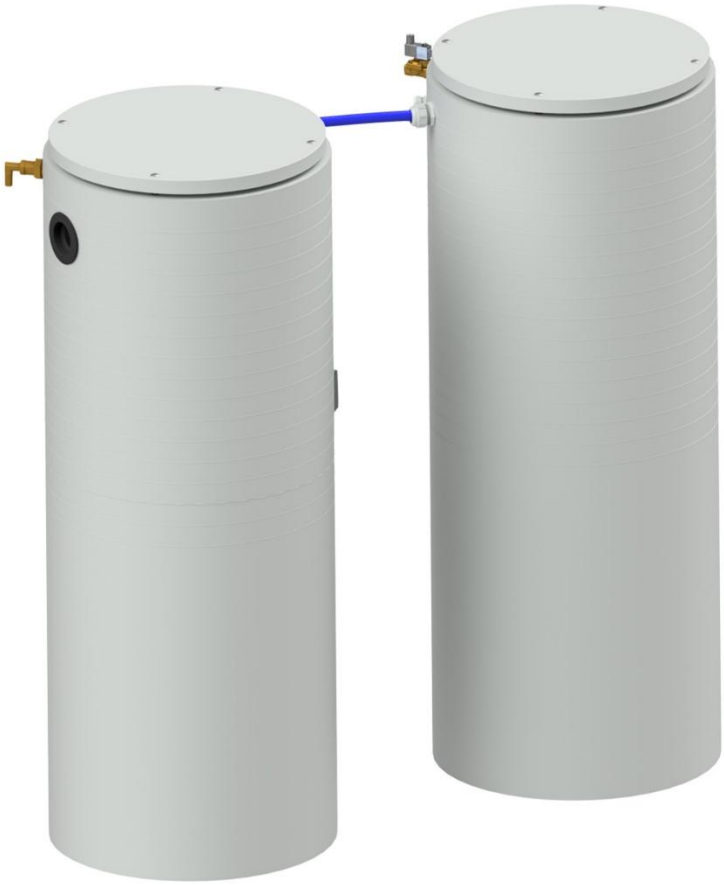
GreenLife



Installation, commissioning and maintenance manual

GWI 1.0 - 250

www.greenlife.de

GreenLife GmbH
Sacktannen 1a
D-19057 Schwerin

Dear customer,

Congratulations on your purchase of this GreenLife product and thank you for the confidence you have placed in us.

Please check the goods for any damage when you receive them.
The carrier, not the manufacturer or the supplier, is liable for transport damage. Transport damage reported after receipt of the goods can no longer be claimed. If the packaging is damaged, the goods must be unpacked immediately in the presence of the supplier in order to determine any damage, which must be reported to the carrier in writing. The goods must remain with the buyer until the transport damage has been clarified.

Before installing, connecting and/or operating this product, it is absolutely necessary to read the installation and operating instructions carefully and completely and to observe all safety instructions. Please keep these instructions in a safe place for future reference.

If you have any questions or comments, please do not hesitate to contact us at
service@greenlife.de
at your disposal.

Best regards,

Your GreenLife Team

Content

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

1. Introduction

The greywater recycling plant, hereinafter referred to as GWR plant, is used exclusively for the treatment and reuse of slightly contaminated wastewater (greywater) from showers, wash hand basins and bathtubs, which can preferably be used for flushing toilets and washing machines, but is also suitable for garden irrigation and cleaning activities.

When operated properly, the treated greywater achieves the quality required by the EU Water Framework Directive.

In single households, users are free to wash their laundry with treated greywater. In an apartment building, service water can be offered for washing laundry. Alternatively, the tenant must be provided with a drinking water connection for the washing machine. As a rule, the operator must notify the competent health authority of service water utilisation systems by means of a form. This form, together with a commissioning report and an inspection plan, is an integral part of these instructions for use.

Any other use is considered improper. The manufacturer and/or seller are not liable for any damage resulting from this!

2. Safety and Protection

2.1 Electrical installations

Warning

Your electrical installations must comply with the general installation regulations. The electrical mains (230V~/50Hz AC) to which the system is connected must have a residual current device (RCD) with a 30 mA fuse. Please contact your specialist electrical company, as the electrical connection of the system must be permanently installed. Operation or connection via a safety plug is not permitted.

2.2 Inadmissable modes of operation

Danger

The limit values specified in the technical data must not be exceeded under any circumstances. The clear water obtained from the unit must not enter the mains supply for drinking water. It must also not be used as drinking water. The unit must not be operated with organically highly contaminated kitchen wastewater, aggressive wastewater (concentrated acids/ alkalis), wastewater containing faeces, medical sludge baths and highly foaming wastewater. For highly contaminated wastewater from toilets, kitchen drains or washing machines, the quality targets of the treatment are not achieved and damage to the system (membrane) cannot be ruled out. The supply of strongly alkaline cleaning agents (chlorine cleaners, etc.), dispersion paints, varnishes, hair dyes, oils and greases also impairs the performance of the membrane and the quality of the clear water and must be excluded. Grease and oil in particular can irreversibly damage the membrane.

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

3. Product description

3.1 General

Notice

The system must be installed and operated in accordance with the relevant state of the art, in particular technical regulations such as DIN 1988 T1 to T8, DIN 1986, DIN EN 1717, DIN 2403, TrinkwV 2001, must be taken into account. The limit values specified in the technical data must not be exceeded under any circumstances. The greywater brought into the system must be collected using separate pipes. These must be clearly marked. The clear water obtained from the system must be distributed through separate, clearly marked pipes and tapping points. It must not enter the mains supply for drinking water. It must also not be used as drinking water. Suitable uses are toilet flushing and irrigation. The system must not be operated with organically highly contaminated kitchen wastewater, aggressive wastewater (concentrated acids/ alkalis), wastewater containing faeces, medical sludge baths and highly foaming wastewater.

3.2 Function and Control

The GWR plant consists of several tanks: filtration and service water tanks.

Warning

The pressure boosting system is not described in this manual. Please read the corresponding instructions.

The incoming greywater is pre-filtered and collected in the sedimentation tank and forwarded for biological treatment. Solids and bacteria are separated via the membrane filter and the filtrate is stored in the service water tank. The service water network is supplied from the service water tank by means of the pressure boosting system. If the availability of service water falls short, drinking water must be replenished in accordance with the standards or rainwater must be replenished, thus ensuring security of supply.

By using a filtrate deduction, the filtrate can be lifted from the filtration tank into the service water tank. This makes it possible to position the filtration tank and the service water tank independently of each other. The filtrate should not be lifted higher than 1.0 m above the minimum water level in the greywater tank. Lifting into an external service water tank is also possible.

The greywater treatment and filtration are controlled automatically.

Warning

Exceptions and special cases

Power failure: After a power failure, the system automatically returns to normal operation.

Absence: When there is no greywater supply, e.g., during absence, the system should remain switched on in order to maintain ventilation. Drinking water feed and water feed pumps can be switched off.

3.3 Operation parameters

The following operating parameters apply:

filtration tank:	500 l
service water tank:	500 l
pollution load in the influent:	maximum 50g BSB5 / d
rated voltage:	230 V / 50 Hz
maximum power:	970 W (with submersible pressure pump GAP X120)
maximum current:	4,4 A (with submersible pressure pump GAP X120)

3.4 System description

Figure 1 shows the Greywater-Recycling-Plant GWI 1.0 – 250 and its components.

Figure 1: Greywater-Recycling-Plant GWI 1.0 – 250

filtration tank

- inlet of the greywater
- air connection aerator pump for membrane filter
- membrane filter
- floating switches
- overflow to the sewer

service water tank

- submersible pressure pump GAP X120
- floating switch
- overflow to sewer
- mains water back-up

control cabinet

- with control module, display and aerator pump

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

3.5 Use

The GreenLife Greywater-Recycling systems are designed and constructed for the purification of domestic greywater. The connected loads and cleaning capacities depend on the quality of the greywater supplied.

Any other or further use of the system or its components is considered improper.

The instructions contained in the operating manual must be observed.

The system can only be used for its intended purpose if maintenance is carried out and documented in accordance with the instructions in this manual.

The manufacturer accepts no liability for damage caused by failure to observe the operating instructions or by improper use.

Incorrect discharges (domestic waste water, chemicals, pesticides etc.) can lead to a malfunction of the system and the biological degradation process (e.g. overloading or poisoning). This leads to an impairment of the purification performance of the system.

The discharge of the following substances is not permitted:

- domestic waste water
- greywater from kitchen and laundry
- substances that can impair the biodegradation process (chemicals, pesticides) or are not biodegradable.
- solid or foreign substances that can impair the mechanical components of the system.

Wastewater quantities or pollutant loads that do not correspond to the design data and lead to a hydraulic overload or to an overload of the degradation capacity of the plant represent an improper use and are not permissible!

It is imperative that you follow the instructions in table 1 on which substances must not be fed into the system!

The treated greywater (clear water / process water / service water) can be used for toilet flushing, cleaning or garden irrigation.

It is not recommended to use the clear water for washing clothes. Reason: If substances are added that do not correspond to the intended use of the system, e.g. hair dye, etc., there is a possibility that these colour pigments will get into the clear water.

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

Table 1: forbidden substances

Substances that must not enter the system	Caused problem	Correct disposal point
Ash	does not decompose	waste bin (residual waste)
Solids, e.g.: Sanitary towels, ear swabs, plasters, panty liners, tampons, textiles	poison the greywater, eat away at pipelines, affect the quality of process water	waste bin (residual waste)
Liquids, e.g.: Nail varnish, nail varnish remover, cream, make-up remover, hair dye, bleach.	poison the greywater, eat away at pipelines, affect the quality of process water	collection points
Medicines/Drugs	poison the greywater, affect the quality of process water	collection points, pharmacies
Cleaning agents, e.g.: Disinfectants, cleaning agents (pipe cleaners), thinners, brush cleaners.	poison the greywater, eat away at pipelines, affect the quality of process water	collection points
Fixed Binders, e.g.: Cat litter, bird sand	lead to deposits and blockages	waste bin (residual waste)
Liquids according craft activities e.g.: Chemicals, paints, varnishes, oils, soldering water, cement water, wallpaper paste	poison the greywater, eat away at pipelines, affect the quality of process water	collection points
Kitchen waste, e.g.: Grease, oil, food waste	lead to deposits and blockages, attract vermin	Waste bin (organic waste), collection points
Machine lubricants, substances containing lubricants	poison the greywater, affect the quality of process water	collection points
Pesticides, e.g.: Plant protection products, pesticides	poison the greywater, affect the quality of process water	collection points

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

4. Control

4.1 Description of the control cabinet

The control cabinet is pre-assembled and contains the control unit with display, the aerator pump and the cabling.

The control cabinet is fixed to the wall with a stainless steel mounting bracket. This is mounted with rubber buffers. This provides better sound insulation. Stainless steel mounting bracket and fixing material are included in the scope of delivery.

Figure 2: Control cabinet (variable)

1. control with display and operating element
2. aeration pump
3. aeration hose duct
4. ventilation of control cabinet via grille
5. feed-through for control cables, float switch, feed pumps

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

4.2 Description of the control

all processes in the GWR plant fully automatically.

In the event of a power failure, the control programme and the counted operating hours are retained in the internal memory. After the power supply is restored, the system restarts automatically.

The module contains the actual intelligence and a power reserve of approx. 480 hours. All digital inputs and outputs are also located here. Furthermore, there are cable glands for the float switches of individual tanks, as well as cable glands for the feed pumps.

All cable glands are colour-coded and must not be confused in order to ensure smooth operation.

The control unit is powered centrally with 230V 50Hz.

4.2.1 Operation (operator level)

Normal operation is fully automatic and independent of the operator. A toggle indicator appears in the display. The display shows the current operating status. In addition, times and other states are displayed.

4.3 Important note on the service functions

Warning

All the points described below can have a considerable influence on the functioning of the system and are reserved for the specialist company for installation, commissioning and maintenance.

Unauthorised operating errors can result in the discharge values not being complied with or warranty claims or claims for damages against the manufacturer or supplier becoming invalid.

4.4 Service work

4.4.1 Safety during service work

Danger

Service work on the control unit may only be carried out by qualified electricians!

Before starting installation work, disconnect the unit from the mains and secure it against being switched on again!

Before opening the housing, disconnect the system from the mains and secure it against being switched on again!

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

4.5 Installation connections

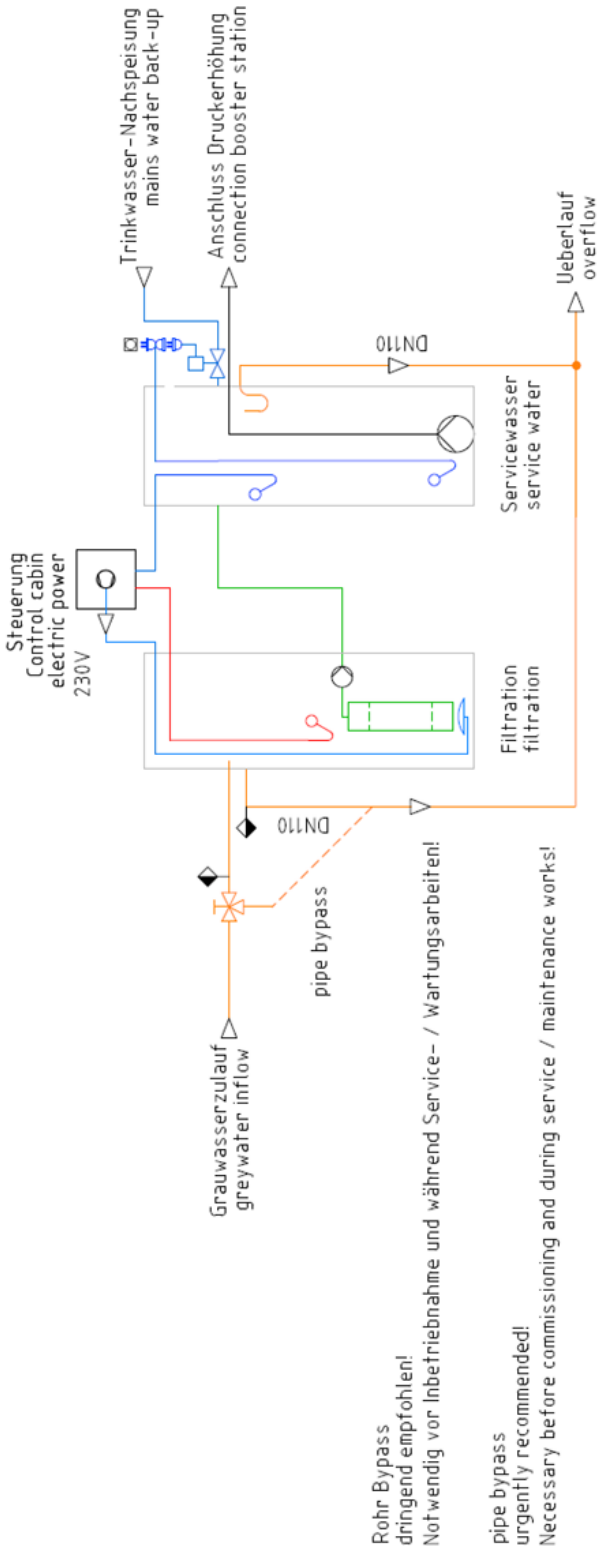


Figure 6: P&I Scheme

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

5. Commissioning and continuous operation

5.1 Commissioning

5.1.1 Prerequisites for commissioning

In the case of a new building or renovation of a building, the GWR system must not be put into operation until the construction work on the building has been completed. Furthermore, it must be ruled out that substances produced during construction work on the building or on the sanitary facilities enter the system. Paints, lacquers, alkalis, grease or similar substances can clog or otherwise damage the GWR system, as already described.

Before commissioning, check whether the following requirements are met.

- The use of the system is in accordance with its intended use and is carried out in accordance with the design
- All installation work is completed according to the operating instructions
- The tank(s) of the system are completely filled with fresh water.
- It has been checked and ensured that there is no danger from the system during commissioning.

Commissioning is carried out by a competent person who is familiar with the functioning of the entire system and the contents of the operating instructions.

For initial commissioning, the mains plug is plugged in and the system is switched on at the mains switch.

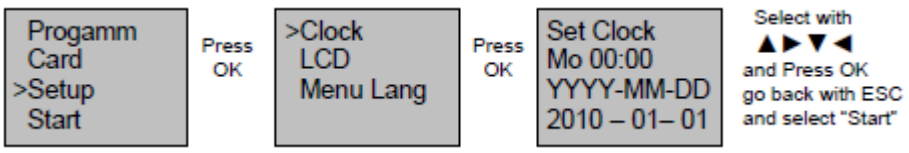
In the delivery state, the basic setting of the control unit is set to the respective system size and is shown in the display.

5.2 Initial comissioning

Before putting the system into operation for the first time by plugging in the mains plug of the control unit, it must be ensured that:

- The tanks must stand securely upright
- Fill the filtration tank with drinking water up to the overflow
- The service water tank is filled with 20 cm of water so that the drinking water feed does not start automatically.
- The system is connected to the prepared installations.

Turn on the power to the unit and set the time and date.



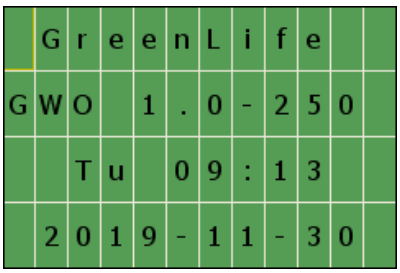
Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

After you have entered the time and date, go to START in the menu with the arrow keys and confirm with OK. The system now switches to the respective programmed mode. Now check whether aeration is taking place in the tanks. The display of the control unit shows which process is currently taking place.

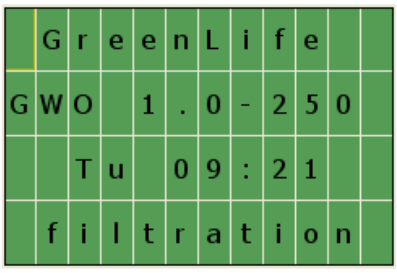
Mode „normal“:

The filtration tank is aerated and revitalised. The bubble pattern should be strong and uniform.



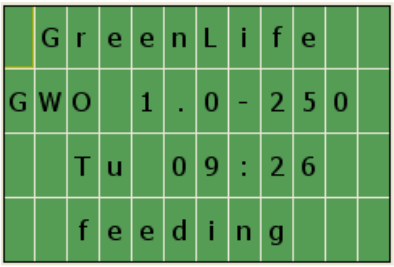
Mode „filtration“:

The system aerates the filtration tank evenly and at predefined intervals. In the filter, air flows over the pipe and bubbles upwards over the filter surfaces. The bubble pattern should be strong and uniform. If no air or too little air arrives at the filter, disconnect the system from the power supply and check the aeration hose.



Mode „feeding“:

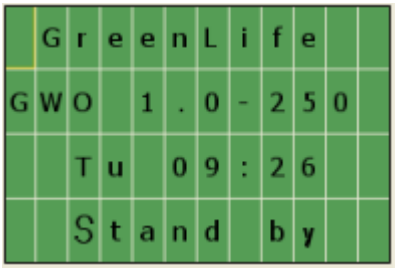
The service water tank is replenished with water because there is not enough service water available.



Mode „Stand-by“:

- Activate with ESC and ▲
- Deactivate with ESC and ▼

The filter tank is aerationed. No filtration takes place.



The unit then starts automatically and goes into normal operation.

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

5.2.1 Handover

After completion of installation and commissioning, the operator of the system must be instructed by the installer. This must be documented and a commissioning report drawn up (⇒ Chapter 7) and signed by the operator and installer. The system must be handed over to the operator together with the instructions, parts 1 and 2. The operator must ensure annual maintenance.

5.3 Continuous operation (disposal instructions)

For compliance with the cleaning requirements, operation must be in accordance with the operating instructions.

Warning

The greywater system must be permanently ready for operation (= trouble-free on the mains)!

Operation is only permissible if the greywater supplied corresponds to the design data in terms of quantity and quality.

In principle, only substances that correspond to the characteristics of domestic greywater may be fed into the greywater system.

Biocides, toxic substances or biologically incompatible or degradable substances must not enter the system, as they lead to biological process problems (⇒ Table 1: Disposal instructions).

Liquids and solids that can lead to clogging of pipes or damage to aggregates must not be discharged (⇒ Table 1: Disposal instructions).

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

6. Maintenance

6.1 Self-checks of the operator

The operator of a GWR plant has the duty to ensure a smooth operation of the plant.

Therefore, the regular inspections are of great importance.

All maintenance, inspections or other work on the GWR system must be recorded in detail in the operating logbook.

The operator of the GWR system must have the work carried out by a competent person appointed by him if he does not have the necessary expertise[1] himself. When commissioning the system, the operator must be instructed by a competent person. The instruction shall be certified.

The operator or an authorised person must carry out the functional checks and work listed below and pump out the sludge at the specified intervals.

Any defects or faults detected must be rectified immediately by the operator or by an authorised specialist!

Daily controls

Check whether the system is operating properly. This is the case when the basic display appears in the control unit display and there is no fault message. The unobstructed air supply to the control cabinet must be guaranteed. There must be a uniform bubble pattern in the aeration and filter tank.

Monthly checks

- Read off the operating hours and enter the values in the operating logbook.
- Visual inspection of all system parts (feed pumps, hoses, covers, replenishment, etc.)
- Visual inspection of all tanks
- Visual inspection of the bubble pattern in the aeration and filter tank
- Visual inspection of service water
- Visual inspection of all inlets and outlets for blockages
- (if available: visual inspection of UV system, lamps)

[1] *Competent" is defined as persons of the operator or appointed third parties who, due to their training, knowledge and experience gained from their practical work, ensure that they carry out self-monitoring of greywater recycling facilities properly.*

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

6.2 Maintenance by qualified personnel

Danger

All system parts that require regular maintenance must be safely accessible at all times.

Maintenance must be carried out at least once a year (at intervals of approx. 12 months) or as required.

Observe occupational health and safety and hygiene regulations!

Warning

If it is necessary to enter the greywater system for repair or maintenance purposes, special care must be taken.

During maintenance work, the relevant accident prevention regulations must be observed.

When servicing the electrical units (e.g. booster system, aerator pump), the manufacturer's maintenance intervals must be observed.

The maintenance carried out is to be noted in the operating logbook, manual part 1.

Drying out the filter leads to the destruction of the membrane.

6.3 Reading out the operating times

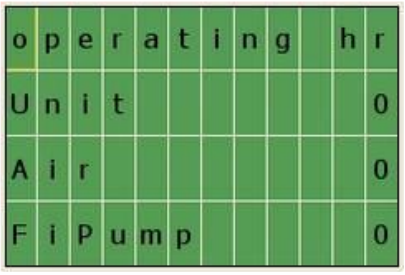
If necessary or for maintenance, the operating time of the system and the operating times of the pumps can also be displayed.

Proceed as follows:

ESC and ◄ Operating hours system

Operating hours aerator pump (if available)

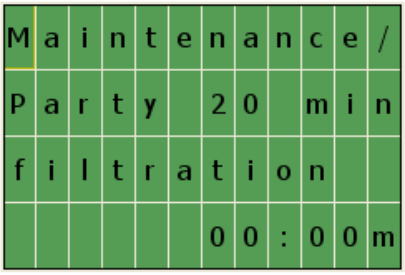
Filter pump operating hours



It is also possible to take the unit to the filtration mode for maintenance if necessary. For this purpose, it is necessary to fill the filtration tank completely.

Proceed as follows:

ESC and ► Maintenance/Party filtration für 20min



Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

Maintenance content

- Inspection of the operating diary with analysis of regular operation
- Reading out and entering the operating hours
- Inspection of all tanks
- Inspection of all connections and joints
- Check of all valves
- Checking of all aerator pumps (see manufacturer's instructions)
- Checking all float switches
- Carrying out general cleaning work, e.g. removal of deposits or foreign bodies
- Filtration tank: Checking water visually
  Check smell
  Clean tank
  Check filtrate flow
- Service water tank: Checking water visually
  Check smell
  Clean Tank
- Record any component changes in writing in the operating manual
- Functional check of the important mechanical, electrotechnical and other plant components, in particular of the feed pumps and the air compressor.
- Maintenance of the aerator pump according to the manufacturer's instructions.
- Maintenance of the UV system and the lamp according to the manufacturer's instructions.
- Checking the structural condition of the system. Here e.g.:
  - Accessibility
  - Corrosion damage
  - correct fit of tank covers
- Checking that ventilation is adequate.
- The findings and work carried out must be documented in a maintenance report and handed over to the operator. The operator must add the maintenance report to the operating manual.

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors

7. Commissioning report Greywater-Recycling Plant

Installation company		**Plant location**	
Company:		**Customer (operator)**	
Street, Nr.:		**Street, Nr.**	
ZIP, City:		**ZIP, City**	
Represented by (installer):		**Actual number of persons connected to the system**	

Details of technical equipment	
Designation of plant	
Serial number of control	(if available)
Designation of air compressor	
Motor power of air compressor	

Details of tank geometry			
Plant type			
Number of tanks Software version Special features			

Details of work carried out and handover of the system to the operator				
Result waterproof test		**O.K.**		**not O.K.**
Filling of the complete system		**yes**		**no**
Installed according to installation manual		**yes**		**no**
Control set		**yes**		**no**
Checking the bubble pattern		**O.K.**		**not O.K.**
Commissioning of the plant		**done**		**not done**
Briefing of the operator		**done**		**not done**
Operating and maintenance instructions incl. operating diary handed over		**yes**		**no**
The operator undertakes to remedy previously listed defects (if applicable). The operator has been informed of his duties of care and instructed in the inspection and maintenance work to be carried out by him.				
Installer *Place, date, company stamp* **Customer / Operator**				

Please copy the protocol and send one copy each to the operator, the installing company and the manufacturer. GreenLife GmbH, Sacktannen 1a, D-19057 Schwerin

8. Notes

Technical support
Phone: +49 (0) 385 7733 775
E-mail: service@greenlife.de

Status: 2023/06
Subject to technical changes
No liability is assumed for printing errors