EMO
ENVIRONMENT BY TECHNOLOGY

SEPTAGE TREATMENT PLANT

What do we mean by «septage» (or faecal sludge)

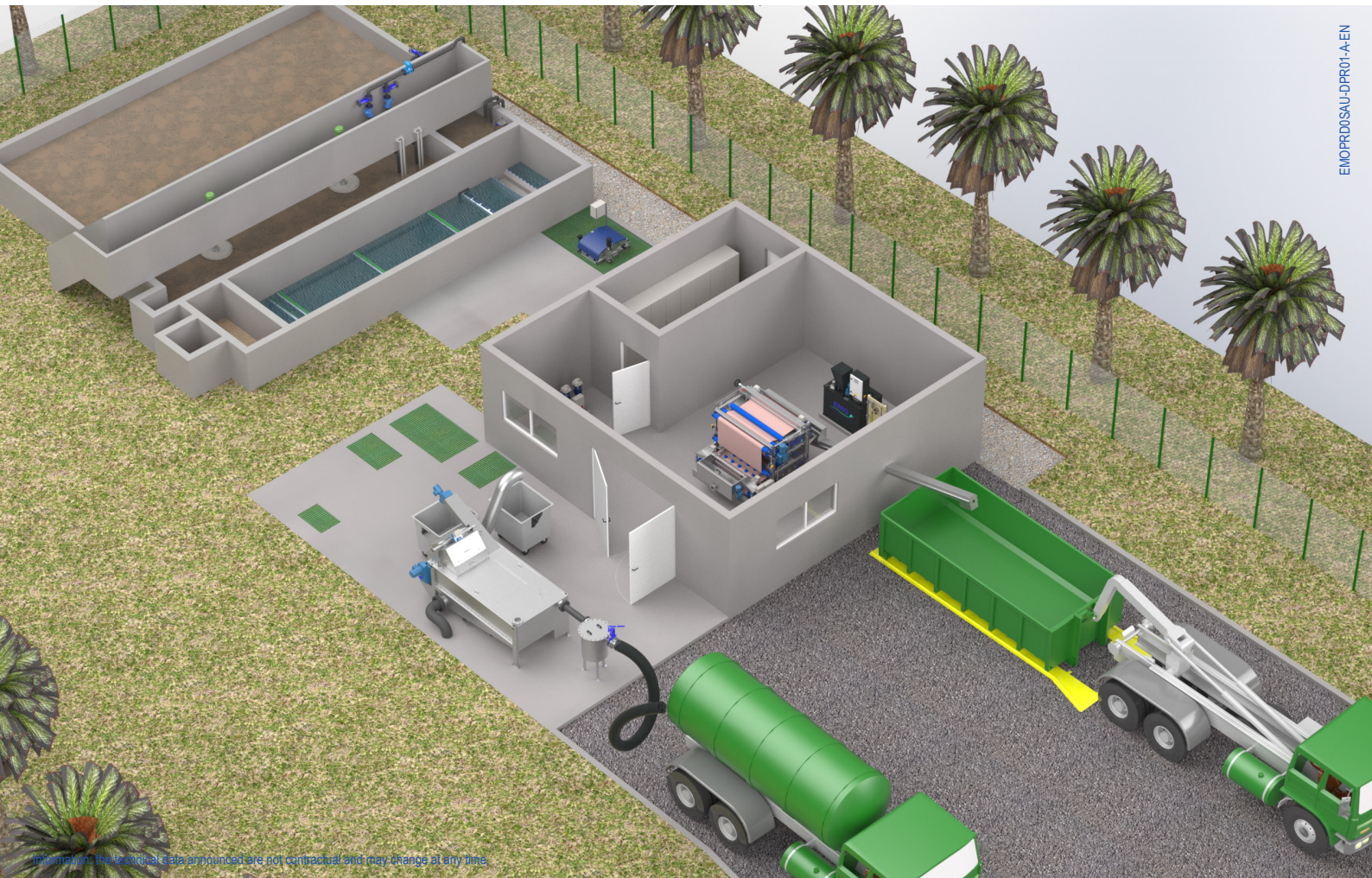
If the house or building is not connected to a town or city's sewer, the waste from drains (bathroom, kitchen…) and toilets goes into a septic tank. Therefore the septage refers to the partially treated waste material that accumulates in septic tanks over time. It consists of a combination of solid and liquid waste, including human excreta, organic matter, fats, oils, grease, and various microorganisms.

The septage should not be confused with sewage. Septage varies in composition depending on household usage, tank size, and time between pump-outs. It contains high levels of biochemical oxygen demand (BOD) and total suspended solids (TSS).

If improperly managed, septage can contaminate water sources and pose public health risks.
In the past, septage was sent to sewage treatment plants but it was affecting the biological process. Nowadays septage is periodically removed using vacuum trucks and sent to dedicated septage treatment facilities.

A typical septage treatment plant includes:

- Septage receiving station
- Septage sludge dewatering system
- Biological treatment for filtrate from dewatering
- Secondary clarification
- Tertiary treatment (depending on treated water quality requirement)
- Quaternary treatment (depending on treated water quality requirement)



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Information on the technical data announced are not contractual and may change at any time.

1 Septage receiving station Pretreatment

The vacuum trucks discharge the septage into free-standing or channel mounted septage acceptance units. Because of the variable and uncontrolled nature of the septage, a good pretreatment system is required to protect the mechanical components of the system and the plant functioning. The EMO's screens are specially designed to provide protection to lifting and pumping stations. Our large range can be adapted to fit any site.

- STONE and GRIT TRAP
- FINE SCREEN
- SCREENINGS WASTE CONVEYING
- SCREENINGS WASTE COMPACTING or WASHING/COMPACTING

For unconventional septage (containing big solids waste), EMO offer an alternative solution for acceptance unit with a heavy duty screening drum.



Septage accpetance bay

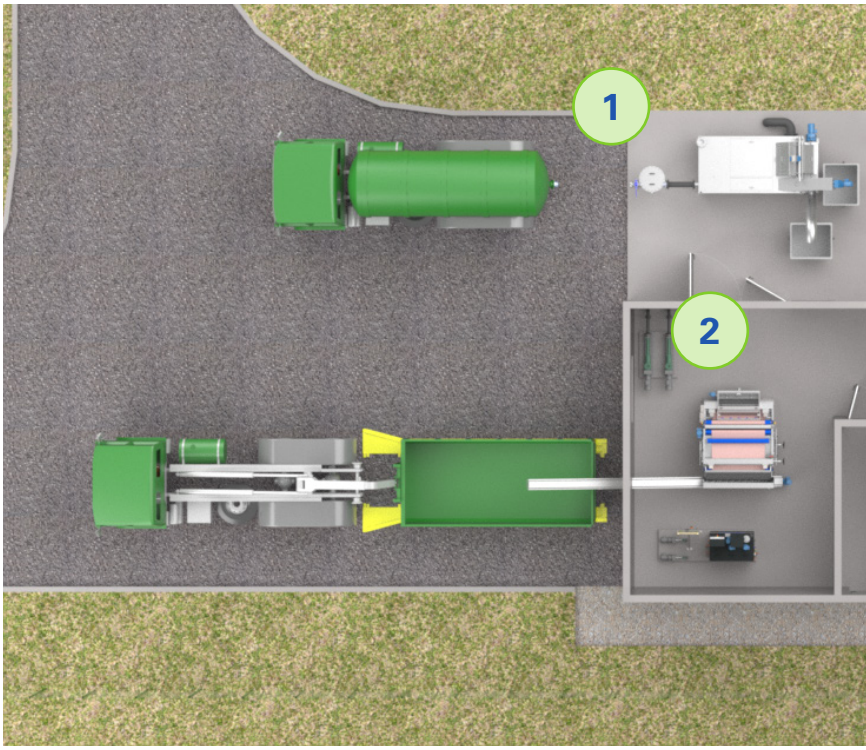


Septage accpetance unit

2 Septage sludge dewatering system

After screening and degritting, the septage is mechanically dewatered to separate most of the solids (sludge) from the liquid (filtrate).
The objective is to reduce the septage volume and therefore the volume of liquid that will be further biologically treated. The dewatered septage sludge will be evacuated to disposal site or further treatment. Many technologies are proposed by EMO for the sludge dewatering, the choice depending on several factors.

- BELT FILTER PRESS
- SCREW PRESS
- DECANTER CENTRIFUGE




Belt filter press

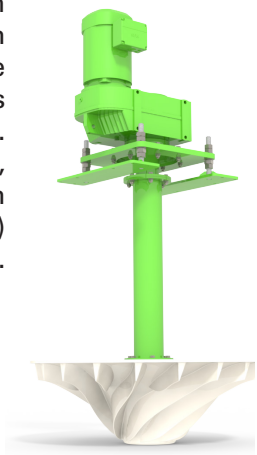


Sludge screw press

3 Biological treatment for filtrate from dewatering / Aeration

The biological treatment of filtrate from dewatering of septage is a critical step in ensuring that the concentrated liquid waste resulting from the dewatering process is properly treated before discharge or reuse. Filtrate is rich in organic matter, ammonia, phosphorus, and pathogens, and often has high chemical oxygen demand (COD) and biochemical oxygen demand (BOD). Different aerations systems are available:

- MECHANICAL SURFACE AERATION
- JET AERATION
- SUBMERGED TURBINE AERATION
- DIFFUSED AERATION SYSTEMS



4 Secondary clarification

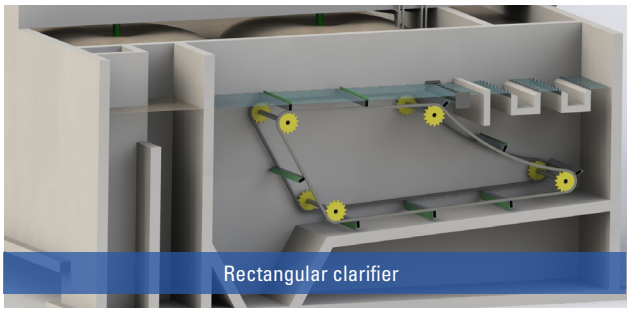
This clarifier tank is used to settle the sludge that was suspended in the aeration tank. The solids settle by gravity forming a sludge blanket at the bottom. Clarified effluent is discharged by overflow and sent to further treatment. The clarifier is equipped with a sludge collection mechanism at the bottom and a skimmer to collect floating matters at the surface.

The clarifier can be static or mechanized.

- CIRCULAR WITH SCRAPER BRIDGE
- RECTANGULAR WITH CHAIN AND
- FLIGHT SCRAPERS



Circular clarifier



Rectangular clarifier



5 Tertiary treatment
(depending on treated water quality requirment)

Tertiary treatment is an advanced filtration step designed to further improve the quality of treated water after secondary (biological treatment) step. This step eliminates residual pollutants not retained in the previous steps before its discharge into the natural environment or its reuse.

- DISC FILTER
- SAND FILTER



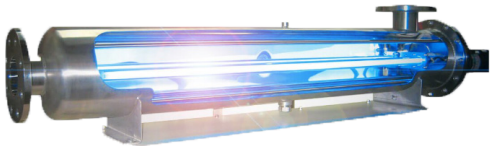
Disc filter



Sand filter



Membrane filtration



Oxidation by UV lights

6 Quaternary treatment
(depending on treated water quality requirment)

Quaternary treatment is designed to remove micro-pollutants that are not fully eliminated by previous stages (pharmaceuticals; pesticides; industrial chemicals; heavy metals; microplastics...). It is typically used in highly sensitive ecosystems or water reuse applications. Different technologies are available:

- ACTIVATED CARBON ABSORPTION
- MEMBRANE FILTRATION
- OXIDATION BY UV LIGHTS

REFERENCES

From 10 m³/day up to 3,000 m³/day.





















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