SEWAGE TREATMENT PLANT BASED ON SBR TECHNOLOGY

PROCESS DESCRIPTION

Description of Process Offered:

The Plant is based on Sequential Batch Reactor Technology popularly known as SBR Technology. Unlike various processes of treatments the raw sewage as obtained for the treatment undergoes Physio-Chemical & Biological Treatments. The first part of Physio-Chemical treatment is the Primary Treatment to the raw sewage, which covers the physical activities like screening, de-gritting, flow measurement, flow distribution etc. The plant is designed in accordance with the characteristics of influent and effluent as provided and according to the guidelines set up by the 'CPHEEO Manual', published by the Govt. of India. The detailed description of individual units & their functions are given below.

Raw Sewage Pumping Station:

As per the requirement of the plant, the Raw Sewage Pumping Station is designed to handle average, peak and lean flows. The Coarse Screen Chamber is provided ahead of sump. Screens will be provided in the Coarse Screen Chamber to screen the raw influent. Necessary hand operated sluice gate shall be provided to isolate the screen when it is under maintenance. The Screened sewage is then allowed to flow to the Raw Sewage Collection Sump. The detention time stipulated as per the tender is adopted for the hydraulic design of wet well. The necessary pumps will be provided to pump the screened raw sewage for further treatment.

The common rising main is provided to carry the sewage from raw sewage sump to Primary units.

Primary Units:

The first unit of Primary treatment is the Inlet Chamber, in which the discharge from Common rising main through Raw Sewage Pumps is received. The inlet chamber is mainly used to control the velocity of raw influent and also for its smooth distribution of flow to the fine screen channel. The fine screen channel will be equipped with manual screen & mechanical screen as required designed for peak flow velocity. Necessary hand operated sluice gate shall be provided at upstream of the chamber to isolate the screen when it is under maintenance. The screenings is conveyed to the disposal through a belt conveyor and further it is to be disposed off by suitable arrangement.

The screened influent then flows to the Grit chambers where the heavy inorganic matter is separated. The Grit free waste thus obtained will flow to SBR basin. At this stage physical treatment of raw influent known as Primary Treatment completes.

SBR Process:

SBR is a **SEQUENTIAL BATCH REACTOR** process. It provides highest treatment efficiency possible in a single step biological process.

SBR – System is operated in a batch reactor mode which eliminates all the inefficiencies of the continuous processes. A batch reactor is a perfect reactor, which ensures 100% treatment. Two modules are provided to ensure continuous treatment. The complete process takes place in a single reactor, within which all biological treatment steps take place sequentially.

NO additional settling unit / secondary clarifier is required!

The complete biological operation is divided into cycles. Each cycle is of 3 – 5 hrs duration, during which all treatment steps take place.

Explanation of cyclic operation:

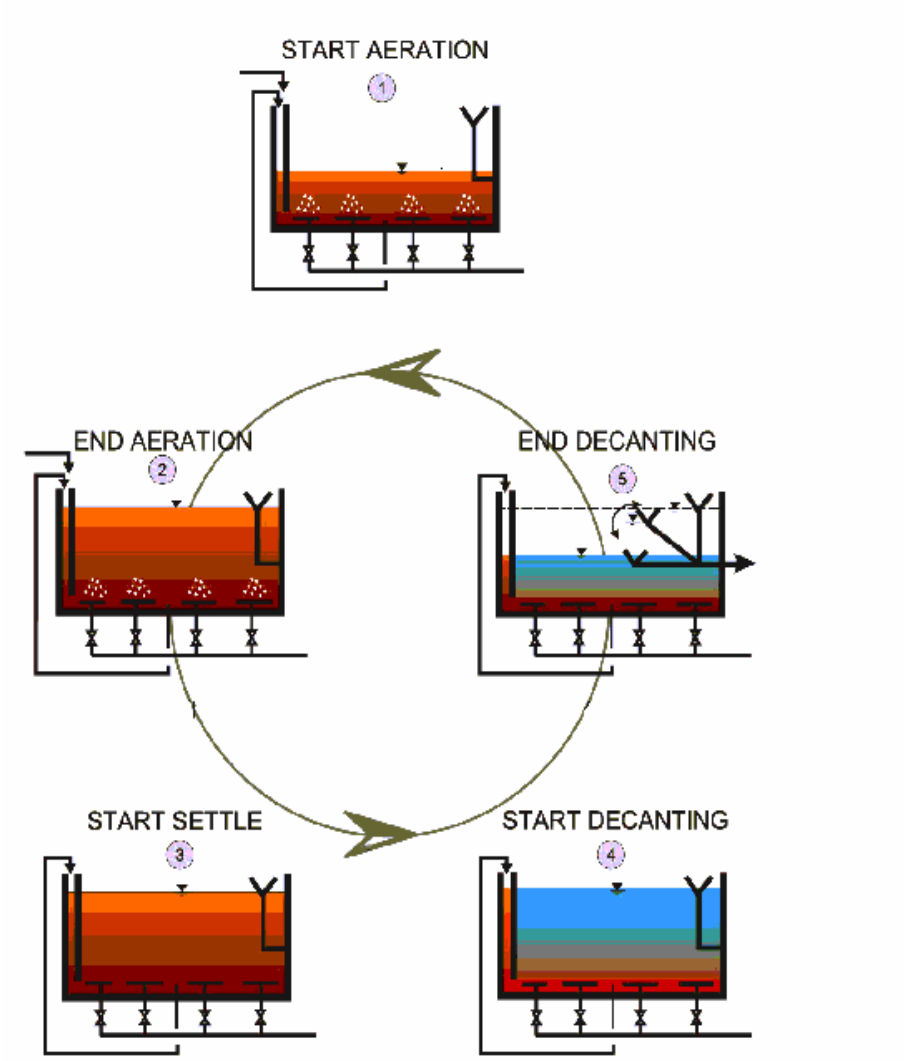
A basic cycle comprises:

- Fill-Aeration (F/A)
- Settlement (S)
- Decanting (D)

A Typical Cycle

During the period of a cycle, the liquid is filled in the SBR Basin up to a set operating water level. Aeration Blowers are started for aeration of the effluent. After the aeration cycle, the biomass settles under perfect settling conditions. Once Settled the supernatant is removed from the top using a DECANTER. Solids are wasted from the tanks during the decanting phase.

These phases in a sequence constitute a cycle, which is then repeated.



Chlorine Contact Tank:

The Effluent from the SBR basins will be collected in Chlorine Contact Tank .The supernatant thus collected will get disinfected in Chlorine Contact Tank by adding suitable dose of chlorine and finally it is discharged in to nearby nallah.

Sludge Handling System:

The sludge as collected from SBR basins is collected into sludge sump and conveyed to centrifuge unit for dewatering the same. The necessary centrifuge feed pumps & Centrifuges will be provided. There will be an arrangement of dosing polyelectrolyte if necessary.