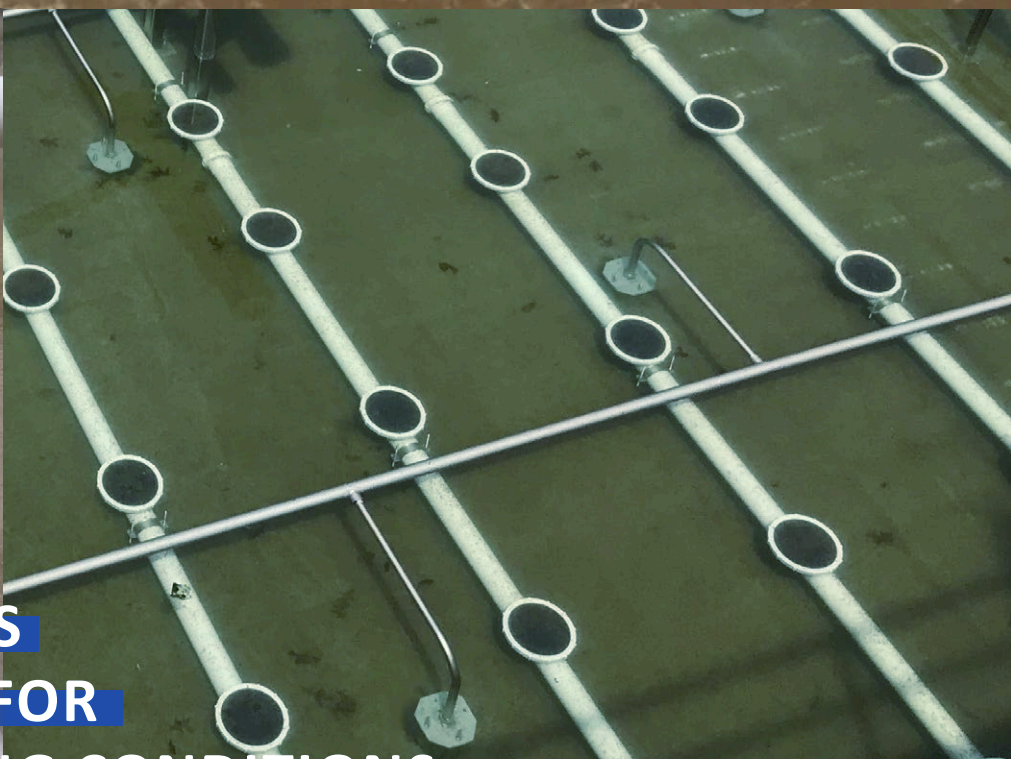


PROCESS CONTROL · ENERGY SAVINGS

# FlexZone Adaptive Process Volume System



**FLEXIBLE PROCESS  
ENVIRONMENTS FOR  
VARIABLE LOADING CONDITIONS**

CONTACT [SALES@ENVIRO-MIX.COM](mailto:SALES@ENVIRO-MIX.COM) TO  
DISCUSS HOW YOU CAN OPTIMIZE YOUR  
ACTIVATED SLUDGE PROCESS WITH FLEXZONE.

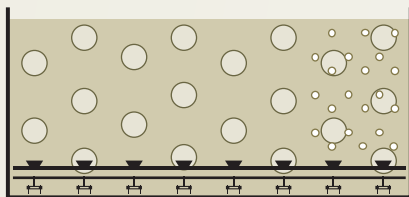
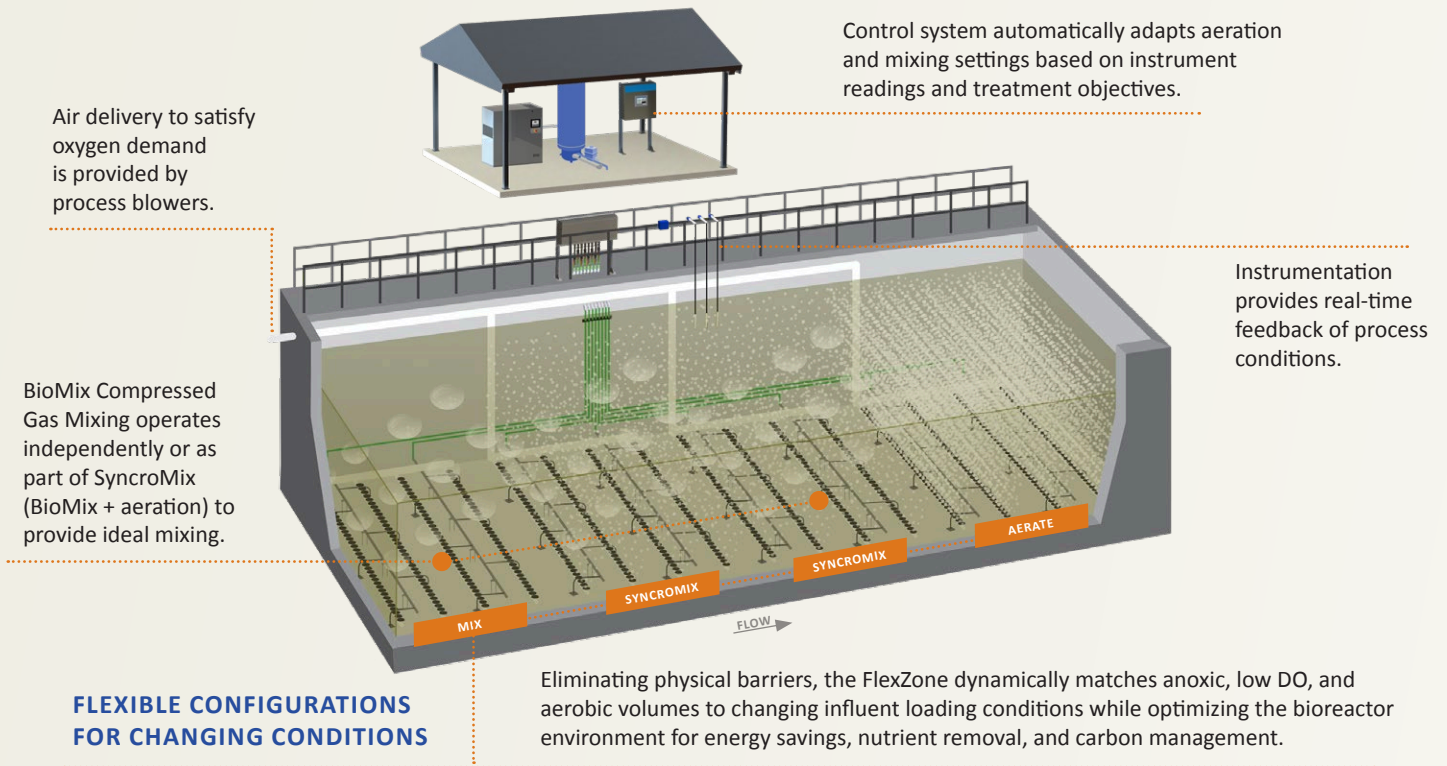


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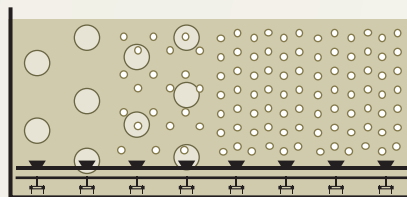
701 East Bay Street, Suite 502, Charleston, SC 29403  
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Most activated sludge treatment facilities are designed for a future waste load allocation and treatment objectives. Furthermore, treatment facilities are designed for maximum daily and monthly loadings to ensure permitted effluent quality compliance. This results in facilities that are conservatively designed, lack operational flexibility, and operate inefficiently, both from the perspective of process control and energy consumption.

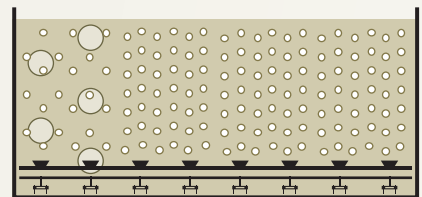
**THE FLEXZONE™ ADAPTIVE PROCESS VOLUME SYSTEM** is a flexible activated sludge treatment solution that is designed to address diurnal and seasonal loading conditions while accommodating current and future water quality requirements with an emphasis on optimizing energy efficiency and process control.



LOW LOADING



MODERATE LOADING



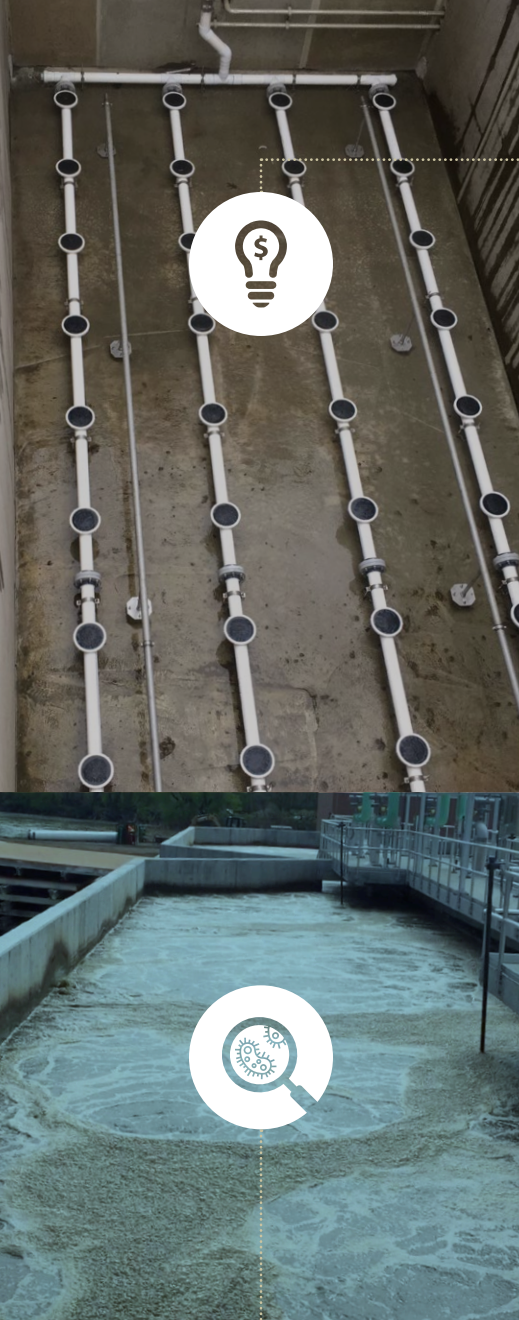
PEAK LOADING

## STRAIGHTFORWARD OPERATION

The FlexZone provides dynamic process volume control, eliminating the need for fixed process volumes segregated by baffle walls. Using instrumentation, control algorithms, and automation, the **FlexZone adjusts aeration and mixing settings to create a bioreactor environment that is either anoxic, low dissolved oxygen (DO), or aerobic.** Maintenance of FlexZone equipment is minimal. Equipment outside of the tank is easy to access, and maintenance of in-tank equipment is limited.





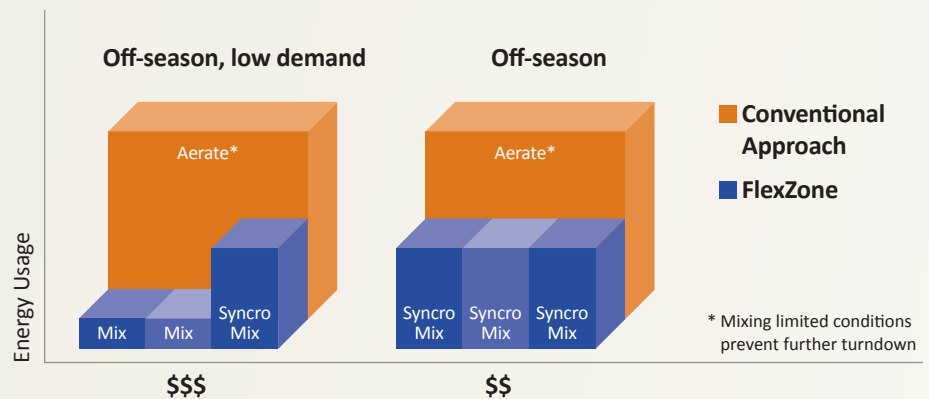


## ENERGY EFFICIENCY

Effective operation matches aeration delivery to oxygen demands. However, due to inherent aeration equipment limitations, turndown is unachievable. **The best way to save energy is to eliminate unnecessary aeration**, but this is not possible in most applications because the aeration equipment is used to mix the tank, not just deliver oxygen for the process.

**The FlexZone eliminates unnecessary aeration** by integrating a BioMix Compressed Gas Mixing System with diffused aeration equipment to allow for aeration, mixing, or SyncroMix. **SyncroMix — which is concurrent operation of BioMix and diffused aeration — provides the ideal blend of oxygen delivery and mixing without over-aeration and wasted energy.**

The example below compares the operation of a treatment plant in a resort town using a fixed conventional aeration approach with limited turndown versus the FlexZone. The FlexZone automatically transitions the aerated volume to mix and/or SyncroMix to meet the oxygen demand, providing unmatched turndown and energy savings.



## PROCESS OPTIMIZATION

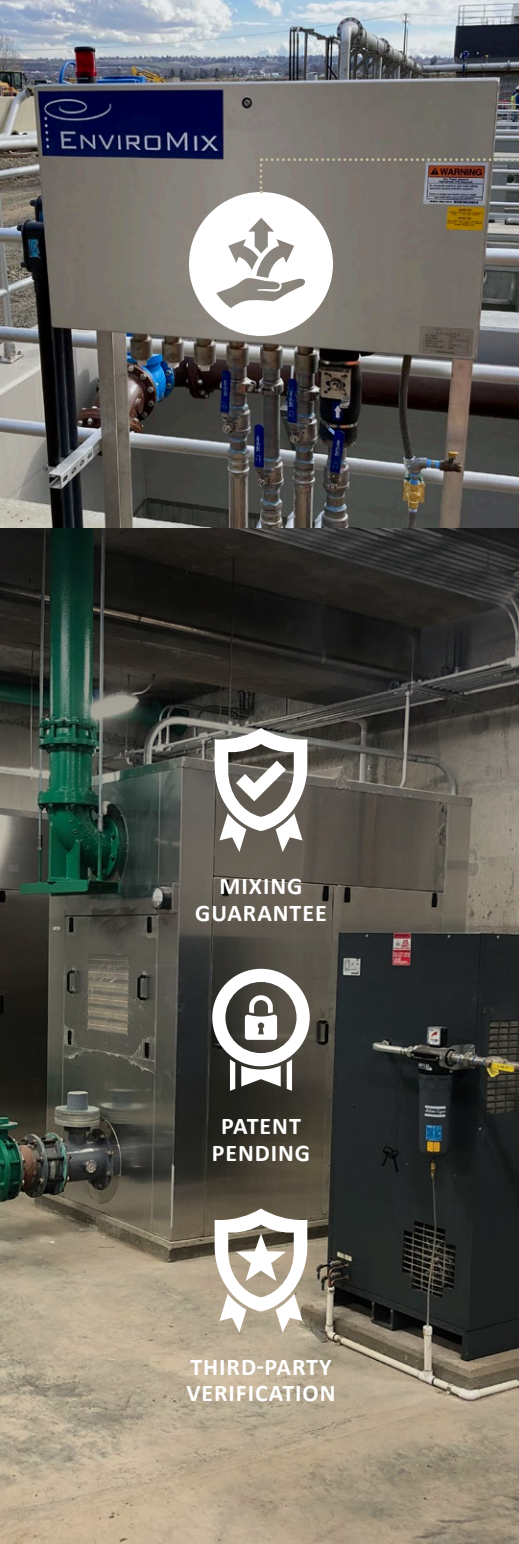
The dynamic nature of the FlexZone allows for a **sustainable and resilient system design that matches the volumetric process environment to influent flow, load, and temperature changes** in order to meet treatment objectives. Wide variations in operating conditions can be accommodated by automatically adjusting the bioreactor environment.

**The Flexzone dynamically creates multiple biological process environments.**

ANOXIC	LOW DO	AEROBIC
Denitrification	Simultaneous Nitrification and Denitrification	BOD Removal + Nitrification + P Uptake

The ability to change anoxic, low DO, and aerobic environments within the reactor in real-time improves carbon management, minimizes energy consumption, and optimizes current and future nutrient removal. The process benefits of dynamic treatment environments are:

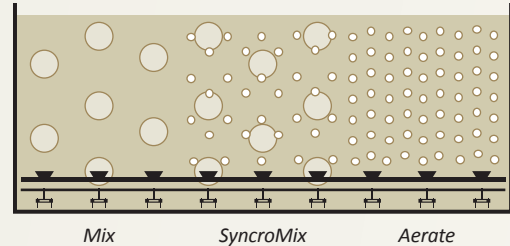
- **Improved nitrogen and phosphorus removal** with more effective carbon management.
- **Reduced chemicals** for carbon addition, alkalinity supplementation, and phosphorus precipitation.
- **Reduced oxygen demand** in the aerobic environment with improved denitrification.



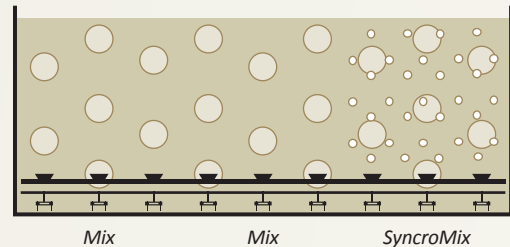
## UNPARALLELED FLEXIBILITY

Unlike conventional aeration systems with limited turndown capabilities, **the FlexZone allows for a wide range of operating environments** to address reduced oxygen demand.

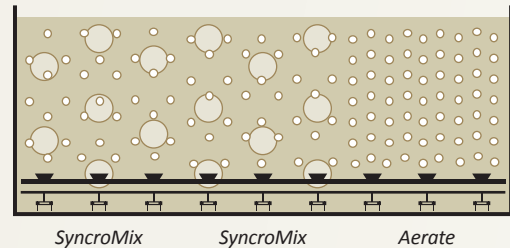
**EXAMPLE 1:**  
Enhanced denitrification,  
optimized carbon  
management



**EXAMPLE 2:**  
Eliminates high DO  
under mixing limited  
conditions



**EXAMPLE 3:**  
Simultaneous  
nitrification and  
denitrification,  
low DO environment



As influent flow and loading conditions continuously change, the **FlexZone allows the bioreactor to adapt to the changing conditions to meet both daily diurnal fluctuations as well as the full range of loading conditions** over the life of the treatment facility. The FlexZone can be designed for greenfield treatment facilities or integrated into facility upgrades utilizing existing equipment, including diffusers, blowers, and instrumentation.

EnviroMix, Inc. focuses on delivering solutions that reduce energy costs and enhance process performance in the water and wastewater industry. We design and manufacture performance-proven technologies that improve water quality and reduce energy consumption in critical areas of the treatment process. Utilizing patented and proprietary technology, we provide equipment and process control solutions to enhance plant performance for both the municipal and industrial markets.



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