

# PRODUCT SPECIFICATION SHEET

## EDI ATLAS - DBBR™

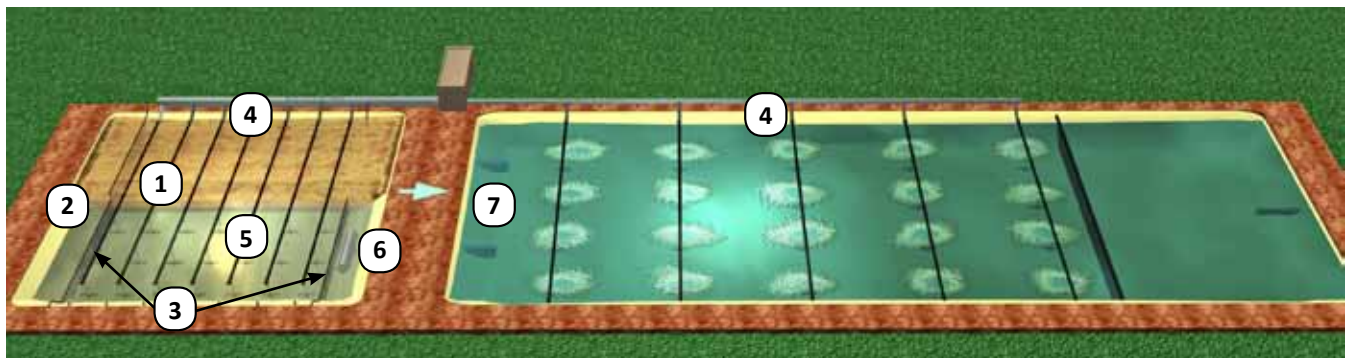
### Innovative Internal Decanted BioBalanced Reactor Technology for Advanced Treatment Lagoon Performance

- Full nitrification, less than 2 mg/L even in cold climates
- High BOD and TSS reduction; less than 30 mg/L
- High process stability with low food to biomass ratio and long sludge age
- Decanted complete mix, and flow thru partial mix and settling reactors
- Continuous inflow, intermittent supernatant withdrawal from complete mix reactor, and equalized final discharge
- Maximum biological solids recovery with settling and supernatant withdrawal from complete mix reactor
- Ideal for small flows with high peaking factors
- Simple supernatant withdrawal components for fault free operations and low maintenance
- Ideally suited for facilities with multiple lagoon reactors
- Install in new or existing lagoons
- High degree of system simplicity; minimum operator interface, self-regulating "equilibrium" solids management system
- Solids digestion and long term storage in partial mix aerated zone
- No return sludge pumps
- Waste sludge pumps optional
- Minimum operating costs
- Low maintenance requirements



1. Decanted Complete Mix Reactor
2. Influent (continuous)
3. BioCurtain™\*
4. Floating Lateral Aeration System
5. Reactor in settle/supernatant withdrawal
6. Supernatant withdrawal in operation
7. Supernatant to downstream lagoons

\* BioCurtain for influent and effluent flow dispersion



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The ATLAS - DBBR™ (Internal Decanted Bio Balanced Reactor) system integrates conventional decanted reactor technology with EDI's "equilibrium" solids management program to improve the performance capabilities of lagoon-based wastewater treatment systems. Conventional lagoon treatment systems that are experiencing any of the following conditions will benefit from the application of the ATLAS - DBBR system:

- Hydraulic or organic overload
- Inadequate BOD or TSS reduction
- Poor ammonia conversion
- High effluent total nitrogen
- Reduced cold weather performance

Biological processes are limited in their ability to treat wastewater by the mass of microorganisms that can be retained and suspended in the biological reactor. The ATLAS - DBBR system effectively increases the mass of microorganisms in the system by operating complete mix reactor(s) in a sequential aerate, settle, and supernatant withdrawal mode. The control of biomass allows for a shorter hydraulic residence time, long sludge age and low food to microorganism ratio for high process stability and maximum cold weather performance. A hydraulically isolated complete mix reactor is required to manage the continuous inflow and intermittent discharge from the sequencing reactors. Properly sized and ideal settling conditions accommodate large peaking factors commonly associated with system with small plant flows.

The synthesis of organic materials in the wastewater results in a net production of biological solids. A long sludge age is used to reduce the mass of biological solids that are produced and minimize downstream solids management requirements. Biological solids that are not retained in the complete mix reactors are carried with the discharge to downstream partial mix reactors for additional stabilization and storage. A non-aerated, quiescent zone is provided for final effluent polishing prior to discharge. Optional WAS pumps are available for additional process control or discharge to solids handling facilities. Pretreatment is recommended to minimize

maintenance issues associated with influent solids and floatable materials.

The internal decanted complete mix reactor operates on a 4-hr cycle for all flow conditions. Variations in influent flow are handled by varying the high water operating level in the reactor. The duration of the aeration cycle is varied based on influent load and when combined with an EDI high efficiency FlexAir™ diffused aeration system, the ATLAS-DBBR system is one of the more energy efficient, wastewater treatment processes available in the industry.

The ATLAS-DBBR system is also effective in reducing total nitrogen. By operating the complete mix zone at a low dissolved oxygen concentration, co-current nitrification / denitrification is achieved. Operating under this optimized condition also provides additional benefits including alkalinity and oxygen recovery and increased field oxygen transfer efficiency. The system may also be configured with an anoxic mix cycle and biological selectors for added process performance and control.

BioCurtain™ is provided to isolate the influence of influent flow and to encourage a uniform approach velocity to the supernatant withdrawal system. A simple, fixed elevation supernatant withdrawal system provides fault free operations. The system operates under a decreasing head with zero driving head at the end of the withdrawal cycle. An inlet flow diffuser with fixed orifices is provided for uniform approach velocity. Mechanical solids exclusion components are not required with the ATLAS - DBBR system.

When the highest level of effluent quality is required, the ATLAS - DBBR system may be augmented with the BioReef™ system for effluent polishing and the BioShade™ system for algae control. These supplemental technologies may be incorporated at any time to improve the performance and viability of lagoon-based systems. In extreme cold climates, the BioInsulate™ system is available for temperature control.

The ATLAS - DBBR system is one of many efficient, low cost, lagoon-based technologies available from EDI. For detailed information on how to improve the performance of lagoon-based systems, contact EDI or a local EDI representative.



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