StaRplast

Mod. LUM01 - Rev. 04 del 01.12.2021

USE AND MAINTENANCE MANUAL

BIOLOGICAL treatment plants

Consult and keep this booklet.

Follow the instructions inside for proper use.

Starplast plants are made of polyethylene by means of rotational moulding and comply with national and European regulations, relating to the CE marking of the product, with reference to specific types of operation.

RULES FOR THE PROPER FUNCTIONING OF A PLANT

- Correct sizing
- Correct installation
- Regular periodic maintenance

ALLOW TO

- Reduce pollutant emissions into the environment as much as possible
- Reduce the frequency of extraordinary maintenance operations
- Increase the useful life of the plant
- Comply with regulatory and authorisation requirements

Given that every operation must be carried out by specialised and authorised personnel, with this booklet STARPLAST provides the minimum indications for correct management and installation of the system.

For any technical-commercial information, please contact our Technical Office, which will be at your complete disposal for:

consultancy, installation, start-up, system management and indications regarding the Starplast Point nearest to you.

INDEX:

TYPES OF PLANT

PRIMARY TREATMENT

GREASE SEPARATORS) **DEG** 

SEPTIC TANKS) **SET** 

IMHOFF TANKS) **IMF** 

SECONDARY TREATMENT

ANAEROBIC PERCOLATOR FILTERS **FPN** 

AEROBIC PERCOLATOR FILTERS (BOTTOM OUTLET) **FPAL** 

AEROBIC PERCOLATOR FILTERS (TOP OUTLET) **FPAH** 

AEROBIC PERC. FILTERS WITH RELAUNCH PUMP **FPALP** 

ACTIE SLUDGE PURIFIERS **DFA** 

SUPER SECONDARY PLANT **IIS** 

COMPLETE PLANTS

ANAEROBIC PERC. FILTERS WITH PRIMARY SEDIMENTATION **FSN**

AEROBIC PERC.FILTERS (TOP OUTLET) WITH PRIMARY SEDIMENTATION **FSAH**

AEROBIC PERC. FILTERS WITH PRIMARY SED. AND RELAUNCH PUMP **FSALP**

TOTAL OXIDATION PLANTS **IOT**

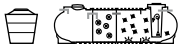
BIOLOGICAL OIDATION PLANTS **IOB**

ACTIVE SLUDGE PLANTS WITH CONSTANT FLOW RATE **IFA PC**

HORIZONTAL FLOW PHYTO-PURIFICATION PLANTS **IFD FO**

AERATED BIOFILTRATION **MBBR**

BIOSMART **BST**



DEPURSTAR **DST**

DEPURSUPERSTAR **DSS**

FUNCTION AND USE

PRIMARY TREATMENT
This is the first stage of the wastewater purification process, involving the sedimentation of suspended solids through physical and/or chemical/physical processes, following which, before discharge, the BOD5 of the water being treated must be reduced by at least 20% and the total suspended solids by at least 50%. The combination of biological processes of fermentation and anaerobic digestion enables the digestion and stabilisation of suspended and settled organic substances by considerably reducing their volume

SECONDARY TREATMENT
Secondary Treatment is usually carried out following primary treatment and involves the removal of colloidal organic substances through aerobic bacterial oxidation (active sludge treatment) or anaerobic oxidation (anaerobic percolator filters). Through aeration (or biological oxidation), non-settleable suspended solids and biodegradable dissolved solids are converted into settleable sludge. This is followed by secondary sedimentation, which has the task of removing the settleable sludge produced in the oxidation phase. The treated effluent can then be discharged into surface water bodies or onto the soil, respecting the discharge emission limits set by current regulations.

COMPLETE PLANTS
Complete plants provide a plant chain that includes both primary and secondary treatment and offer a unique solution to purification needs. The treatment phases are therefore divided into: primary sedimentation, oxidation treatment of organic substances by anaerobic means (anaerobic percolator filters) or by aerobic means (active sludge or aerobic percolator filters), followed by secondary sedimentation for the separation/removal of sedimentable sludge formed as a result of the oxidative action.

PHYTO-PURIFICATION

Phyto-purification plants perform secondary or tertiary (refining) water treatment.
They are therefore realised downstream of a primary pre-treatment generally carried out with Imhoff tanks and grease separators and are counted, in this case, as complete plants. Phyto-purification treatment is obtained with the use of macrophytic plant essences and employs, in the case of Starplast plants, horizontal flow systems (HFS) to convey the effluent through a bed of inert materials suitably chosen and selected so as to guarantee a uniform drainage path.
The plants, developing a dense network of roots and crossing the backfill medium vertically and horizontally, form the substrate on which the purification bacteria will grow. At the same time, they also allow the oxygen needed by the aerobic bacteria to be transported from the atmosphere for the removal of organic pollutants from the effluent (COD, BOD, SST, etc.).

STANDARDS, CERTIFICATIONS AND FINAL DELIVERY OF THE DISCHARGE

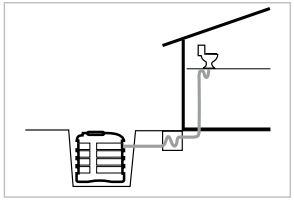
The following table shows the main certifications and possible discharge addresses that characterise the various types of treatment of the biological plants supplied.

	PRODUCT		STANDARDS	FINAL DELIVERY OF THE DISCHARGE
PRIMARY	■ GREASE SEPARATOR	**DEG**	CE UNI EN 1825	T3 public sewer
	■ SEPTIC TANK	**SET**	CE UNI EN 12566-1	T3 public sewer
	■ IMHOFF TANK	**IMF**	CE UNI EN 12566-1	T3 public sewer
SECONDARY	■ ANAEROBIC PERC.	**FPN**	CE UNI EN 12566-3	T3 surface waters
	■ AEROBIC PERC. (B.O.)	**FPAL**	UNI EN 12566-3	T3 surface waters
	■ AEROBIC PERC. (T.O.)	**FPAH**	UNI EN 12566-3	T3 surface waters T4 soil
	■ AEROBIC PERC. (T.O.) WITH PUMP	**FPALP**	UNI EN 12566-3	T3 surface waters

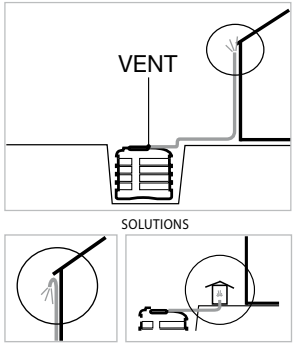
■ ACTIVE SLUDGE PURIFIER	**DFA**	CE UNI EN 12566-3	 T3  T4	surface waters soil
■ SECONDARY SUPER PLANT	**ISS**	CE UNI EN 12566-3	 T3  RI	soil reuse
■ ANAEROBIC PERC. WITH SEDIMENTATION	**FSN**	UNI EN 12566-3	 T3	surface waters
■ AEROBIC PERC. (T.O.) WITH SEDIMENTATION	**FSALP**	UNI EN 12566-3	 T3	surface waters
■ PERC. AEROBICO U.A. CON SEDIMENTAZIONE	**FSAH**	UNI EN 12566-3	 T3  T4	surface waters soil
■ TOTAL OXIDATION PLANT	**IOT**	CE UNI EN 12566-3	 T3	surface waters
■ BIOLOGICAL OXIDATION PLANT	**IOB**	CE UNI EN 12566-3	 T3  T4	surface waters soil
■ ACTIVE SLUDGE PLANT WITH CONSTANT FLOW RATE	**IFA PC**	UNI EN 12566-3	 T3  T4	surface waters soil
■ AERATED BIOFILTRATION	**MBBR**	UNI EN 12566-3	 T3  T4	surface waters soil
■ BIOSMART	**BST**	UNI EN 12566-3	 RI	reuse
■ DEPURSTAR	**DST**	UNI EN 12566-3	 T4	soil
■ DEPURSUPERSTAR	**DSS**	UNI EN 12566-3	 RI	reuse
■ HORIZONTAL FLOW PHYTO-PURIFICATION PLANT	**IFD FO**	CE UNI EN 12566-1	 T3  T4	surface waters soil

PRELIMINARY CHECK AND INSTALLATION

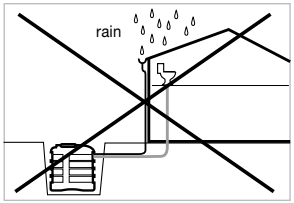
STARPLAST tanks are specially sized and manufactured for underground use, therefore (except in special cases to be agreed with the Starplast Technical Office) they must never be used for outdoor use. For details of the installation methods, please refer to the attached “underground/laying methods” document.
In any case, it is essential to comply with the following instructions:



To avoid possible odour return in the bathrooms, always place a siphoned shaft upstream of the system.



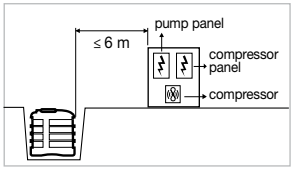
ALWAYS CONNECT BIOGAS
Ensure that the biogas vent is unobstructed to prevent the tank from becoming pressurised/depressurised.
Connect it to the ventilation pipe of the house, or provide for it to be sent to a suitable place where its blockage is prevented; always at a level above the height of the tank cover.
Check and verify that the section of the pipeline is proportionate to the pressure drop and allows for the proper disposal of the biogas and that no goosenecks or water accumulation points are formed along the route that would impede the flow of gas.



In any case, rainwater must not flow into the system.

After positioning the tank and making the water supply and drainage connections as specified in the installation manual, for installations requiring electromechanical equipment, proceed as described below.

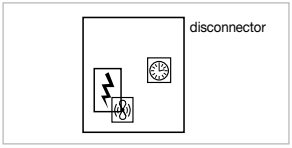
INSTALLATIONS – DFA, FPAH, IOB, IFA PC, IBV, MBBR



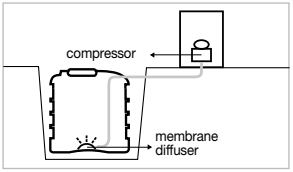
COMPRESSORS, BLOWERS, HYDRAULIC PUMPS AND ELECTRIC PANELS

- The compressors and/or air blowers must be placed above ground in a dry place protected from the weather together with the electric control panel supplied. We therefore recommend installing the equipment inside a well-ventilated containment box or technical room with adequate air exchange to prevent overheating of the machines at a distance of no more than 6 m from the purifier. The compressor must also be positioned above the sewage level to prevent it from returning in the event of an air supply interruption.

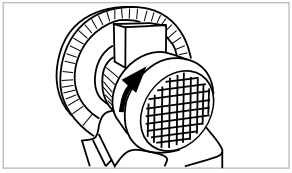
- **WARNING:** Side channel blowers are volumetric machines which, during their operation, raise the temperature of the suctioned air supplied to the diffusers: let the machine cool down before carrying out any operation to avoid burns. This rise in temperature is particularly relevant both inside the equipment room and in the first sections of the air supply pipework. We therefore advise you to pay particular attention to the ventilation and air exchange system of the technical room in which the blower is installed and to use galvanised carbon steel fittings and piping at the blower outlet for a distance of at least 2 metres.
Do not use fittings or piping made of plastic material (PE, PP, PVC, etc.) in order to avoid melting and/or throttling of the duct.
- For use, maintenance and guarantee of compressors and blowers, please refer to the specific technical data sheet.



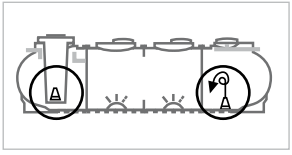
Position the electrical panel provided, as close as possible to the compressor, inside the technical room and make the electrical connection by setting up a 230 Volt single-phase or 400 Volt three-phase power supply line. We recommend that a manual disconnect switch with general thermal protection is installed downstream of the equipment by specialised personnel.



Connect the air piping that comes out of the tank to the compressor, **making the route as straight as possible without inserting bends or elbows** that decrease the machine's performance.
Always install the supplied filter on the air intake pipe.



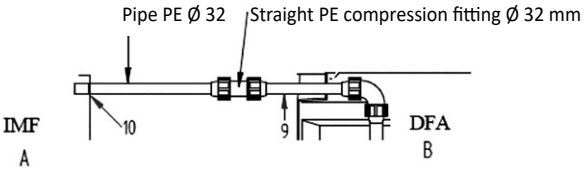
Check the direction of rotation of the compressor motor (for 400 Volt power supplies) by comparing the direction of rotation of the ventilator with the direction indicated by the arrow on the top of the protective cover. Looking at the ventilator through the protection grille, it should turn clockwise.



After installation as described above, check that the compressor and air diffusers are working properly. Excessive movement of the slurry over a specific area of the oxidation tank may be an indication that the air piping has become detached or that the diffuser membrane has been cut.

The hydraulic recirculation pump and the equalisation pump (for IFA PC models), if any, are pre-installed and already hydraulically connected inside the respective tanks in a non-permanent manner, i.e. in such a way that they can be removed for maintenance. After they have been electrically connected to the supplied control panel, their timing must be adjusted. The recirculation pump for the impulse feed of the flow rate must be set, in the first instance, by virtue of the daily flow rate divided into at least 24 impulses (on an hourly basis, while the equalisation pump must be timed at the same time but every 1/2 hour; check that the two feeds are temporally staggered.

CONNECTION SLUDGE RECIRCULATION WITH AIR-LIFT (TYPE IOB….T4)



Materials required

- n° 1 straight PE compression fitting Ø 32 mm
- approx. 1 metre of Ø 32 mm polyethylene pipe

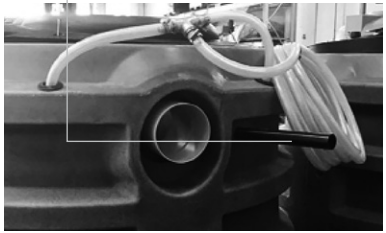
OPERATIONS DESCRIPTION

he recommended distance between the primary sedimentation (Imhoff) and secondary treatment (active sludge) tanks is 50 cm. However, for construction site requirements, this may vary but must not be less than 30 cm. In accordance with this distance, a suitable length of the connection pipe must be provided, taking into consideration that the existing pipework coming out of the activated sludge tank is approx. 10 cm.

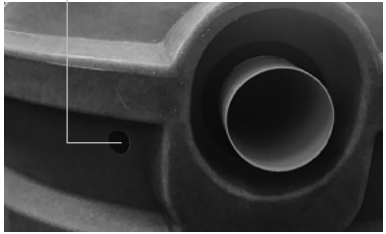
For the connection work, proceed as described below:

- Insert the compression fitting into the 32 mm which flows out of the DFA tank (reference 9 on the technical drawing)
- Connect the Ø 32 mm polyethylene pipe to the fitting and insert it into the hole hole in the Imhoff tank (reference 10 of the technical drawing) leaving approx. 5 cm of pipework inside the tank.
- Proceed with the filling of the excavation, paying particular attention to the connection area of the pipe in order to avoid the pipe slipping out.

Placement of outlet piping on **active sludge purifier** *(reference 9 of the technical drawing)* recirculation

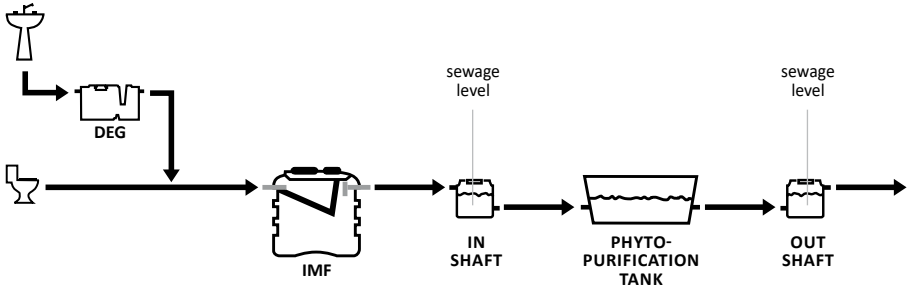


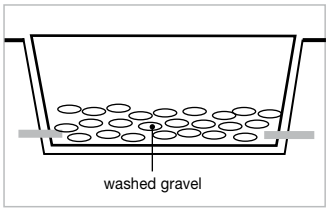
Hole on **Imhoff tank** *(pos. 10 technical drawing)* for inserting recirculation pipe



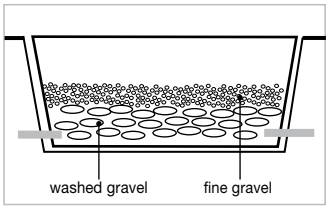
PHYTO-PURIFICATION

Once the primary treatments are installed (Grease separator and Imhoff tank) according to the previous instructions, position the distribution and inspection sumps upstream and downstream of the absorbent beds to control the water level of the system.
Then proceed to fill the tanks as described below.

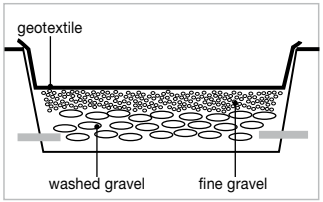




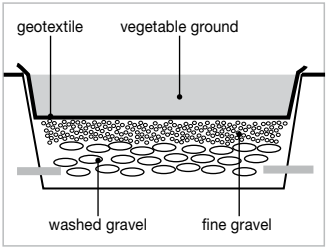
Filling material.
Initially fill the tank, starting from the bottom, with a 15 to 20 cm thick layer of washed gravel (40/70 mm) to completely cover the PVC adduction pipes, in order to facilitate the distribution of the sewage at the dispersing pipes.



Continue backfilling with a 15-cm layer of the finest washed gravel (10 to 20 mm)



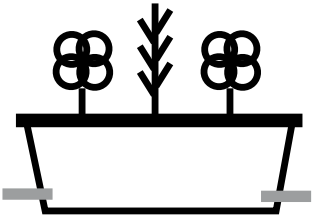
Place a sheet of nonwoven fabric over the gravel layer.



Finish filling the tray with a mixture consisting of 50 percent vegetable soil and 50 percent peat, on which the plants will be planted. For the composition of said soil, it is advisable to rely on the nurseryman who will provide the tree essences.

LIST OF PLANTS SUITABLE FOR PHYTO-PURIFICATION

The most suitable plants for phytodepuration are those that are water-hungry and particularly resistant to moisture. As an alternative or supplement to the more common Phragmites, they are:



SHRUBS

Aucuba Japonica	Bambù
Cornus alba	Cornus florida
Thuya canadensis	Cornus stolonifera
Kalmia latifolia	Laurus cerasus
Spirea salicifolia	

HERBACEOUS PLANTS

Astilbe	Elynus Arenarius
Iris pseudoacorus	Iris kaempferi
Joxes	Lytrium officinalis
Nepeta musini	Petasites officinalis
Felci	

However, when choosing plants, we recommend using a nurseryman who will be able to give the right advice depending also on the climate and the type of soil used to fill the tanks.
In any case, the nurseryman's choice should generally fall on plants peculiar to the area of reference (native).

Limitations of use

Starplast biological treatment plants are used for the purification of domestic and assimilated wastewater.It is required wastewater in which pollutants with maximum allowable concentrations of:

• pH:	6÷8	• N-NH4+:	30 mg/l	• Total hydrocarbons:	10 mg/l
• BOD_5:	300 mg/l	• N-NO3-:	20 mg/l	• Total surfactants:	10 mg/l
• COD/BOD_5:	≤ 2,2	• Ntot:	12 gr/A.E.	• Cl-:	concentration detected in supplied water + 40 mg/l
• SST:	400 mg/l	• Ptot:	2 mg/l		

For all other parameters further contemplated by the Discharge Reference Tables in D. Lgs.152/06 and s.m.i. upstream of each purification treatment, for incoming water, the limit values prescribed by the same for discharges indicated in the decree or in the plant's discharge permit apply.

Never exceed the above limits and pay attention to the hydraulic loads influent to the plant since an excessive discharge rate can irreparably damage the plant and its purification process. STARPLAST biological plants are sized **for maximum influent flow rates of 200 liters/P.E. x day**. In the event of excessive point hydraulic loads and/or abnormal discharges other than the above concentrations, plant remediation and a new plant start-up procedure will be required after verification of the effectiveness of the constituent parts of the manufactures.

PROHIBITIONS

It is prohibited to:

- Adding stormwater to the systems
- Entering coarse solid materials such as paper, cardboard, newspapers, textiles and anything else that may obstruct plant piping and equipment
- Enter dangerous liquids (toxic, irritating, explosive, flammable, etc...)
- Use and introduce sanitizing liquids that are alkaline, acidic or have a high ammonia and bleach content
- Enter into drains substances that may harm the bacterial flora
- Inject detergents that are not fully biodegradable

START-UP

The start-up of a biological sewage treatment plant requires a period of time ranging from 20 to 45 days before it reaches full capacity.
Once the artifacts are placed filled with clean water and regularly connected both hydraulically and electrically, feed the plant with raw sewage and start the compressors and the recirculation and equalization pumps (where present). Plan, if possible, to be able to feed the tanks initially with only part of the raw sewage. If a constant flow activated sludge plant (IFA PC) is used, provide for adjustment of the equalization flow rate by acting on the valve located on the discharge piping detachment to recirculate part of the slurry within the equalization tank. It is advisable, during start-up, to send a low hydraulic load to the subsequent treatment stages (open the recirculation valve almost fully for IFA PC). Then proceed to increase the sending to oxidation by a higher flow rate until the process flow rate is reached.
FOR IFA PC ONLY: Adjustment of the process flow rate can be made by verifying that at a point discharge the pump flow rate is such that the water level on the equalization section does not remain below the overflow weir level at all times. The initial timing of the recirculation pump is such that it allows a recirculation coefficient of about 1 and then a cycle of 15 minutes ON every hour; it follows that the timing of the equalization pump (where present) is 1 cycle of 15 minutes ON every 1/2 hour. Stagger the feeding times of the two pumps.
Keep the compressor running continuously for the first 10 days; thereafter time it at the rate of 8 cycles of 2 hours ON followed by 1 hour OFF. Pay special attention to the distribution of air in the oxidation compartments, which should be as homogeneous as possible. After a period of use of about 5-10 days, if we wanted to increase bacterial growth, specific bacteria can be introduced into the anaerobic and aerobic compartments.
These can be either in liquid solution or freeze-dried as long as they are bacteria for purifiers i.e., active biomass formulations based on enzymes, microorganisms, and nutrients for wastewater treatment plants.
When the bacterial sludge (bacterial flora) has formed and developed in sufficient quantities, the plant will effectively carry out its purifying action. In percolator filter plants, the successful growth of the bacterial film in the surfaces of the filling bodies should be verified. While on active sludge plants, verify that the bacterial sludge is present in the appropriate amounts, following the following methodology: take one liter of aerated mixture from the oxidation compartment, let it decant for half an hour on appropriate Imhoff cone, and verify that the volume of sludge deposited is approximately half a liter, above it will be water free of settleable solids (supernatant). At this stage of paccesa so that aerated mixture is taken.
In the transition and start-up period, the plant will show turbid water, foam formation and alteration of chemical parameters that will disappear at full capacity. In modular biological plants where there are more than two diffusers, the air supply can be

adjusted by acting on the PVC valve upstream of the air distribution manifold on each inspection module in the tank.
Once fully operational, it is advisable to check, possibly with the support of a technician, the purification process by establishing control visits or whatever else is necessary relative to the final delivery in the receptor body.

PHYTO-PURIFICATION PLANTS - IFD FV, IFD FO
Plant start-up takes a few weeks and varies with the season. It should also be noted that a prolonged frost or high snow depth can impair the proper functioning of the absorbent bed. A layer of straw to protect the bed and root system of the vegetation is recommended in areas with altitudes greater than 800 m and otherwise with harsh winters.

USE AND MAINTENANCE

GENERAL WARNINGS:
For proper operation of the systems, it is essential that no coarse bodies (plastic bags, diapers, etc.) are conveyed to them, which could clog parts of the system, or that no products harmful to the bacterial flora (strongly acidic or strongly basic products) are introduced. Check that the vent pipe is clear, and if it is clogged, arrange for its cleaning.
Periodically check the integrity of the piping, seals and fittings to which the items are connected.
Check and remove coarse materials that should not clog the sewage inlet and outlet pipes and the vent.
For all maintenance operations, it is advisable to maintain appropriate records of the operations performed.
For phyto-purification plants in order to maintain evaporative functions, it is necessary to provide periodic maintenance of vegetation.

Conduction:
During normal operation, the purification process will run independently returning a purified effluent with BOD_5, COD, SST levels aligned with current standards.

Routine maintenance consists of purging solids from the primary compartment and oils, greases, foams, etc. on a maximum annual basis. Periodically check the characteristics of active sludge (bacterial flora) in the system and provide for its removal in case of excessive concentration. However, it is necessary to leave an adequate amount of activated sludge in the oxidation compartment in order not to affect the proper purification process. Check electromechanical equipment by referring to the specific booklet supplied with the plant.
In cases where the power supply to the plant differs from the design ones and for problems in setting the purification process, contact your trusted technician or the Starplast Technical Office.

Notes on conductions:
In case of any inconvenience or malfunction, check preliminarily the proper functioning of the blower pump and diffusers (air bubbles should be seen bubbling inside the oxidation sector), as well as any clogging or excessive release of soaps, oils, greases and disinfectants. If no apparent faults are found in the system, it will be necessary to carry out effluent monitoring. To do this, take a significant aliquot of wastewater from the inlet and outlet sampling wells, contact an analytical center and request for the two samples the evaluation of the following parameters: pH, Total Suspended Solids, BOD5, COD, Total Nitrogen, Ammoniacal Nitrogen, Phosphorus, Total Fats and Oils, Total Surfactants; then contact the nearest authorized Starplast service center or the Technical Department. If the problem encountered is the absence of bacterial flora, it is likely that the system has not yet reached full capacity, alternatively, substances toxic to the bacterial flora itself (disinfectants, antibacterials, etc.) have probably been received or there are strong hydraulic peaks. Clean the system and repeat the start-up operations after identifying and eliminating the cause of the death or failure of the bacterial flora such as:

- **Dispersed growth:** formation of (settleable) flocs is probably prevented by the influx, presence, excessive surfactants;
- **Viscous and Filamentous Bulking:** flakes of gelatinous appearance that are difficult to settle due to lack of dissolved oxygen in the oxidation tank (increase timing and/or amount of aeration), pH shock (limit or do not discharge acidic or basic substances), presence of substances toxic to bacterial flora, sludge loading too low (oversized plant), lack of nutrient elements contained in sewage (integrate according to BOD5 : N : P = 100 : 5 : 1). In the case of Filamentous Bulking, the main cause is excessive variation in operating conditions from both chemical and physical points of view (affix a homogenization tank - equalization)
- **Pin point flakes:** the flakes are very small in size and remain scattered due to lack of filamentous-support;
- **Rising:** rising and floating of sludge due to denitrification occurring in the bottom of the secondary sedimenter;
- **Foaming:** biological foams that form both on the surface of the sedimenter and in the aeration basins. This is caused by. in the presence of surfactants, nutrient imbalance or management problems such as low oxygen

If the problem encountered is the presence of foul odors in the outlet water, the timing of oxidation should be increased, for example, by setting the oxygenator control unit at the rate of 8 cycles consisting of 2.5 hours ON followed by ½ hour OFF. If the problem persists, the blower pumps should be kept running at all times. If the odor is present in the vicinity of the installation, first check the tightness of the cover works, if present, and restore the tightness if necessary. Then check that the equipment end caps are properly in place, that the biogas outlets are connected, and that the pipe containing the electrical cables is insulated (if necessary, silicone can be used to implement the seal and/or gaskets can be purchased from authorized Starplast sales outlet).

If the odor appears within the structures, the problem is not with the sewage treatment plant but with the hydraulic adduction circuit (siphons) and/or the power supply network.
In case the operating conditions have changed over time or differ from the design conditions it will still be possible, and is still recommended, to implement the plant capacity so as to adapt to the particular situation.

ROUTINE MAINTENANCE

PERIODIC CHECKS:

After the start-up of the purification process has taken place, the following checks should be carried out at least quarterly:
- Checking the operation of the blower and adjusting the oxidation times.
- Control and removal of coarse materials that must not clog the sewage inlet/outlet and vent pipes.
- Control and adjustment of the air distribution system in the oxidation compartment.
- Control of pump operation and adjustment of feeding times (equalization and sludge recirculation).
- Thermal and fuse reset control.
- Absorption control and thermal calibration.

SEMIANNUAL CHECKS:

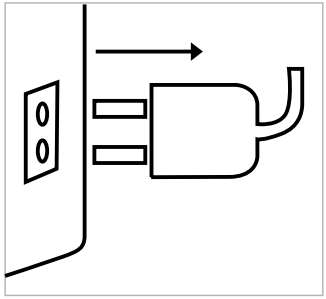
- provide for the removal of excess sludge from the plant if necessary.
- the sludge purge operation should be carried out following measurements of the volume percentage of sludge in the oxidation tank. Imhoff cone measurements allow verification of:
  - o The state of the activated sludge (density and settleability);
  - o Possible need for purging;
  - o Evaluation of possible product dosing for optimization of biological functions.

Therefore, the frequency of this operation cannot be defined a priori, but necessary at least every six months.

- sludge purging activities are to be carried out by a specialized and licensed Firm (auto purge).
- Provide for the cleaning of the compressor suction filter.

ANNUAL CHECKS:

- Provide for the cleaning of the air diffusers from any clogging. This requires removing them from the artifact and cleaning their surface with a pressurized water jet and then soaking them in a solution of water and sodium hypochlorite for about 15 minutes. Reassemble the air line, start the compressor, and check both the proper functioning of the air distribution and the compressor absorption, which must be within the nameplate data.



Any maintenance operations must be carried out after disconnecting the Power Electricity.

The above cadences and control activities are indicative in nature, as they can be subject to customization by Starplast service centers, depending on the potential of the plant, the characteristics of the influent effluent (discharges from restaurants, civilian dwellings, etc.) and specific needs of the Customer.

SHEET TO BE PHOTOCOPIED AND KEPT FOR VERIFICATION AND MAINTENANCE PURPOSES

PLANT TYPE ..... **CHECK DATE** .....

CHECK AND CLEAN VENT PIPE	☐
GASKET CHECK	☐
REMOVAL OF COARSE MATERIALS	☐
REMOVAL OF EXCESS SLUDGE	☐
REMOVAL OF FLOATING MATERIAL	☐
CLEANING OF FILLING BODIES	☐
BLOWER RUN	TIME / RUN ..... STOP .....
BLOWER FILTER CLEANING	☐

PUMP OPERATION CONTROL	☐
THERMAL AND FUSE CONTROL	☐
PUMP 1 ABSORPTION CONTROL	ABSORPTION (A) .....
PUMP 2 ABSORPTION CHECK	ABSORPTION (A) .....
AIR DIFFUSER CLEANING	☐
SLUDGE SETTLING	IMHOFF CONE (ml/1000ml).....

OTHER MAINTENANCE OPERATIONS

CHECK CARRIED OUT BY

.....

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