Since 1950

NAPIER-REID

Water and Wastewater Treatment Solutions

BIO-BATCH™ SBR SYSTEMS

High-Performance SBR Technology for Municipal and Industrial Wastewater Treatment

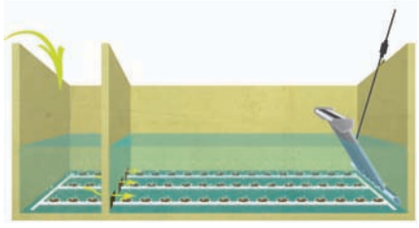
CERTIFIED ISO 9001:2008 COMPANY

www.napier-reid.com

BIO-BATCH™ SEQUENCING BATCH REACTORS

BIO-BATCH™ SBR is a process developed by Napier-Reid in which continuous inflow and treatment is accomodated through alternating react, settle and decant sequences in SBR trains. Each train, through a typically operating cycle of three to five hours, provides all of the processes of activated sludge treatment in one basin.

BIO-BATCH™ Operation Cycle

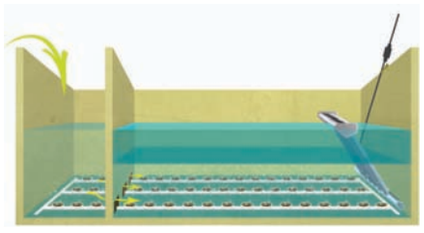


REACT

Raw wastewater is introduced into reactor and mixed with biomass for bio-reaction.

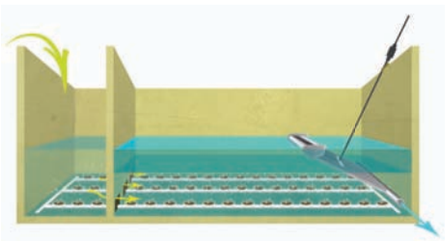
AIR-ON: Oxygen is introduced by aeration to satisfy oxygen demand for BOD removal and Nitrification.

AIR-OFF: Aeration stops and mixers are turned on to provide anoxic conditions for denitrification.



SETTLE

Aeration system and mixers are shut off while influent continues entering the reactor. A tranquil condition is created in the main aeration zone for efficient sludge settling.

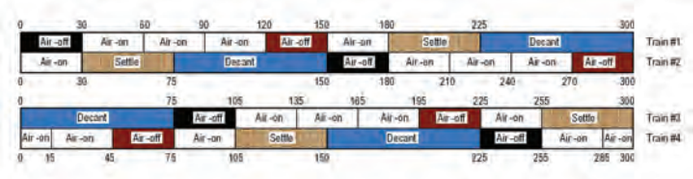


DECANT

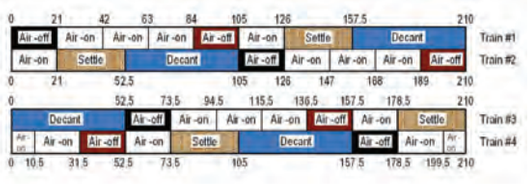
The clear, treated water is decanted as final effluent. A swing or telescopic type decanter is used to remove the clarified supernatant from the tank.

Typical operating sequences of a four-train system during Normal and Peak cycles

5 Hour Normal Cycle



3.5 Hour Peak Cycle



Package BIO-BATCH™ SBR for Kinross Gold

Mauritania

Design flow: 1,200 m^3 per day

ADVANTAGES OF BIO-BATCH™ SBR

Enhanced Treatment Performance

-Superior sludge settling performance due to bio-selector and aerobic/anoxic/anaerobic cyclic sequences
-Supress filamentous bacteria thus lower potential for sludge bulking
-Enhanced nutrient removal (denitrification and bio-P) without chemicals or separate tanks
-Built-in equalization capacity preventing performance deterioration during surge conditions

Smaller Footprint and Lower Construction Cost

-Equalization, biological treatment and clarification achieved in one tank
- No external return sludge pumping system
-Rectangular tanks with common-wal design
-Simple process, fast construction and installation

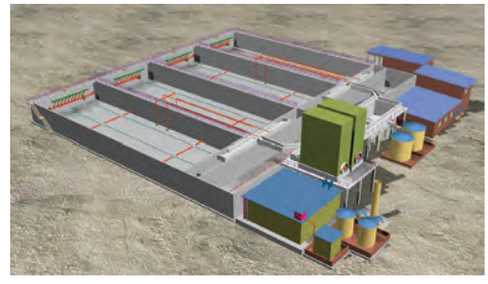
Flexibility

- Duration of cycle or sequences can be adjusted to accomodate variation in hydraulic flow or biological loading, e.g. shorter cycle for peak flow conditions or shorter aeration time for lower loading
-Easy expansion with single rectangular tank design
-Automatic control system provides easy and flexible adjustment to operational parameters

Low Operation and Maintenance Cost

-Better aeration control, denitrification, lower power consumption
-Less and simpler equipment thus reduced maintenance
-Automatic control adapting to changing conditions with less operator attention
-Biological N and P removal without need for chemicals

BIO-BATCH™ SBR, Philippines
Design Flow: 10,400 m³ per day



Napier-Reid meets clients' needs
with custom-designed systems

The World's Largest Two-basin SBR

Mafraq Wastewater Treatment Plant, Abu Dhabi

In 2008, ADSSC, the sewage and sanitary authority in Abu Dhabi, decided to convert two of the existing concrete emergency storage tanks at Mafraq WTP into sequencing batch reactors, increasing the secondary treatment capacity of the plant by 50,000 m³ per day. Napier-Reid's BIO-BATCH™ SBR was selected to meet the stringent effluent discharge limits. As part of the design, the equipment included four duplex decanters with a total weir length of 36 meters. Each SBR basin is 30 m wide by 109 m long, which makes the Mafraq SBR plant the world's largest two-basin SBR in terms of treatment capacity and tank size.

Since 1950

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