



SEQUENCING BATCH REACTORS

A Sequencing Batch Reactor (SBR) is a relatively low technology aeration method comprising a system of one or more tanks, typically GRP, glass lined metal or concrete in construction, inside of which are contained pumping and aeration equipment. Each tank is sized to give a balance between oxygen transfer, energy and heat conversion and maintenance requirements. The process consists of several defined stages: tank filling; aeration, settlement; discharge, sludge withdrawal; standby. The SBR has been proven through many applications to be a reliable, economic and long-term solution for the treatment of leachate derived from municipal solid waste.



KEY FEATURES

SIMPLE, RELIABLE LOW MAINTENANCE PROCESS

SCOPE FOR THERMAL INSULATION TO PERMIT ALL WEATHER OPERATION IN COLD CLIMATES

LOW OPERATIONAL COST

ABILITY TO WITHSTAND SHOCK LOADS

ABILITY TO DEAL WITH HEAVY METALS AND OTHER TOXIC COMPONENTS

THE PROCESS

The process is designed to utilise the nitrifying abilities of naturally occurring bacteria, cultured within the SBR, to reduce ammonia content and biological oxygen demand within leachate.

The process is automatically controlled by a number of programmable logic controllers (PLC's) and timers. Leachate is delivered in batch from the site to whichever bio-reactor is programmed to receive it (where more than one vessel has been installed).

With the commencement of the fill, a series of process phases is started including the biological conversion of organic pollutants, nitrification, denitrification (where a sufficiently long anoxic duration is allowed) and biological phosphate uptake. The delivery of air to the reactors and the mixing of the liquid support these processes.

When the desired treatment result is achieved mixing and air injection is ceased. The activated sludge settles and the supernatant, now clear of solids is withdrawn. The reactor is now ready to receive a new batch of leachate for processing and the residual sludge provides an inoculant of bacteria.

THE COST

The cost of SBR is dependent upon two things in particular; volume and quality of leachate. Relative to the capital costs of other treatment options, SBRs can offer significant savings.

ITS APPLICATION

The Sequencing Batch Reactor (SBR) is a relatively simple process particularly suited to landfill applications. It is especially effective in removing ammonia to very low levels. The SBR will receive less supervision and operate than other, more complex treatment systems.

ORGANICS

We have been working with leachate treatment systems since the late 1980s. Additional leachate treatment technologies covered include:

- *Anoxic reactors*
- *Reverse osmosis plant*
- *Ammonia stripping plant*
- *Anaerobic treatment systems*

Please contact us should you require additional information.



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