Typical Applications

Biological Nutrient Removal
- 8.1 MGD Avg. Daily Flow
- Replaced flow-through activated sludge system for enhanced biological nutrient removal (EBNR) to meet Chesapeake Bay Initiative.

Phosphorus Removal
- 2.7 MGD Avg. Daily Flow
- Dissolved oxygen control optimizes power consumption
- Process control achieves 85% removal of typical municipal wastewater’s total influent phosphate

Nitrification
- 0.3 MGD Avg. Daily Flow
- Utilizes the ballast decanter option with process control via the IntelliPro system.

Reuse
- 2.0 MGD Avg. Daily Flow
- 3-basin system followed by 2 AquaDisk® cloth media filters supplies reuse water to the nearby U.S. Army base for irrigation and cooling water.

Industrial Pretreatment
- 0.75 MGD Avg. Daily Flow

Retrofit
- 12 MGD Avg. Daily Flow
- Designed retrofit case existing lagoons to meet today’s stringent requirements.

Providing TOTAL Water Management Solutions

Visit our website at www.aqua-aerobic.com to learn more about the AquaSBR® Sequencing Batch Reactor and our complete line of products and services:

Aeration & Mixing
Biological Processes
Membranes
Filtration
Controls & Monitoring Systems
Aftermarket Products and Services
The AquaSBR sequencing batch reactor utilizes five basic phases of operation to meet advanced wastewater treatment objectives. The duration of any particular phase may be based upon specific waste characteristics and/or effluent objectives.

### Phases of Operation

1. **Mix-Fill**
   - Influent flow enters the reactor
   - Mixing is initiated with the AquaMixAir to achieve complete mix of the reactor contents in the absence of aeration
   - Anaerobic conditions are created which facilitate removal of any residual iron/manganese (Fe/Mn) via the process of precipitation
   - In systems requiring phosphorus removal, the Mix-Fill phase is extended to create anaerobic conditions where phosphorus accumulating organisms (PAOs) release phosphorus to ready for subsequent recovery uptake during aeration times
   - Anaerobic conditions assist in the control of some types of filamentous organisms

2. **React**
   - Influent flow enters the reactor
   - Mixing is initiated with the AquaMixAir to achieve complete mix of the reactor contents in the absence of aeration
   - Anaerobic conditions are created which facilitate removal of any residual iron/manganese (Fe/Mn) via the process of precipitation
   - In systems requiring phosphorus removal, the Mix-Fill phase is extended to create anaerobic conditions where phosphorus accumulating organisms (PAOs) release phosphorus to ready for subsequent recovery uptake during aeration times
   - Anaerobic conditions assist in the control of some types of filamentous organisms

3. **React**
   - Influent flow enters the reactor
   - Mixing is initiated with the AquaMixAir to achieve complete mix of the reactor contents in the absence of aeration
   - Anaerobic conditions are created which facilitate removal of any residual iron/manganese (Fe/Mn) via the process of precipitation
   - In systems requiring phosphorus removal, the Mix-Fill phase is extended to create anaerobic conditions where phosphorus accumulating organisms (PAOs) release phosphorus to ready for subsequent recovery uptake during aeration times
   - Anaerobic conditions assist in the control of some types of filamentous organisms

4. **Settle**
   - Influent flow does not enter the reactor
   - Sludge and seston are terminated
   - Ideal solids/liquid separation is achieved due to partially quiescent conditions
   - Adjustable time allows settling time to match pretreatment conditions

5. **Decant/Sludge Waste**
   - Influent flow does not enter the reactor
   - Mixing and aeration terminate
   - Decantable volume is removed by subsurface withdrawal
   - Floating decanter follows the liquid level, maximizing distance between the withdrawal point and the sludge blanket
   - Small amount of sludge is wasted near the end of each cycle

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### Aqua MixAir® System Features and Advantages

- **Independent aeration and mixing with the AquaMixAir® system provides precise oxygenation and nitrogen consumption.**
- **Forces systems to achieve desired concentrations of o and n in a single reactor.**
- **All components of the AquaSBR system are retrievable and easily accessible from the side of the basin and require minimal maintenance.**
- **Aqua MixAir® floating decanter follows the liquid level, maximizing the distance between the effluent withdrawal point and the sludge blanket.**
- **Hydraulic fluctuations are easily managed through the flexibility of a time managed process operating strategy.**
- **Low cost of ownership.**

### AquaSBR® System Features and Advantages

- **The AquaSBR sequencing batch reactor system features time-managed operation and control of aerobic, anaerobic and anoxic environments within a single reactor including equalization and clarification.**
- **The AquaSBR system utilizes five basic phases of operation to meet advanced wastewater treatment objectives.**
- **The duration of any particular phase may be based upon specific waste characteristics and/or effluent objectives.**
- **Hydraulic fluctuations are easily managed through the flexibility of a time managed process operating strategy.**
- **Low cost of ownership.**

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### System Advantages

- **Real-time, online monitoring and control: The IntelliPro® system provides precise oxygenation and nitrogen consumption.**
- **Aqua-Aerobic Control Model which automatically manages aeration and mixing.**
- **Reduces the operator’s sampling time.**
- **Remote troubleshooting.**
- **Provides online operation and maintenance support.**
- **Online operation and maintenance support.**
Aqua MixAir System

The Aqua MixAir system provides process advantages and lower energy consumption.

- No secondary clarifier
- Reduced footprint
- Lower energy consumption

Advanced Decanter

The Aqua MixAir system provides process advantages and lower energy consumption.

- No secondary clarifier
- Reduced footprint
- Lower energy consumption
Providing TOTAL Water Management Solutions

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Typical Applications

Biological Nutrient Removal
- 1.65 MGD Avg. Daily Flow
- Replaced flow-through activated sludge system for enhanced biological nutrient removal (EBNR) to meet Chesapeake Bay Initiative.

Phosphorus Removal
- 0.3 MGD Avg. Daily Flow
- Utilizes the ballast decanter option with process control via the IntelliPro system.

Nitrification
- 0.075 MGD Avg. Daily Flow
- Treating high strength dairy waste since 1991.

Reuse
- 2.7 MGD Avg. Daily Flow
- Dissolved oxygen control optimizes power consumption
- Process control achieves 98% removal of typical municipal wastewater's basic influent phosphorus.

Industrial Pretreatment
- 0.75 MGD Avg. Daily Flow
- Treating high strength dairy waste since 1991.

Retrofit
- 12 MGD Avg. Daily Flow
- 3-basin system followed by 2 AquaDisk® cloth media filters supplies reuse water to the nearby U.S. Army base for irrigation and cooling water.

Visit our website at www.aqua-aerobic.com to learn more about the AquaSBR® Sequencing Batch Reactor and our complete line of products and services.
AquaSBR® Sequencing Batch Reactor

The information contained herein relative to data, dimensions and recommendations as to size, power and assembly are for purpose of estimation only. These values should not be assumed to be universally applicable to specific design problems. Particular designs, installations and plants may call for specific requirements. Consult Aqua-Aerobic Systems, Inc. for exact recommendations or specific needs. Patents Apply.

1.65 MGD Avg. Daily Flow
Replaced flow-through activated sludge system for enhanced biological nutrient removal (EBNR) to meet Chesapeake Bay Initiative.

Biological Nutrient Removal
- 1.65 MGD Avg. Daily Flow
- Reduced flow-through activated sludge system for enhanced biological nutrient removal (EBNR) to meet Chesapeake Bay Initiative.

0.3 MGD Avg. Daily Flow
Utilizes the ballast decanter option with process control via the IntelliPro system.

Nitrification
- 0.3 MGD Avg. Daily Flow
- Optional the ballast decanter option with process control via the IntelliPro system.

0.075 MGD Avg. Daily Flow
Treating high strength dairy waste since 1991.

Industrial Pretreatment
- 0.3 MGD Avg. Daily Flow
- Treating high strength dairy waste since '91.

Phosphorus Removal
- 2.7 MGD Avg. Daily Flow
- Dissolved oxygen control optimizes power consumption
- Process control achieves 80% removal of typical municipal wastewater’s total influent phosphorus.

Reuse
- 2.7 MGD Avg. Daily Flow
- 3-basin system followed by (2) AquaDisk® cloth media filters supplies reuse water to the nearby U.S. Army base for irrigation and cooling water.

Industrial Pretreatment
- 12 MGD Avg. Daily Flow
- Chosen retrofit case existing lagoons to meet today’s phosphorus requirements.

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AquaSBR® Video

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AquaSBR®
Typical Applications