water generator requires:

- **Basic Maintenance**, to be carried out by the user.
- **Professional Maintenance**, to be carried out by a refrigeration professional qualified for this generator.

> ⚠ Any repair, replacement or intervention in the generator by unauthorized personnel will lead to the cancellation of the Warranty.

> ⚠ During maintenance, turn off the power and wear protective gloves to avoid possible cuts.

It is important to follow the Maintenance recommendations with the **frequency** indicated in this Manual

The Basic Maintenance tasks are described below:

3.1.1. External Cleaning

To keep your generator free of dust and dirt, wipe the housing surface with a damp cloth. Do not use detergents or solvents.

Frequency: Depending on the location.

3.1.2. Air Filters

By the generator use, dust and dirt will be deposited on the air filters, hindering the air flow. This requires a periodic filter cleaning and replacement.

> ⚠ It is mandatory turn off the general switch before any maintenance task.

3.1.2.1. Air Inlet Filter

- Turn off the generator by pressing the ON/OFF key at the display and disconnect the general switch by turning the handle located in the electrical panel.
- Unscrew the holder and remove the filters as indicated.

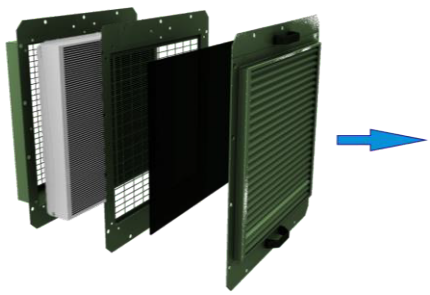


Figure 28: Air inlet filters removing

- Replace the anti-insect filter or clean it with a damp cloth or a vacuum cleaner. Do not use solvents, degreasers or products harmful for human health.
- Replace the air filter.
- If you do not have spare parts, please contact support@auqvian.se.
- Follow the opposite order to the previous figure to place the filters.
- Turn on the generator.

Frequency: Once a year, in dusty environments, the replacement frequency may increase.

3.1.2.2. Air Outlet Filter

- Turn off the generator by pressing the ON/OFF key at the display and disconnect the general switch by turning the handle located in the electrical panel.
- Access to the top of the generator. To remove the filters, unscrew the Air Outlet Filter holders.

Figure 29: Air outlet access

- Replace the filters or clean it with a damp cloth or a vacuum cleaner. Do not use solvents, degreasers or products harmful for human health.
- Install the air outlet filter holder and turn on the generator.
- If you do not have spare parts, please contact support@auqvian.se.

> ⚠ After maintenance, make sure not to leaving objects or tools on top of the generator.

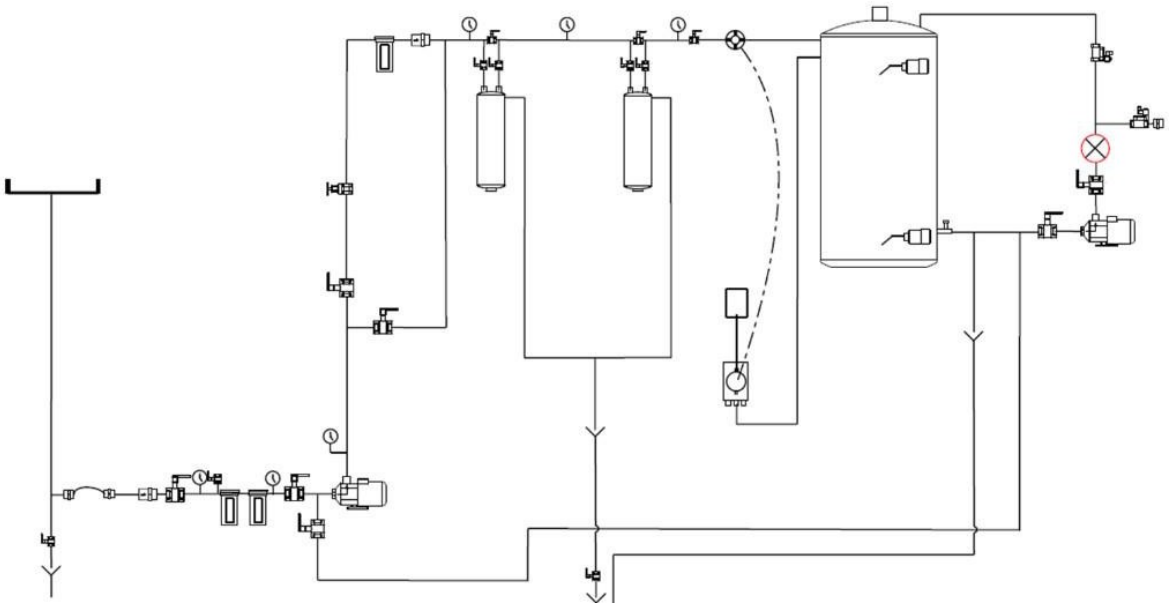
Frequency: Replacement in case of deterioration.

3.1.3. Hydraulic Circuit

The hydraulic circuit is composed of several elements that require supervision, cleaning and replacement maintenance:

> It is mandatory disconnect the generator from the power grid before any maintenance task.

3.1.3.1. Diagram



Code	Description
P1	Tray water pump
P2	Internal tank water pump
UV	UV Lamp
MF	Mineralization filter
ACF	Activated Carbon Filter
SF1, SF2…	Sediment filter SF1, SF2…
A1, A2…	Retention valve
V1, V2…	Manual valve V1, V2…
FV	Fill valve
MD1	Chlorine pump
M1, M2…	Pressure gauge
VG1	Gate valve
SERVICE	Service valve

Figure 30: Hydraulic diagram

Figure 31: Standard mode

3.1.3.2. Standard Mode:

This is the configuration by default for the water treatment. Automatic condensation tray emptying and recirculation. To set Standard Mode, the following steps are necessary:

- Set the Activated Carbon Filter (ACF) and Mineralization Filter (MF) selectors to the ***Filter mode*** position.
- Open valves: V1, V2A, V3A, GV, V4A, V4C, V5A, V5C, V6, V7, V8, V9 (see hydraulic diagram).
- Closed valves: FV, V2B, V3B, V4B, V5B, V10A, V10B, V10C (see hydraulic diagram).

3.1.3.3. Leakage Check

Periodically check the absence of leaks in the hydraulic circuit and after any cleaning or replacement operation. To disconnect the pipe, unscrew the connector. To ensure the connection, introduce the pipe completely into the quick connection. In case of doubts, please contact support@auqvian.se.

Frequency: In each maintenance operation.

3.1.3.4. Condensation Tray

The condensation tray cleaning requires removing the access panel as shown below:

- Turn off the generator by pressing the ON/OFF key at the display and disconnect the general switch by turning the handle located in the electrical panel.
- Open the valve V10A.
- Close the valve V1.

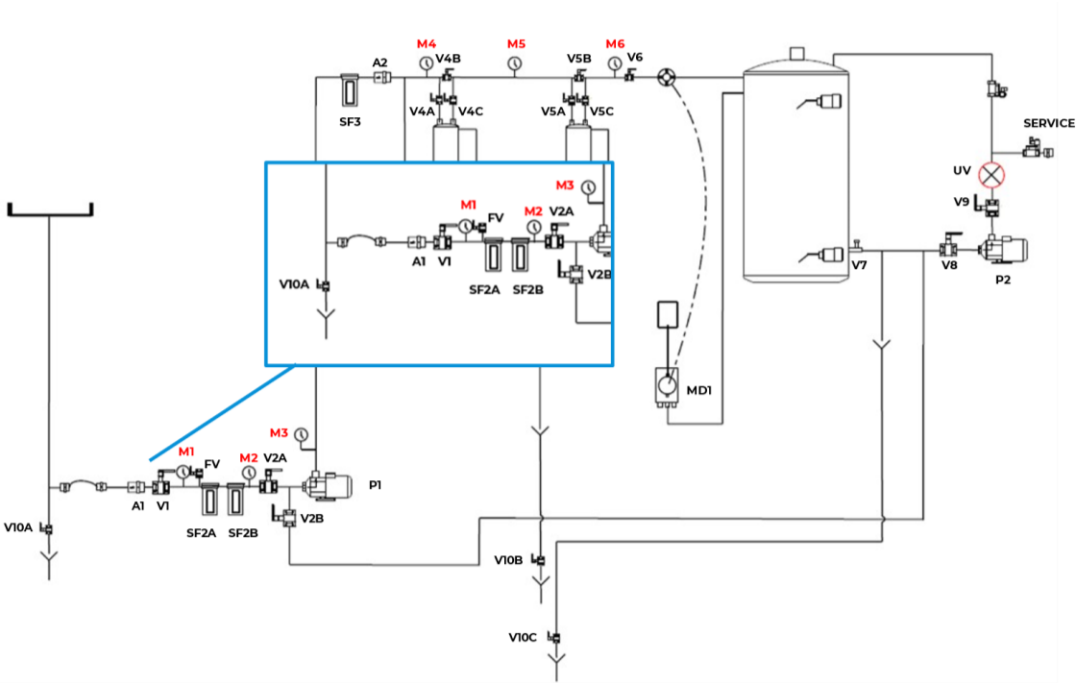


Figure 32: Condensation tray maintenance

- Once the tray is empty, remove the condense zone panel.

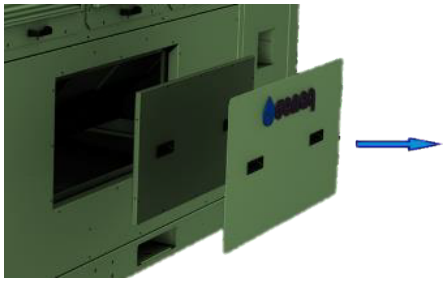


Figure 33: Condensation tray access panel

- To access the condensation tray, hold this panel firmly with both hands and exert a force in horizontal direction to extract it.

> ⚠ It is possible that the panel gets stuck due to the suction generated by the fans. When this happens, use a non-cutting tool (spatula, screwdriver...) to help separate the panel from the generator (the panel should look like the image above to be able to be removed).

- With the panel removed, proceed to clean the condensation tray.
  Clean the tray with products that do not damage the stainless steel of the tray and that are not harmful to health, such as bleach dissolved with water. Do not use solvents, degreasers or products that are harmful to health.
- Once the condensation tray is cleaning, tighten both panels.
- Close the valve V10A.
- Open the valve V1.
- Turn On the generator.

Frequency: Depending on the air quality of the place, its frequency is 1 month

> ⚠ Make sure do not leave object inside the generator

3.1.3.5. Water Tank Cleaning

With the use of the generator, the water tank will accumulate sediments. It is important to keep it clean and inspected periodically. To perform a correct maintenance, follow the next steps:

- Turn off the generator by pressing the ON/OFF key at the display and disconnect the general switch by turning the handle located in the electrical panel.
- Open the valves V10C (first) and V7.
- Close the valves V8 and V2B.

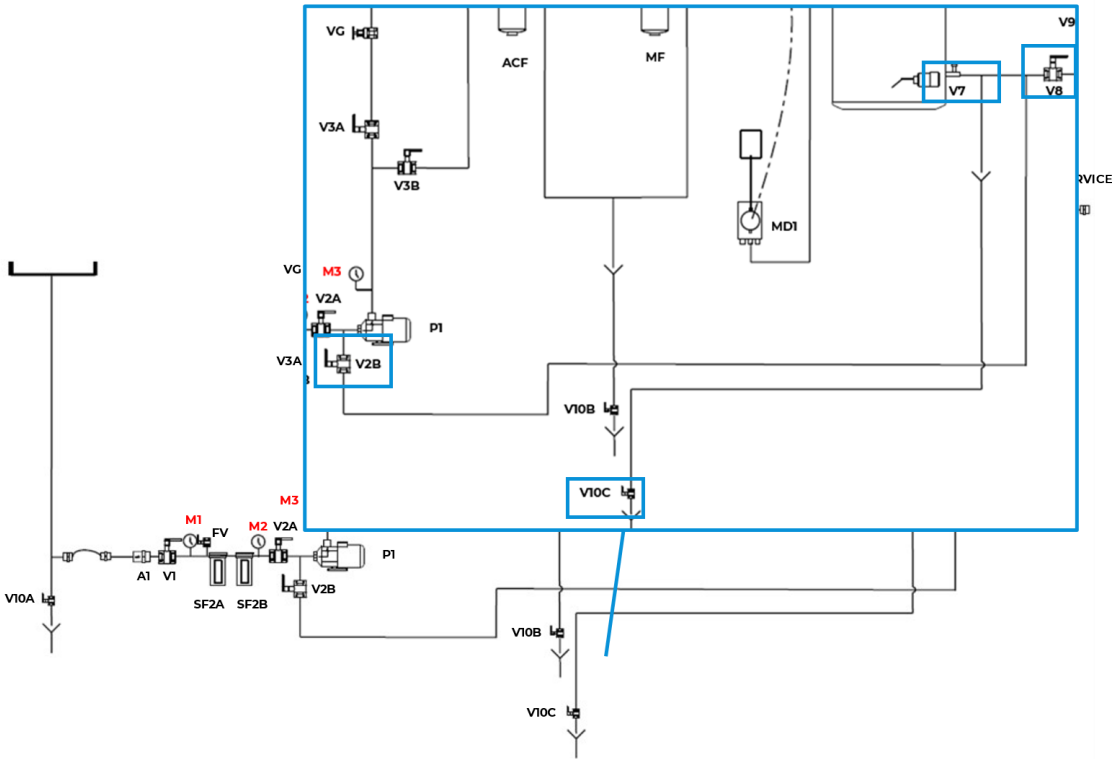


Figure 34: Water tank maintenance

- Once the Internal tank is empty, proceed to clean the internal tank. Clean the tank with a damp cloth or add sodium hypochlorite and cleaning with pressurized water. Do not use solvents, degreasers or products harmful to people.
- Once relocated all the elements, close the valves V10C and V7.
- Open the valves V8 and V2B.
- Turn ON the generator.

Frequency: Depending on the air quality of the place, its frequency is around 1 month.

3.1.3.6. Water Filters

The water filters are used to trap particles that have through the main air filters, to avoid microbiological and chemical contamination risk, to avoid any smell or flavor in the water, and to enrich it with minerals.

Number	Description
1	Sediment Filter
2	Activated Carbon Filter
3	Mineralization Filter

Figure 35: Water treatment

To clean and replace the filters, the following steps need to be followed:

Before water treatment maintenance, it is necessary to empty condensation tray to avoid P1 pump activation during filter cleaning, to empty condensation tray:

- Access to **LAYOUT** by pressing **T2** key on Display main screen.
- Access to **PUMPS** screen (see image below) by pressing **T8** on Layout menu and check tray level.

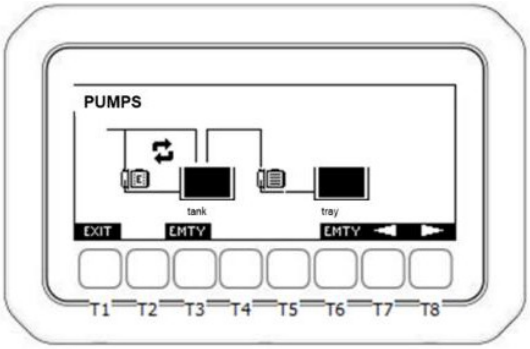


Figure 36: Water level check

- Empty the condensation tray.
- Turn off the generator by pressing the ON/OFF key at the display.

Once condensation tray is empty, proceed to remove the water filters as follows:

3.1.3.5.a. Sediment Filter (SF2)

- Unscrew the purger and unscrew the drainage from the bottom of the filter by using an Allen key.
  Put a recipient under the filter to collect the excess of water. Empty the filter until water level permits filter extraction without spilling water. To remove the filter, unscrew the filter head counterclockwise.

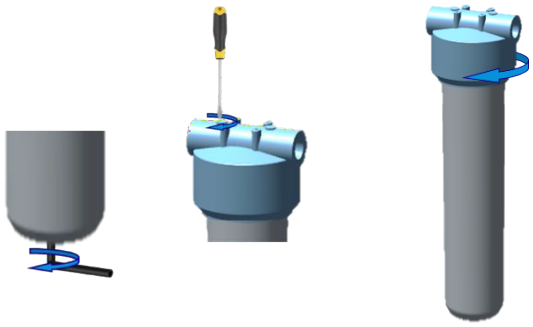


Figure 37: Sediment filter

- Remove the filter mesh.
  - For Cleaning: Wash the filter mesh with water.
  - For Replacement: Replace the filter mesh with a new one. If you do not have spare parts, please contact support@auqvian.se.
- Place the filter mesh back in the housing and screw the filter head clockwise.
- Fill circuit with the drawn water (like pump priming).

> ⚠ The batteries may have ice particles. Sediments filters cleaning or replacing should be done before the condensation tray fills up.

3.1.3.5.b. Activated Carbon Filter (ACF)

> ⚠ It is mandatory to have, at least, 500 liters in the water tank.

- Set the ACF filter selector to the ***Back-Wash*** position.

Figure 38: ACF Back-Wash selector

- Open the valves: V1, V2B, V3A, GV, V4A, V7 and **V10B**.
- Close the valves: V2A, V3B, V4B and V4C.
- Activate the **Maint.** Switch until the pump stops (generator will stop). Then deactivate the switch as shown in the figure.

Figure 39: Maint. Switch

  - For Cleaning: Clean the outside of the filter with water, clean the inside with a backwash.
  - For Refill: After cleaning you must refill the filter in the following cases:
    - The pressure drops high (under 2 bar with VG full open) or the flow is low.
    - The flow is low.
  - Replacement: replace the aggregate by the new one. If you do not have spare parts, please contact support@auqvian.se.

- Deactivate the **Maint.** Switch.
- Set the ACF filter selector to the ***Filter Mode*** position.
- Close the valves: V1, V2B, V3A, GV, V4A, V7 and **V10B**.
- Open the valves: V2A, V3B, V4B and V4C.

3.1.3.5.c. Mineralization Filter (MF)

> ⚠ It is mandatory to have, at least, 500 liters in the water tank.

- Set the MF filter selector to the ***Back-Wash*** position.

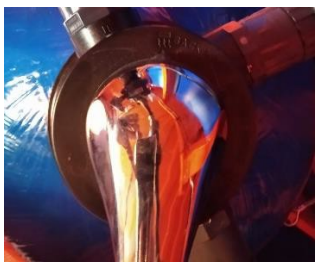


Figure 40: MF Back-Wash selector

- Open the valves: V1, V2B, V3A, GV, V4B, V5A, V7 and **V10B**.
- Close the valves: V2A, V3B, V4A, V4C, V5B and V5C.

- Activate the **Maint.** Switch until the pump stops (generator will stop). Then deactivate the switch as shown in the figure.

Figure 41: Maint. Switch

  - For Cleaning: Clean the outside of the filter with water, clean the inside with a backwash.
  - For Refill: After cleaning you must refill the filter in the following cases:
    - The pH is low (for mineralization filter).
    - The pressure drops high (under 2 bar with VG full open) or the flow is low.
    - The flow is low.
  - Replacement: replace the aggregate by the new one. If you do not have spare parts, please contact support@auqvian.se.

- Deactivate the **Maint.** Switch.
- Set the MF filter selector to the ***Filter Mode*** position.
- Close the valves: V1, V2B, V3A, GV, V4B, V5A, V7 and **V10B**.
- Open the valves: V2A, V3B, V4A, V4C, V5B and V5C.

⚠ Please check Possible Anomalies in the ***Troubleshooting*** chapter.

Frequency:

- **Sediment Filter:**

Cleaning: About 3 months. In dusty environments, the cleaning frequency may increase.
Replacement: Once a year.

- **Mineralization Filter:**

Cleaning: Backwash every 3 months. Cleaning to be performed when pressure drop indicated in the gauge is over 1 bar.
Refill: Visual inspection every 6 months or if the pH is low, refill if pressure drop high or the flow is low.
Replacement: Once a year.

- **Activated Carbon Filter:**

Cleaning: Backwash every 3 month. Cleaning to be performed when pressure drop indicated in the gauge is over 1 bar.
Refill: Visual inspection every 6 months or if the pH is low, refill if pressure drop high or the flow is low
Replacement: Once a year.

3.1.3.7. Replacement of the UV lamp

- Extract the UV Lamp body from the holder and unscrew the Quartz sleeve lock nut.

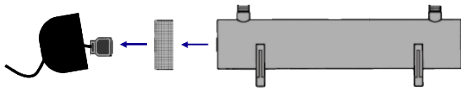


Figure 42: UV Lamp body breakdown

- Make sure that the sealing O-ring is installed in the quartz sleeve. Introduce the quartz sleeve into the UV Lamp body.

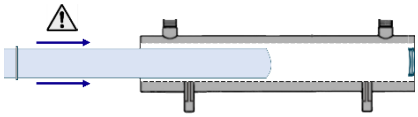


Figure 43: Quartz sleeve installation

- Screw the lock nut, connect the UV Lamp and insert the lamp into the quartz sleeve

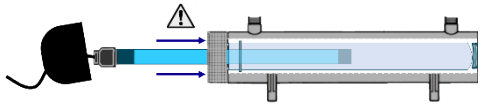


Figure 44: UV lamp installation

If the replacement of the lamp body and / or the brass connections was necessary, please follow these instructions:

- Disconnect the UV Lamp body from the Hydraulic circuit by disconnecting the quick connection.
- Remove the UV Lamp body from the brass connections by unscrew them.
- Screw the new brass 3/8"-female connections (in case they were deteriorated) to the water inlet / outlet.
- To connect the lamp to hydraulic circuit it is necessary to install a 3/8 "– 10mm quick connection to each brass connection.

Note: In any screwed hydraulic connection, it is especially important to coat the connections with Teflon to ensure the tightness. Please, make sure that these connections are properly tightness to avoid leaks.

Frequency:

- **Cleaning of the Quartz sleeve:** Once a year.
- **Replacement of Quartz sleeve and the UV lamp:** Around two years.

3.1.3.8. Chlorine Deposit Recharging

The chlorine deposit must be recharged to ensure chlorination by following these steps:

- Open the generator.
- Check the chlorine level visually. Additionally, in case the tank remains empty, the screen of the dosing pump will show a red light in alarm signal.
- If the chlorine level is insufficient, fill with the authorized refill (Sodium Hypochlorite suitable for human consumption) to achieve a concentration of 0.75ppm (mg / l).
  - Use a product which concentration is 40 grams of chlorine per liter (3.7% active chlorine).
  - In case of using a product with a different chlorine concentration, dilute to achieve the concentration of 40 grams of chlorine per liter (3.7% active chlorine).
    - For example: In the case of a product which concentration is 15000 grams of chlorine per liter (12.38% active chlorine), make a mixture of sodium hypochlorite and water in the chlorine tank, following the proportion of 1 part of Hypochlorite for every 3 parts of water.
- Close the generator side cover.

> ⚠ In case of using a Sodium Hypochlorite of a different concentration, it is necessary to modify the solution of the chlorine tank following the proportion described in this manual.

Frequency: Around 1 month.

3.1.4. Preservation During Long Periods of Inactivity

It is **IMPORTANT** to carry out a correct hygiene of the generator if it is going to be more than a week out of operation, as the pipes and filters can be contaminated due to the lack of use. Despite the warranty offered by the generators regarding their hygiene, the pipes' sections between the tank and the dispensing tap can contain microbiological contamination if the generator is not operating.

The manufacturer will not be responsible for any defect, in this sense, if the following procedure is not followed to avoid such contamination:

- Always perform a **hyperchlorination** of the generator's hydraulic circuit when it has been in a period of inactivity of more than a week. The hydraulic circuit is the section between the tank and the dispenser. The steps for this water's **hyperchlorination** are detailed below. The values are always for a tank filled with 12 liters of water. If the **sodium hypochlorite water treatment product** used has a chlorine concentration of 12.38%, then 0.7 ml would be dispensed into the full 12 liters tank for disinfection If that concentration were 4%, the amount would be 2ml for 12 liters and if that concentration was 1.15%, the amount would be 6ml for 12 liters. If any doubt, check with the manufacturer.

Table 4: Hyperchlorination

Water amount	Product Concentration	Product Quantity
12 liters (full tank)	12.38%	0.7ml
12 liters (full tank)	4%	2ml
12 liters (full tank)	1.15%	6ml

3.2. Professional Maintenance

The **Professional Maintenance** includes all the tasks of the **Basic Maintenance** plus those described in this section which must be carried out by a refrigeration specialized and authorized technician.

> ⚠ Any repair, replacement or intervention on the generator of unauthorized personnel will lead to the cancellation of the warranty.

> ⚠ During maintenance, turn off the power and wear protective gloves and goggles to protect against cuts and splashes.

Frequency: Annual and in case of any anomaly detected.

Professional Maintenance includes the following tasks:

- The generator metallic parts corrosion control (chassis, bodywork, exchangers, electrical panel, etc).
- Check the air, water and refrigerant isolation circuits.
- In case of an incident, the repair of mechanical parts, refrigeration elements and hydraulic circuit.
- Check the electrical connections.
- In case of an incident, replacement or repair of electrical generator elements.
- Handling of protection elements, control panel, start-up, stop and emergency switches.

In addition to the maintenance tasks recommended above, the generator will be affected by the applicable regulations in this matter.

3.2.1. Refrigeration Circuit

GENAQ Cumulus C5000 is designed to work with R134A refrigerant. The use of any other refrigerant in this generator is not allowed and invalidates the warranty.

The refrigerant charging and draining will always be done in liquid phase through the Schrader valve located in the liquid line of the generator.

3.2.1.1. Refrigerant Charge and Emptying

Any operation related to loads, drains or replacements of the refrigerant must be carried out by authorized refrigeration professional and never by the user of the generator. The recovery of the refrigerant is mandatory for its subsequent reuse and / or disposal and must be handed over to an authorized waste manager when appropriate.

3.2.1.2. Dehydrator Filter

The filter function is to keep clean and free of moisture the refrigerant circuit neutralizing the acids that can be found therein. Check through the viewfinder indicator of the absence of liquid moisture in the system.

3.2.1.3. Oil

Look through the oil viewfinder in order to check the oil level. If there is change of color, check the quality of the oil through a contamination test. In the presence of acid, water or metallic particles, replace the affected oil circuit and the dehydrator filter. If it is necessary to replace the oil, you should use new oil identical to the original one. Both oil type and volume required for each model are listed in tables technical characteristics.

3.2.2. Air Circuit

If a repair or replacement of the fan is necessary, its access is done by opening the upper plate

3.2.3. Chlorine Dosing Pump

The chlorine dosing pump is programmed in *Weekly timed dosage* to ensure the water chlorination generation.

Figure 45: Chlorine dosing pump

3.2.4. Control and Electrical Circuit

This generator uses DIXELL IPG215D-12100 and VTIPG, that have been designed to control all functions of this generator.

Figure 46: Control

The control includes a friendly interface that allows to visualize the temperatures, alarms, and the operation of the compressor and the fan. It also allows you to monitor and change some parameters of the control.

The electrical panel is composed of electrical safety elements. If an intervention is required, please contact support@auqvian.se.

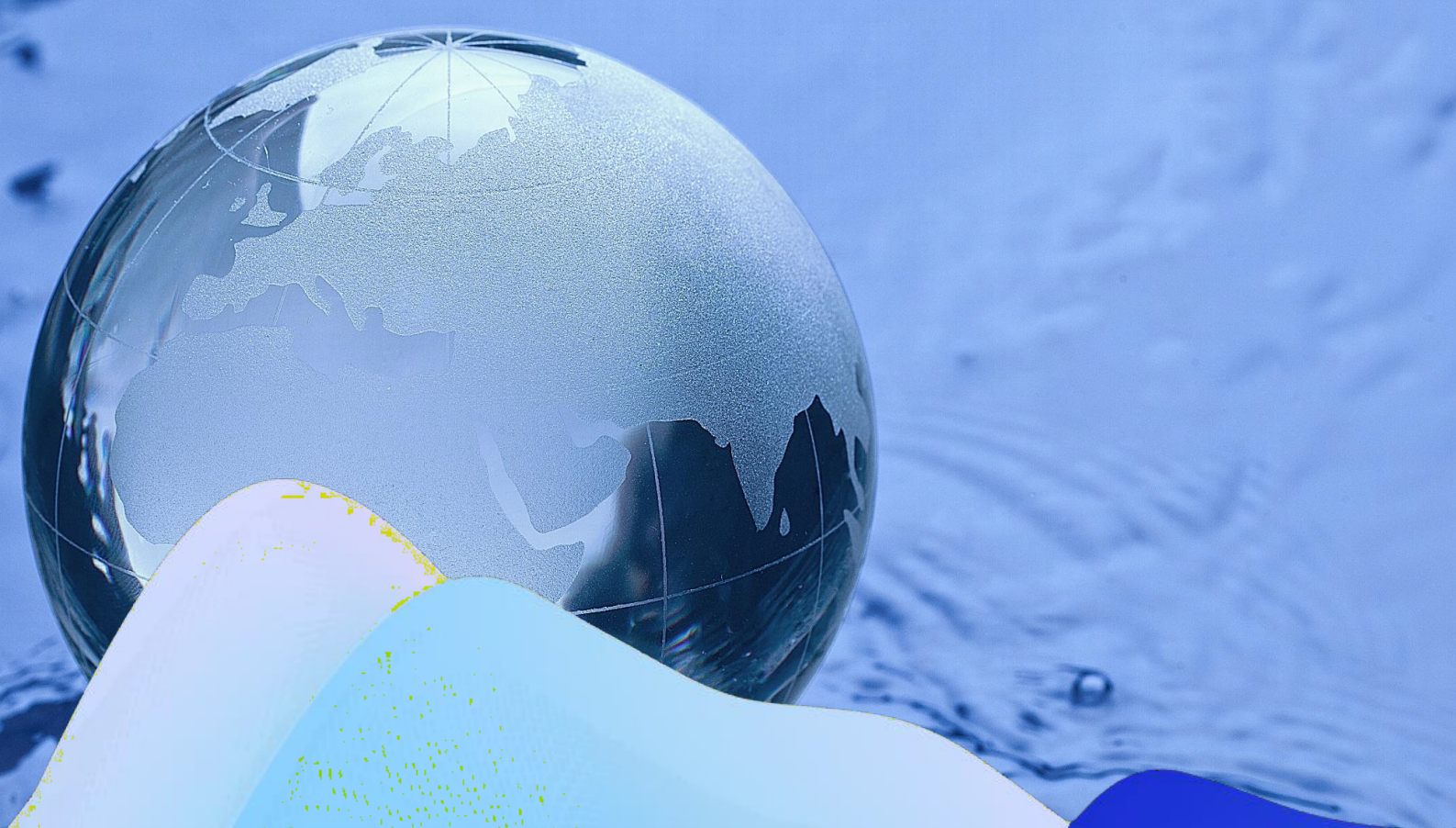
4. Troubleshooting

4.1. Troubleshooting

If there is a problem with the generator, check the table below and follow these tips. In case you might need additional assistance, please contact support@auqvian.se.

Table 5: Troubleshooting tips

Symptom	Cause	Solution
The generator does not turn on	a) Absence of electrical power	a) Check differential, MCB ....
The compressor does not start The compressor pilot is on	a) Absence of electrical power b) Burned contactor coil c) Internal Klixon open d) Inlet Temp lower than set point	a) Check differential, fuses b) Change it c) Wait for rearming, check intensity absorbed
The compressor does not start The compressor pilot flashes	a) The contacts of a control element are open (pressure switches) b) Anti-short cycle timing does not allow start-up	a) Check the safety chain in electronic regulation b) Wait and verify electronic regulation c) Check the continuity of the contact (jumper connection)
The compressor stops a few seconds after starting, the engine sounds intermittently, and opens the internal Klixon	a) Very low network voltage b) Damaged starter kit (check starter relay opening) c) Crammed compressor d) Crashed compressor	a) Check the voltage of the line and locate the voltage drop b) Replace compressor and starter kit c) Check the oil level, and return the oil to the compressor through the suction pipe. If it is necessary to install siphons and resize the pipe. d) Replace the compressor
Repeated stops and starts of the compressor	a) The compressor light flashes b) The compressor pilot remains on. (cut by Klixon) c) Regulating differential too low	a) Check pressures and / or check the safety chain (pressure switches) to find the cause High- or Low-pressure switch cut-out b) Increase the temperature or humidity differential
High pressure switch cut PAL Alarm: Very high condensation pressure	a) Insufficient flow or recirculation of air b) Dirty or clogged air filter c) Fan is damaged d) Dirty or clogged condenser e) High ambient temperature	a) Check air circuits (flow, recirculation, obstructed air outlet) b) Clean c) Repair d) Clean
Evaporator blocked by ice PAL Alarm: Very low evaporation pressure (low pressure switch cut)	a) No evaporator flows b) Cooling fan breakdown c) Continuously frozen Evaporator d) Filter clogging liquid (having different temperature at the inlet and outlet) e) Lack of gas f) Very low-pressure condensation g) Low room temperature	a) Clear air intakes b) Fix it c) Check defrost, defrost parameters change. d) Changing the filter e) Find leak, complete loading f) Air temperature at very low condenser (very high air flow), adjust control parameters condensation or relocating generator
The compressor is noisy	a) Loose Fixation b) Lack of oil c) Default compressor	a) Set b) Add oil up to recommended level c) Change it
Defrosting is not performed	a) Power failure b) Probe out of evaporator coil c) Non-operating module Defrost	a) Check contactor and fuse b) Check reading in Pb2 probe / check location c) Check defrost parameters
EAL Alarm	a) Plate unconfigured to default	a) Check the plate configuration
Null / Sparse production	a) Clogged filters b) Membrane saturated	a) Replace filters b) Replace membrane
Plastic or synthetic flavor	a) Start-up or non-use b) Spent mineralization filter	a) Water filling and complete emptying of the water tank twice b) Replace the mineralization filter
Chlorine taste and smell (with the option chlorine dosing)	a) Spent activated carbon filter	a) Replace activated carbon filter
Unpleasant taste and smell	a) Environmental pollution	a) Replace the filters, the membrane and sanitize the circuit



Drink Pure Water Anywhere

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