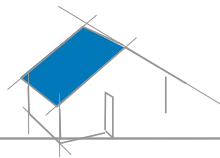


TOPAS[®]



Container Wastewater Treatment Plants



TOPOL
WATER

TOPAS container wastewater treatment plants are designed for treating all biologically polluted wastewater, which mainly includes the following objects:

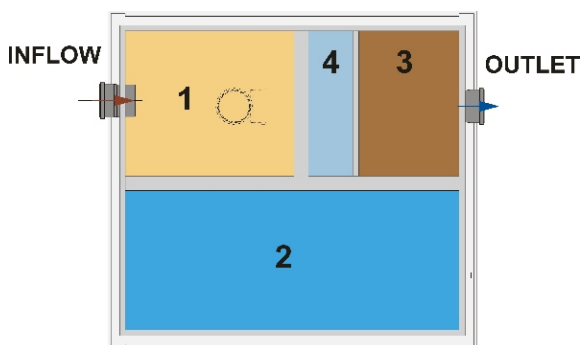
- Family houses
- Recreational objects and cottages
- Guesthouses
- Restaurants
- Smaller municipalities



The treatment plant contains an inlet tank, an activation tank of the SBR type (Sequencing Batch Reactor) and a sludge tank. In relation to the depth of the inlet, there are two basic types of treatment plants: TOPAS R for wastewater inlet up to the depth of 0.7m below the surface and TOPAS S with wastewater pumping and inlet depth of up to 2.2m.

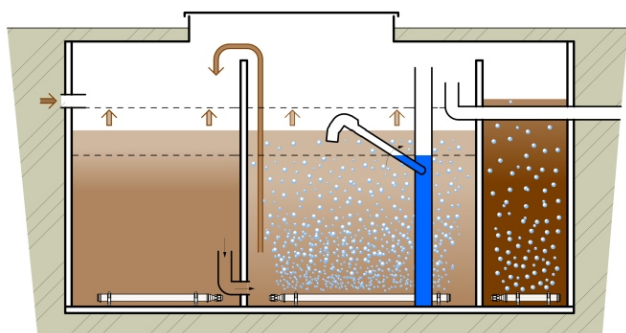
Wastewater flows into the inlet tank and then flows (or is pumped in case of TOPAS S) into the SBR reactor where biological treatment takes place. The reactor is aerated when being filled and it is brought to standstill when filled. After sludge has settled at the bottom, the excessive sludge is pumped into the sludge tank and the subsurface layer of the treated water is pumped using a special appliance (decanter) into the outlet from the wastewater treatment plant or to be finished on the automatically washed sand filter. During the time when the reactor is not aerated, air is supplied from the blower to the inlet tank where wastewater is pre-treated. The treatment process is controlled by a control unit with a special program.

Plan view of TOPAS Wastewater Treatment Plant

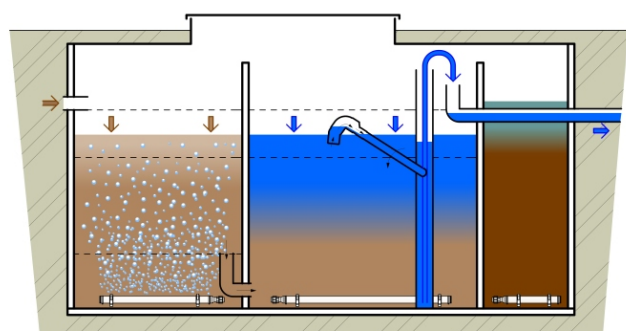


Functions of the individual chambers of the plant:

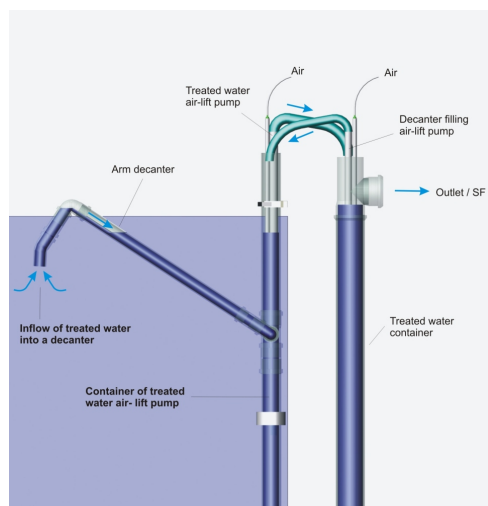
1. **Inlet Tank** – used for collecting and pulverizing gross impurities, for homogenization of sewage and for denitrification (elimination of nitrates from wastewater)
2. **Activation Tank (Activation)** – this is where biological treatment of the wastewater by microorganisms that are contained in the “activated sludge” takes place. The energy during the process is supplied by aeration. Furthermore, ammoniac oxidizes into nitrates and treated water is separated from the activated sludge.
3. **Sludge Tank** – is used for storing excessive sludge as a product of the biological treatment
4. **Sand Filter (Ancillary Equipment)** – is used for mechanical post-treatment of the biologically treated wastewater



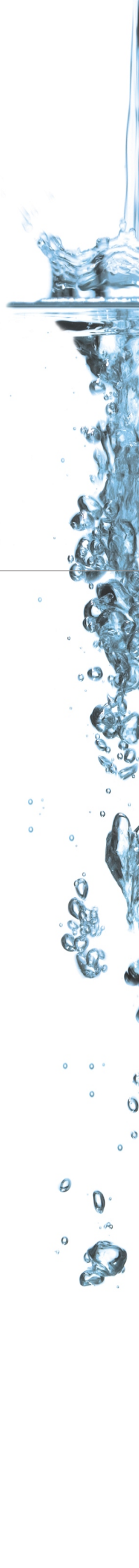
Flow Diagram of Filling Phase TOPAS R without sand filter

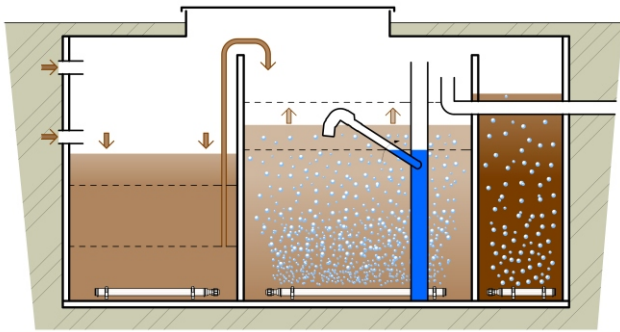


Flow Diagram of Drawing Water Phase TOPAS R without sand filter

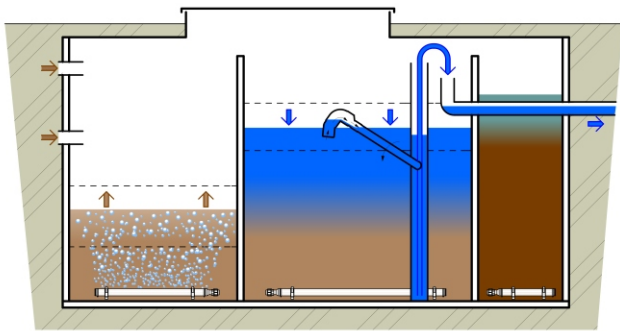


Decanter for treated water drawing





Flow Diagram of Filling Phase TOPAS S without sand filter



Flow Diagram of Drawing Water Phase TOPAS S without sand filter



Control unit

Why Choose TOPAS?

The TOPAS technology represents an application of state-of-the-art technologies, even for the smallest types of domestic wastewater treatment plants, achieved over twenty years of experience and research accomplished with international patents. The frame and function of the decanter, the sand filter and the steel-plastic tanks are protected by patent. This basically allows manufacturing a small, virtually maintenance-free wastewater treatment plant that does not contain any manually adjustable armatures requiring professional qualification.

The Control Unit optimizes the entire treatment process based on permanently measured wastewater quantity. It is a unique system that has no equivalent in domestic wastewater treatment plants. It has the following advantages:

- Maximum energy savings – the output of the treatment plant (time of the blower operation) is continuously adjusted to the quantity of the wastewater;
- When the inlet of wastewater is interrupted, the output of the treatment plant automatically decreases to maintenance mode in which the treatment plant can keep the biological function for a period of at least 3 months without any sewage inlet. This is an ideal system for recreational objects that does not require the installation and setting of various timers;
- Possibility to set a mode for wastewater with unusual pollution (restaurants etc.);
- Any potential failure of the treatment plant is signalled by an audible and visual warning and causes are specified on the display;
- Dosage of chemicals precisely according to the quantity of the wastewater, when only the concentration of the chemical per cubic meter of wastewater is set.

Reconstruction of Non-functioning WWTPs

The TOPAS technology is suitable for being installed in existing tanks (of any shape and material) and for reconstruction of obsolete or for any other reason not functioning wastewater treatment plants.

Ancillary Equipment

Any of the TOPAS wastewater treatment plants can be manufactured with the following ancillary equipment: sand filter (PF), UV lamp (UV), dosage of chemicals (CH) and GSM module (GSM).

Description of the ancillary equipment:

Sand Filter (SF)

It is used for mechanical post-treatment of biologically treated wastewater. PF is required when the treated water is further used in the household (toilets, washing machine etc.). It can be delivered to all types of wastewater treatment plants.

This is a unique appliance protected by a European patent (EP). It allows TOPAS wastewater treatment plants to achieve a stable quality of treatment that cannot be reached by regular treatment plants without separate post-treatment. Its advantage is that it is integrated in the treatment plant and it is automatically washed within the TOPAS system mode several times per day and the turbid water is returned to the treatment plant. Water cleaned by the sand filter can be used for any system of automatic irrigation.

UV Lamp (UV)

It eliminates any present algae, moulds, viruses and bacteria, which disinfects water and eliminates any potential pathogenic agents and infections, which is necessary for its further use.

Dosage of Chemicals (CH)

It is equipment required for the elimination of phosphorus, or for treating pH. It works according to the wastewater quantity measured by the control unit and it doses chemicals for coagulation of phosphorus according to the value of phosphorus concentration at the outlet and so the treatment plant cannot be overdosed with chemicals.

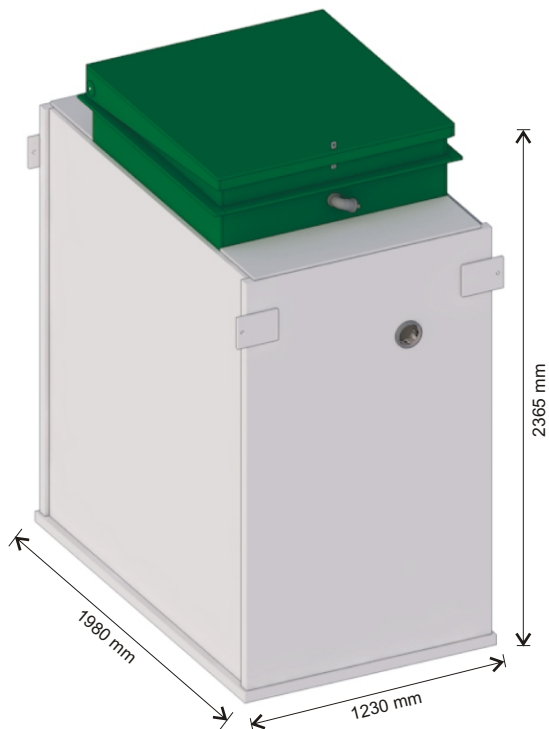
GSM Module (GSM)

The control unit contains a GSM module used for data transfer and remote administration of the TOPAS wastewater treatment plant.

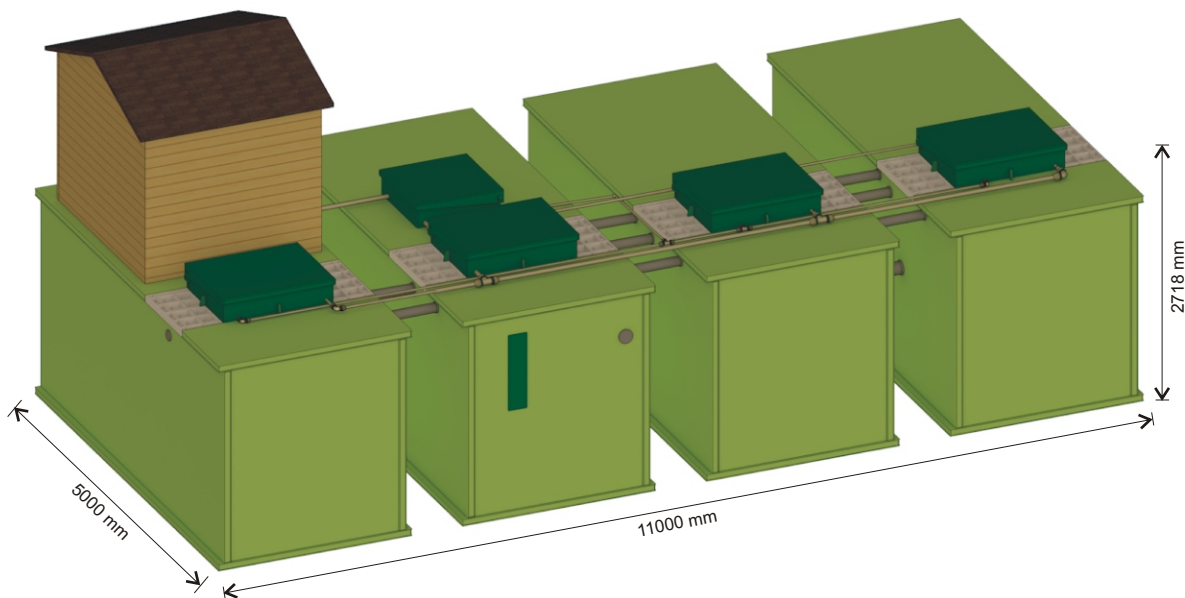
Communication takes place via SMS messages. The GSM module has the following basic functions:

- It provides error messages and information about the status and activity of the treatment plant;
- It provides transfer of all data, including error messages, up to 4 telephone numbers (such as the owner, service technician, dispatching centre etc.);
- It allows adjusting the set parameters of cleaning via SMS.

Easy Installation



TOPAS S 10 – 3D model of a single tank WWTP



TOPAS S 250 – 3D model of more tanks WWTP

All types of the wastewater treatment plant are fully self-contained and can be installed above and below the level of underground water and they can also stand freely on the terrain without being covered with soil. Treatment plants up to 8 PE can be installed on sand subbase when the bottom layer is stable. Treatment plants above 8 PE require blinding concrete.

The steel-plastic frame of the tanks of the treatment plant is protected by patent. The principle of the patent is that the statics of the frame is provided by profiled galvanized metal sheet. The plastic provides water tightness of the tank and it protects the galvanized metal sheet from corrosion. This results in stability and rigidity of the frame that cannot be created only from plastic material for a reasonable price.