



BIOSOLIDS SOLUTIONS US PORTFOLIO

WATER TECHNOLOGIES

 VEOLIA

Biosolids Solutions

Resource and Energy Recovery



We offer safe and environmentally friendly biosolids solutions that focus on performance enhancement, renewable energy, beneficial reuse, and optimization. Veolia Water Technologies is committed to providing innovative solutions with proven value-added performance. Our technologies transform vital resources into clean water, clean energy, and valuable end products, thereby empowering utility owners to develop their own regional circular economies.

- Reduction in waste to be disposed
- PFAS Treatment
- Deammonification
- Phosphorus Removal

- Recovery of valuable byproducts including:
 - > Biosolids as alternate for fertilizer
 - > Nutrients (sulfur, phosphorus)
 - > Energy (biogas, electricity, heat)
 - > Water (for reuse)
- New revenue stream for facility from:
 - > Accepting waste from Municipality
 - > Stabilized biosolids as alternate for fertilizer
 - > Nutrients recovered
 - > Tipping fees for food waste
 - > Biogas RIN credits

Portfolio of Solutions



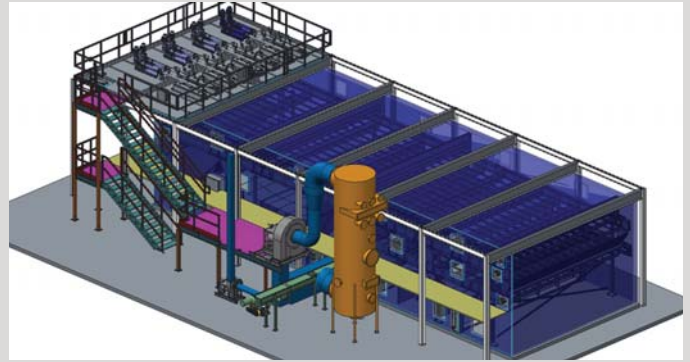
Veolia offers a comprehensive solution for every part of the biosolids process in order to be flexible to individual needs or to outfit the entire process.

Thermal Drying



The **BioCon™** thermal sludge drying system is designed to be safe, easy to operate, energy efficient and environmentally friendly.

- Stainless steel belt material allows for better air flow and increased durability
- Minimal exhaust air easily integrates with existing odor control system
- Automated temperature control strategy, ensures a minimum DS content of 90% and meets Class A requirements
- Unique depositor system that allows maintenance and cleaning without interruption of the system
- Reduces hauling costs



The low temperature nature of the thermal sludge dryer enables the BioCon™ dryer to utilize various thermal energy sources including thermal oil, air or steam. Thermal efficiency can be further increased by employing the BioCon™ Energy Exchange System. Fuel sources for the BioCon™ system include natural gas, biogas, or fuel oil. Thermal Oil does not require a special operator license like steam or hot water based heat systems.

The BioCon™ dryer does not utilize any back-mixing and along with the way the sludge depositors lay sludge onto the belt, it reduces dust generation inside the dryer building, creating a cleaner facility with low maintenance.

PFAS Treatment



BioCon™ ERS (Energy Recovery System) is a safe and sustainable drying and combustion system that combines the efficiencies of a convective air, low-temperature belt dryer with a biomass furnace to recover sensible heat and combust organic material and reduce PFAS.

PFAS (Perfluoroalkyl and Polyfluoroalkyl Substances) are a class of anthropogenic chemicals containing fluorinated carbons that are extremely resistant to degradation.



Additionally, the BioCon™ dryer can be fueled by the biosolids end product by incorporating the ERS which can result in an autogenous system by combusting the end product and utilizing the heat of combustion to fuel the dryer.

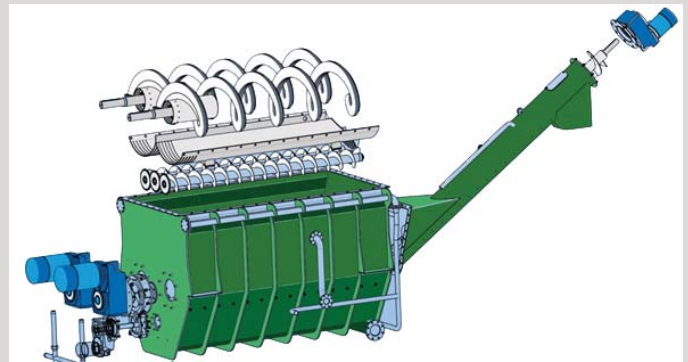
- Reduces PFAS and organic compounds
- Energy independent solids facility
- Volume reduction of 93-97%

Depackaging



The **Ecrusor™** is a food depackaging and organics recovery process ideal for preparing source separated organics, landfill diverted organics and other biodegradable wastes for energy generation.

The Ecrusor™ uses two grinding screws to puncture the packaging material, to allow the separation of the organic and inorganic waste. The organic waste now a slurry will pass through two perforated plates beneath the grinding screws, where the three collection screws that convey the organic slurry out of the unit.



Once separated, the organic slurry is pumped to the plant's anaerobic digesters for digestion and generation of biogas and energy. The inorganic packaging waste remains above the perforated screws and is then removed from the unit by the extraction screw.

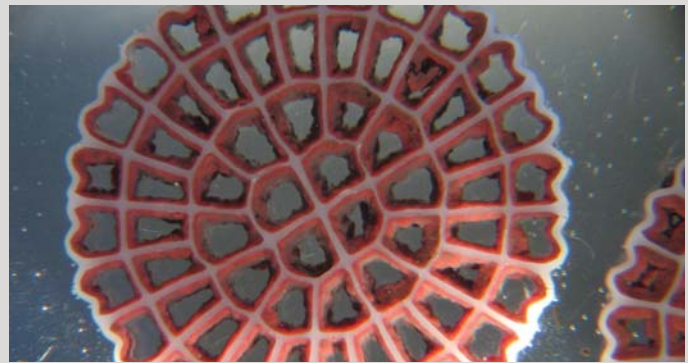
- Removes contaminants such as plastic, paper products and mixed material packaging
- Produces a high quality organic slurry generating biogas
- Installed below grade, outdoors or within truck off-loading stations to receive material directly from vehicles
- Processes up to 40 cubic yards of mixed waste every hour with very low operating energy
- The extraction screw can be adjusted for inert material

Sidestream Deammonification



The **ANITA™ Mox** process is the simplest, most robust, compact anammox process solution for high strength ammonia streams. It combines aerobic nitritation with anaerobic ammonia oxidation (anammox) in a continuous single-stage reactor.

- Media based system eliminates anammox washout during exposure to high TSS and polymer influent
- Requires 60% less oxygen than conventional nitrification
- Patented control strategy achieves ammonia removal higher than 90% and total nitrogen removal in the range of 75 to 85% without external carbon addition



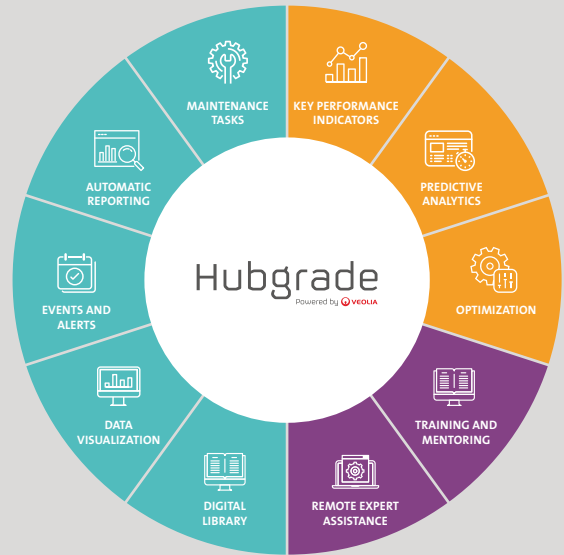
ANITA Mox offers an ease of operation and maintenance when treating centrate or filtrate from either conventional anaerobic digestion (AD) or AD following thermal hydrolysis process (THP). There are benefits to sidestream versus conventional nitrification/denitrification.

- 90% less sludge production
- 60% less energy consumption
- No external carbon required; less carbon footprint
- Significantly smaller footprint with high loading/removal rates

Digital Services

Hubgrade™ is Veolia's digital services to optimize water treatment systems and can be implemented for a single technology, a range of equipment or the complete treatment plant. By using a highly secure cloud portal to facilitate better use of data, Hubgrade™ can be monitored through an intuitive portal anywhere, anytime, at any device.

Hubgrade™ can achieve lower capital and operational costs, reduced maintenance, chemical use and energy consumption with Veolia support.



Hubgrade ESSENTIAL



Performance Optimization Tool

- Digital library to access all relevant documents
- Data visualization to collect and display process data
- Events and alarms to prevent unexpected shutdowns or regulatory breaches
- Automatic reporting to facilitate data analysis and reporting regularly
- Maintenance module overview

Hubgrade ASSIST



Access to Veolia Process Experts

- Remote expert assistance enabled by real-time monitoring, alarm management, and augmented reality
- Training and mentoring features provide access to training materials showing on-site issue resolution or e-learning programs

Hubgrade PERFORMANCE



Online Smart Control Tool

- Key performance indicators assess the quality of the operation and guide operational decision making
- Predictive analytics predicts the evolution of strategic operation parameters or anticipates the failures, reduces downtime risks and optimizes maintenance
- Optimization features provide simulated operational scenarios and setpoints



Aftermarket Services

Customer support is a continuous process, from the design to start-up to operation. Our team of informed and experienced professionals are available for anything from process reoptimization, preventative maintenance or spare parts.

We maintain an extensive parts inventory so that most items can ship the same day the order is placed. In addition to parts, we can also provide a repair service that includes a trained technician to assist with the part replacement.

Resourcing the world

Veolia Water Technologies

4001 Weston Parkway / Cary, NC 27513

Phone: 919.677.8310 • Fax: 919.677.0082

usmunicipal@veolia.com • www.veoliawatertech.com