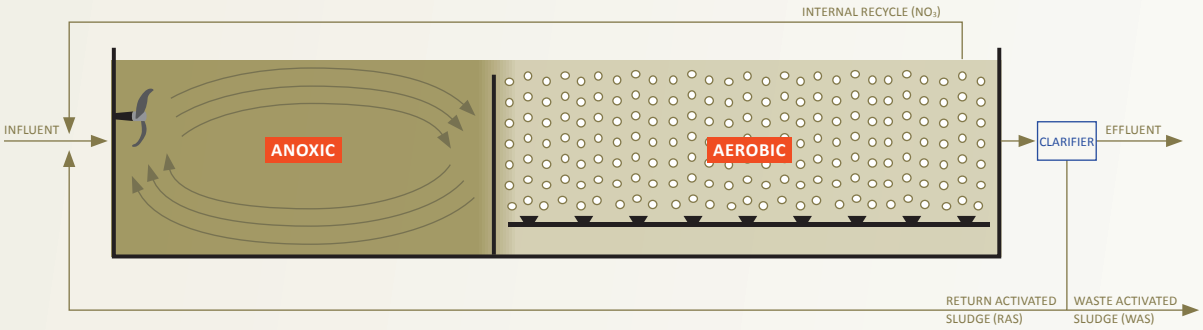
EnviroMix
www.enviro-mix.com

BIOCYCLE-ENR ACTIVATED SLUDGE PROCESS

MLE Configuration

The **BioCycle-ENR Modified Ludzak Ettinger (MLE)** process configuration is a biological nutrient removal treatment solution that is designed for facilities required to meet effluent total nitrogen limits. Utilizing the FlexZone™ Adaptive Process Volume System, the MLE process ensures the proper balance of anoxic, low dissolved oxygen (DO), and aerobic environments to meet nitrification and denitrification requirements under varying loading conditions throughout the life of the treatment facility. In addition to ensuring low levels of effluent total nitrogen, the FlexZone enables best carbon management practices to optimize energy and chemical consumption.

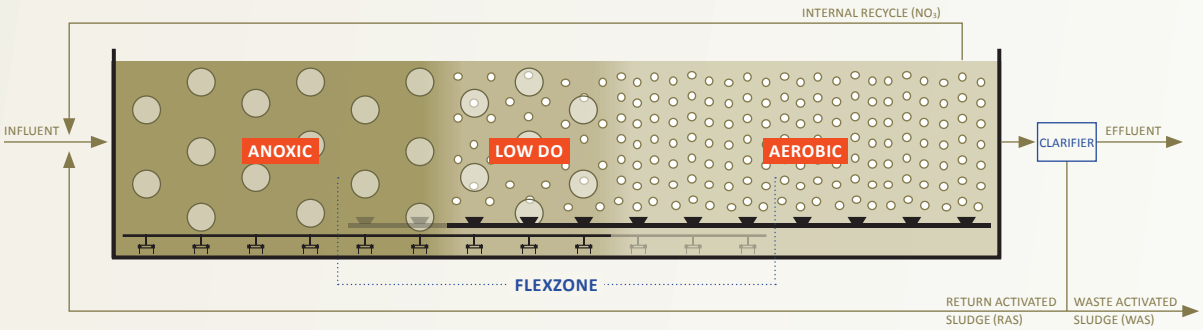
THE PROBLEM:
Conventional Approach



Fixed anoxic and aerobic volumes are designed for a single future state condition, offering **limited flexibility** for all other operating conditions.

Conventional point source mixers **require physical baffles** to facilitate the mixing regime needed to ensure complete mixing.

THE SOLUTION:
BioCycle-ENR for MLE



Without fixed baffle walls, **FlexZone enables the anoxic, low DO, and aerobic volumes to expand and contract** as operating conditions and kinetics change, ensuring effluent quality compliance.

The **vertical mixing regime of BioMix Compressed Gas Mixing maintains the integrity** of the anoxic and aerobic environments without the need for physical baffled zones.

SyncroMix, the unique combination of BioMix integrated with fine bubble diffused aeration, **creates low DO environments** and prevents mixing limited over-aerated conditions through **independent control of aeration and mixing**.

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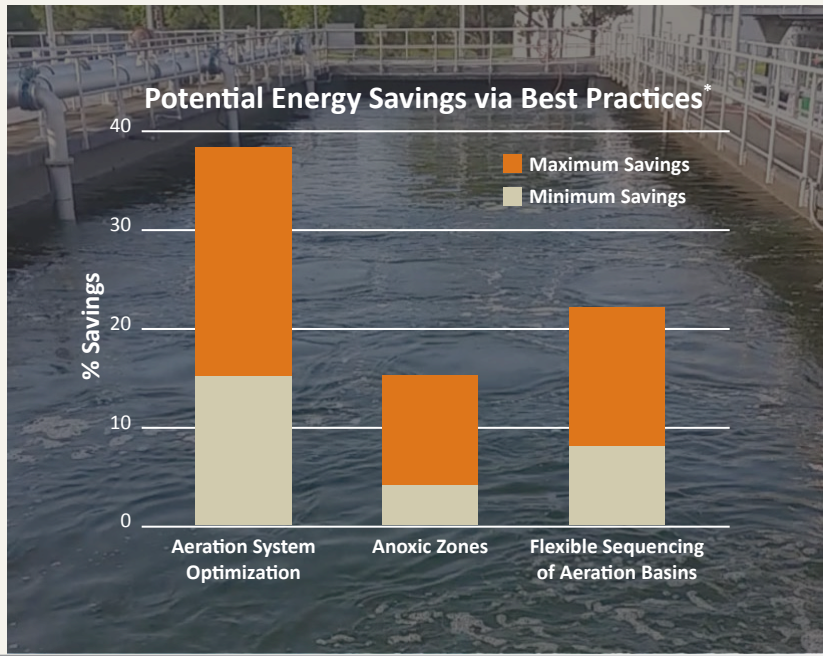
REDUCING ENERGY CONSUMPTION

According to Water Environment Research Foundation's Roadmap to Net Zero Energy, the three largest opportunities for energy savings at wastewater treatment plants are optimization of the aeration system, addition of an anoxic zone, and flexible sequencing of aeration basins. Utilizing low energy treatment options allows plants to get closer to energy neutrality. EnviroMix's BioCycle-ENR with FlexZone is perfectly suited to deliver on all three of these opportunities.

- BioCycle-ENR optimizes the aeration system by **matching the oxygen delivery to the oxygen demand through smart aeration controls** that have unmatched turn down and allow for low DO SyncroMix environments with independent control of aeration and mixing.
- Reducing required oxygen delivery by **manipulating the reactor environment to create anoxic conditions** recovers alkalinity and reduces carbon loading through denitrification kinetics.
- FlexZone takes sequencing to the next level without compromising mixing by dynamically **transitioning excess aerobic capacity** to energy-efficient mixing or low DO volumes.

* Water Environment Research Foundation.
Exploratory Team Report – Energy Management



KEY ADVANTAGES FOR AN MLE CONFIGURATION

Process Optimization

- Capitalizing on the FlexZone, BioCycle-ENR utilizes the proven MLE activated sludge process to dynamically adapt anoxic, low DO, and aerobic environments to changing temperature and loading conditions.
- Ability to ensure proper balance of anoxic, low DO, and aerobic volumes to achieve effluent total nitrogen goals throughout the life of the system.

Energy Efficiency

- Provides energy efficient operation by decoupling aeration and mixing.
- Independently meets mixing and oxygen demands with SyncroMix — concurrent operation of BioMix Compressed Gas Mixing and diffused aeration.

Unparalleled Flexibility

- Offers a process configuration tailored to meet current and future total nitrogen objectives, optimizing energy consumption and treatment performance.
- Provides the ability to create or expand anoxic environments without adding additional tank volume.

Straightforward Operation

- Provides easy access to equipment outside of the tank.
- Requires minimal maintenance of in-tank equipment.

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TO OPTIMIZE YOUR MLE CONFIGURATION WITH BIOCYCLE-ENR.