ANAEROBIC BILOGICAL FILTERS

Anaerobic biological filters are used in the treatment stage following waste water first anaerobic purification in the Imhoff tank and initial degreasing in the grease condensation chamber. The process hence includes the following steps:

- primary decantation in the Imhoff well and degreasing in the grease condensation tank;
- anaerobic bacterial treatment.

The volumes considered for sizing were calculated compliant with the standards set forth by Emilia Romagna Region ARPA (Regional Environmental Protection Agency) and with the plastic components yield ratio provided by the manufacturer of the plastic filter material.

Process description

PRIMARY DECANTATION

The Imhoff primary decantation tank is installed to treat rough foreign bodies, easily settleable substances and floating material.
It is designed to house two separate areas – upper for decantation and lower for organic substance anaerobic digestion – which produce a partially clarified effluent with around 30%-35% pollutant load reduction.

ANAEROBIC BACTERIAL FILTER

Due to gravity, the clarified water flows into the anaerobic digestion tank.
Such tank contains sewage-proof, chemically inert plastic fills unable to influence the purification process. The anoxic conditions that develop in the hollows of such elements promote the growth of anaerobic bacterial flora.

Running and maintenance

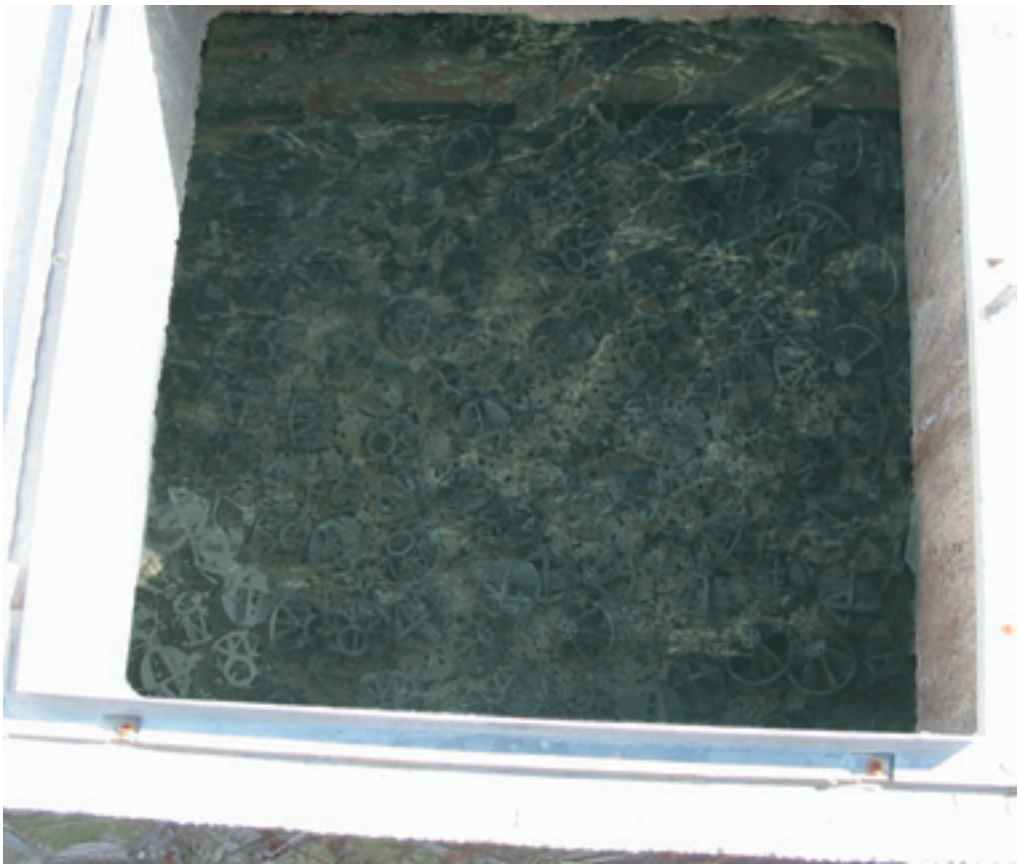
The system does not include electromechanical devices, hence maintenance is cut-down to settled sludge removal (once to twice a year).

Technical features

The system is made up of a single reinforced concrete chamber partly filled with plastic elements. The remaining space above such volume is reserved to water clarification, while the room below the same is where digested sludge settles and incoming waste water flows in. Water seeps through the fills bottom to top.

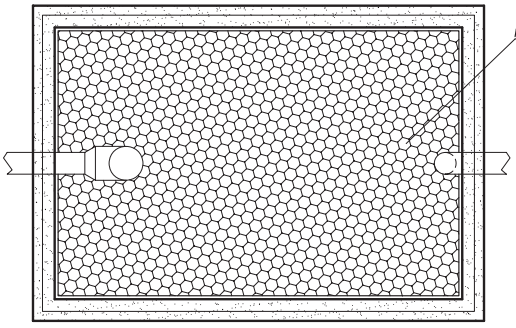
Plastic fills

The plastic fills used in this system are spherical, with around 9 cm diameter and usable area corresponding to 135 sq m/cu m, with 96% clear volume, against the 50-100 sq m /cu m surface and 40% hollow found in stone.
The high hollow ratio guarantees better waste water recirculation and lowers the risk the bottom of the tank is clogged due to excessive film growth. In addition, the special shape and plastic composition of the material ensure adequate waste water retention time.



ANAEROBIC SYSTEM

PLANT



SECTION