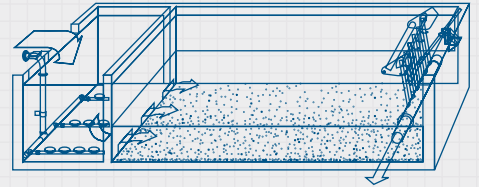


ICEAS[®]

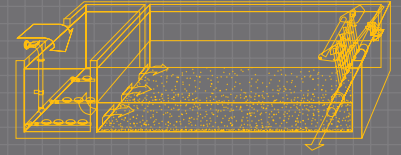
Advanced SBR Technology



Sanitaire



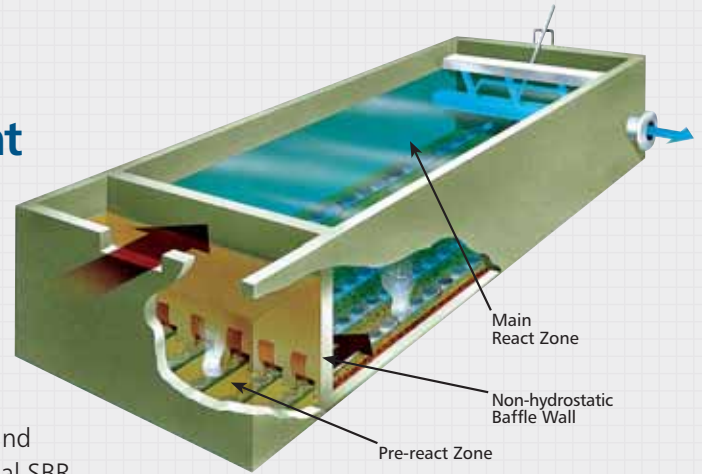
ITT Industries
Engineered for life



Cost-Effective Wastewater Treatment

Sanitaire has provided the wastewater treatment industry with innovative and cost-effective treatment technologies for over 35 years. This tradition continues with the ABJ Intermittent Cycle Extended Aeration (ICEAS) process, which is an advanced sequencing batch reactor (SBR) technology for municipal and industrial wastewater treatment.

The conventional SBR, a variant of the activated sludge process, operates on the fill and draw principle. Fill, react, settle, decant and idle phases occur sequentially on a cyclic basis. In the conventional SBR configuration, flow is diverted from the basin during settling and decanting and requires two or more basins or an influent equalization tank to receive flow when settling and decanting. Sanitaire can provide a conventional SBR but recommends the superior flexibility of the ICEAS design, which does not require any flow diversion.



The ICEAS Process

The advanced ABJ ICEAS process is a fully automated and simple to operate biological treatment system that:

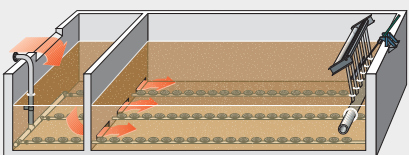
- Operates as a time-based control system allowing continuous inflow of wastewater during all phases of the cycle.
- Responds to flow and load variations.
- Can achieve processes of biological oxidation, nitrification, denitrification, phosphorus removal and liquid/solids separation continuously in a single basin.
- Easily expands and produces a high quality effluent.
- Provides two treatment zones (pre-react and main-react) separated by a non-hydrostatic baffle wall.
- Utilizes the pre-react zone as a biological selector for enhancing the growth of desirable organisms.
- Offers flexibility for meeting specific application needs with custom engineered process cycles.

The ICEAS Cycle

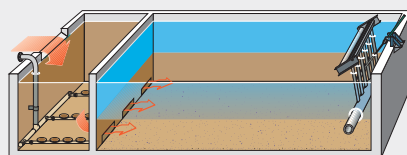
React – Periods of aeration and/or mixing are applied to achieve the desired biological treatment.

Settle – Aeration and/or mixing are discontinued allowing solids to settle to the bottom of the basin leaving a layer of clear, treated water at the top.

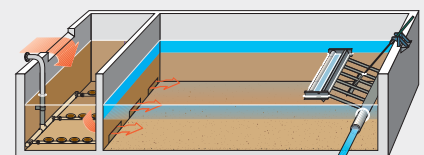
Decant – The clear, treated water is removed by an automated, time-controlled decant mechanism.



React



Settle



Decant

ICEAS Features

Continuous Inflow

- Provides equal loading and flow to all basins, simplifying operation and process control.
- Can be designed to accommodate up to six times average daily flow.
- Results in smaller basin size and less equipment, reducing construction and O&M costs.
- Eliminates primary and secondary clarifiers and return sludge pumps.
- Enables single-basin operation for maintenance and low flow conditions.

Decanter Design

- High quality workmanship and advanced engineering provide a long-lasting decanter.
- Rugged, corrosion resistant stainless steel construction.
- Decants from the top down withdrawing only the uppermost clear water from the basin preventing disruption of the settling solids.
- Uses a proprietary scum exclusion float to prevent the carryover of floating material with the treated effluent.
- Flow over the decanter weir is visible from the basin walkway providing a check of effluent quality.
- Actuator operates via a VFD providing a constant rate of effluent discharge to downstream facilities.
- Parked above top water level during react and settling phases serving as an emergency overflow device in the event of extreme storm conditions or power failure.
- Actuator drive mounted outside of basin at walkway level for easy maintenance.

Energy Efficient Aeration Systems

- State-of-the-art aeration systems have been applied worldwide in activated sludge and biological nutrient removal applications. SANITAIRE diffusers provide high oxygen transfer efficiency, require minimal maintenance and are time proven for their durability in wastewater treatment processes..
- Fine Bubble Membrane aeration systems include advanced membrane material specifically engineered for domestic and industrial applications providing resistance to material property changes. The time-proven piping system accommodates thermal expansion and contraction and prevents air leakage, pipe separation and distributor rollover.
- Coarse Bubble aeration systems provide efficient wide band aeration and mixing with minimal maintenance. Stainless steel material provides corrosion resistance and structural integrity and is fully passivated after fabrication. (Available in fixed header and removable header options).

Municipal and Industrial Wastewater Treatment

The ABJ ICEAS process provides high quality effluent for both municipal and industrial wastewater treatment facilities. Typical industrial applications include waste from meat processing, beverage, pharmaceutical, food processing, pulp and paper and chemical plants.



Typical ABJ ICEAS process



ICEAS effluent sample



Stainless steel decanter

Biological Nutrient Removal (BNR)

The ABJ ICEAS process can be designed as a BNR system for enhanced nitrogen and phosphorus removal.

- Cycles can incorporate alternating periods of "air on" and "air off" during the react phase to produce aerobic/anoxic/anaerobic conditions to promote nitrification/denitrification and phosphorus release and uptake.
- Mixers can be added for operation during periods of "air off" to achieve optimum substrate/microorganism contact.
- New and existing plants can be designed to accommodate future BNR requirements without requiring additional basins.
- Separate aeration drop legs in the pre-react zone can add operational flexibility.



Mixer



Industrial wastewater treatment plant in circular tanks



Control System

- Process control with a PLC based system with a graphic operator interface (HMI).
- Uses state-of-the-art Supervisory Control and Data Acquisition (SCADA) software installed on a PC with modem and remote monitoring capabilities.

World Leader in SBR Technology

ABJ ICEAS facilities have been installed throughout the world over the past three decades. With all installations, Sanitaire provides complete in-house support through its process, mechanical and control engineering departments. Customer assistance is available through in-house staff and representatives who market our products worldwide.

Contact Sanitaire for more information

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Sanitaire



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