SBR - WASTE WATER TREATMENT PLANT

General Information

The GRB-SBR waste water treatment plants are used for the treatment of the waste waters coming from the unitary or separate sewerage networks, as well as for the treatment of the industrial waste waters or for the waste waters that can be biologically treated.

These waste water treatment plants are used for capacities ranging between 500 - 10000 equivalent persons (PE), and are based on SBR technology. Therefore they can be easily adapted to the specificity and to the waste water quantity of each application.

The GRB-SBR waste water treatment plants ensure a high quality treated water (CBO_5 being under 10 mg/l), as well as nitrification, denitrification and partial removal of the phosphorus.

A complete GRB-SBR waste water treatment plant is made up of a pre-treatment equipment, of an equalizing tank (MAB), of a SBR reactor and of a sludge aeration tank (SSB). In case of single unit solutions, the tanks have a rectangular shape and are made up of a unitary structure that can be partially or completely covered.
These require a small above-ground construction (technical room/container) as a technological room for equipments and as an operation room.

The equipping with a control unit for all the treatment processes, connected through a mobile line (GSM) or a land line enables the controlling of the plant by means of a PLC that can be programmed from a central control room.

Advantages

•can adapt its operation automatically, within a wide range of a 10 and 200 % from the nominal capacity;
•high quality treated water. If the reactor has enough volume, the CBO_5 is of approx. 5 mg/l;
•due to its high adaptability, the waste water treatment plant can be commissioned before the sewerage network, too. In this case it will treat the waste water transported with the dump car ;
•can be used for the treatment of the industrial waste water that can be biologically treated;
•low maintenance and operation costs. The entire operation is fully automatized and does not require skilled personnel. In case of remote operation, the daily control of the equipment is not necessary.



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Description

The waste water enters a raw pre-treatment unit, in which the solids are retains by means of a fine mechanical screen.
The extracted raw matter is transported by means of the helical conveyer to the waste container.
The mechanically treated water is pumped to the equalizing tank (MAB), which acts as a first activation manhole. Besides, the equalizing tank also operates as storage tank for the solids in excess from the activation.
From the equalizing tank, the pre-treated water is pumped to the SBR reactor (Sequencing Batch Reactor). Here, there takes place the biological decomposition of the waste water into one reactor which operates cyclically, with different consecutive phases.

The operation phases are the following:

1. filling in
2. filling in and mixing
3. aeration
4. settling/decanting
5. discharge

The supply with oxygen of the reactor takes place by means of an aeration network provided with membrane aeration plates, fixed on a network of pipes, with the oxygen supplied by the blowers with rotative piston.
The mixing of the waste water and of the activated sludge is done with impulse aeration.
The biologically treated water, after the decanting phase, is discharged from the SBR into a final chamber, where it is disinfected with liquid chlorine, dosed by an automatic pump. From here, the waste water is discharged into the emissary.
The optimum level of active sludge in the reactor is automatically maintained with the help of a sludge pump. After each cycle, a volume of treated water with solids is pumped to the sludge storage tank (SSB). In this tank, the sludge is thickened up to a concentration of 3-5% of dry substance.
The turbid water in the sludge tank, which concentrates at the surface during the static settling, is recirculated in the equalizing tank (MAB) and is reintroduced in the treatment process. The sludge storage tank is sized for a storing period of max. 30 days, with a contents of water of 95%.

