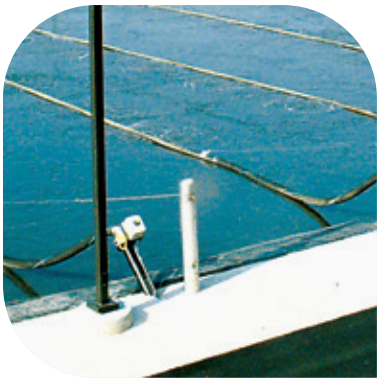
Parkson™
Treating Water Right



biolac®

Extended Aeration Treatment System

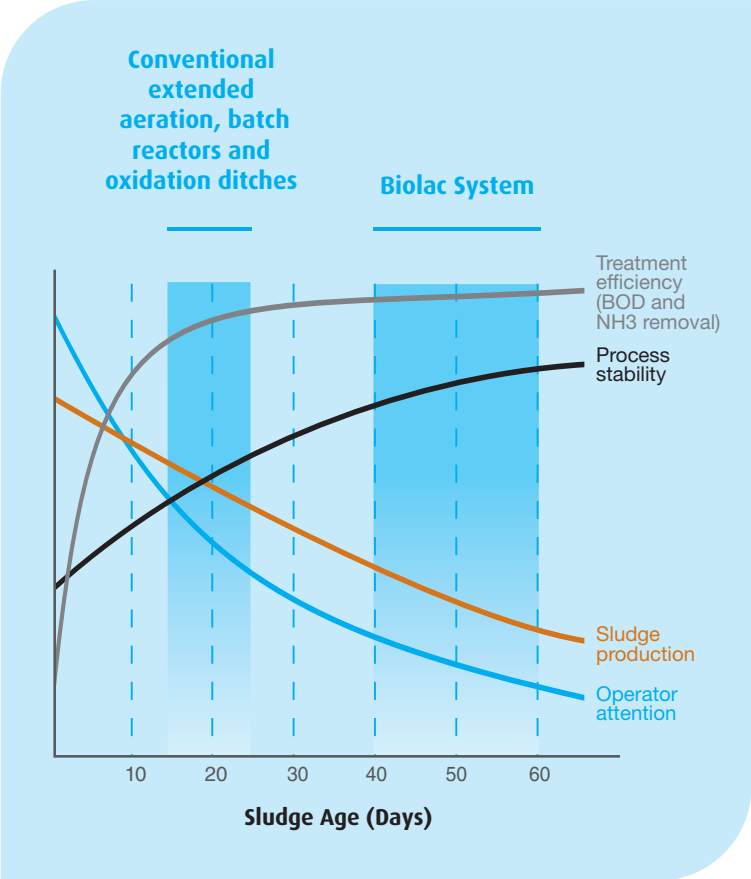
- Low-loaded activated sludge technology
- High oxygen transfer efficiency delivery system
- Exceptional mixing energy from controlled aeration chain movement
- Simple system construction
- Low biosolids production

Extended sludge age biological technology

The Biolac® system is an innovative activated sludge process using extended retention of biological solids to create an extremely stable, easily operated system.

The capabilities of this unique technology far exceed ordinary extended aeration treatment. The Biolac® process maximizes the stability of the operating environment and provides high-efficiency treatment. The design ensures the lowest-cost construction and guarantees operational simplicity. Over 800 Biolac® systems are installed throughout North America treating municipal wastewater and many types of industrial wastewater.

The Biolac® system utilizes a long sludge age design. Sludge age, also known as SRT (Solids Retention Time) or MCRT (Mean Cell Residence Time), defines the operating characteristics of any aerobic biological treatment system. A longer sludge age dramatically lowers effluent BOD and ammonia levels, especially in colder climates. The Biolac® long sludge age process produces BOD levels of less than 10 mg/L and complete nitrification (less than 1 mg/L ammonia).Minor modifications to the system will extend its capabilities to denitrification and biological phosphorus removal.



While most extended aeration systems reach their maximum mixing capability at sludge ages of approximately 15-25 days, the Biolac® system efficiently and uniformly mixes the aeration volumes associated with a 30-70 day sludge age.

The large quantity of biomass treats widely fluctuating loads with very few operational changes. Extreme sludge stability allows sludge wasting to non-aerated sludge ponds or basins and long storage times.



Aeration Components

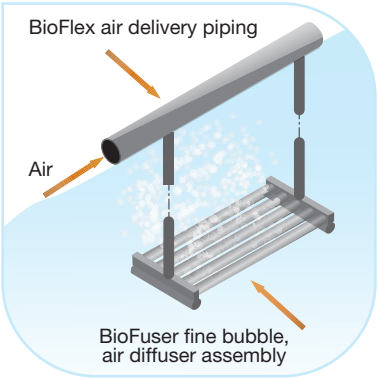
Simple Process Control and Operation

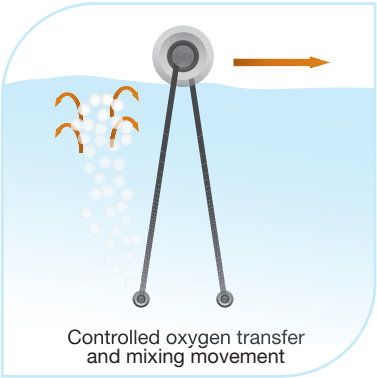
Parkson provides a very easy to use system to control both the process and aeration. Additional controls required for denitrification, phosphorus removal, dissolved oxygen control and SCADA communications are also easily implemented.

Aeration System Components

The ability to mix large basin volumes using minimal energy is a critical function of the unique BioFlex® moving aeration chains and the attached BioFuser® fine bubble diffuser assemblies. The gentle, controlled, back and forth motion of the chains and diffusers distributes the oxygen transfer and mixing energy evenly throughout the basin area. No additional airflow is required to maintain mixing.

Stationary fine-bubble aeration systems require 8-10 CFM of air per 1000 cu. ft. of aeration basin volume. The Biolac® system maintains the required mixing of the activated sludge and suspension of the solids at only 4 CFM per 1000 cu.ft. of aeration basin volume. Mixing of a Biolac® basin typically requires 35-50 percent of the energy of the design oxygen requirement. Therefore, air delivery to the basin can be reduced during periods of low loading while maintaining effective food to biomass contact and without the risk of solids settling out of the wastewater.





System Construction

A major advantage of the Biolac® system is its low installed cost. Most systems require costly in-ground concrete basins for the activated sludge portion of the process. Biolac® systems can be installed in earthen basins, either lined or unlined. The BioFuser® fine bubble diffusers require no mounting to basin floors or associated anchors and leveling. The diffusers are suspended from the BioFlex® floating aeration chains; The only concrete structural work required is for the simple internal clarifier(s) and blower/control buildings.

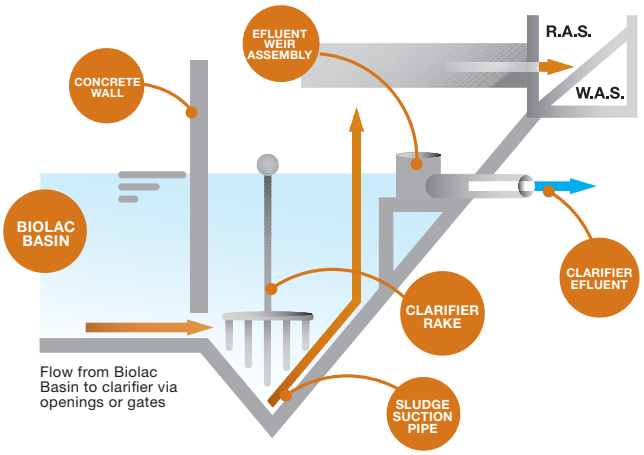
Biological Nutrient Removal

Simple control of the air distribution to the BioFlex® chains creates moving waves of oxic and anoxic zones within the basin. This repeated cycling of environments nitrifies and denitrifies the wastewater without recycle pumping of mixed liquor or additional external basins. This mode of Biolac® operation is known as the Wave Oxidation process. No additional in-basin equipment is required and simple timer-operated actuator valves regulate manipulation of the air distribution.

Biological phosphorus removal can also be accomplished by incorporating an anaerobic zone.

Integral Clarifier

Land space and hydraulic efficiencies are maximized using the integral clarifier. The clarifier design incorporates a common wall between the clarifier and aeration basin. The inlet ports in the bottom of the wall create negligible hydraulic headloss and promote efficient solids removal by filtering the flow through the upper layer of the sludge blanket. Parkson offers multiple configurations of integral clarifiers. One of the most common integral clarifier configuration is the hopper-style bottom clarifier. The hopper-style bottom simplifies sludge concentration and removal, and minimizes clarifier HRT. The sludge return airlift pump provides important flexibility in RAS flows with no moving parts. All maintenance is performed from the surface without dewatering the clarifier.



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