

Enhanced Digestion: Veolia Partners with University Area Joint Authority and RETTEW to Deliver Co-Location Digestion Facility

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University Area Joint Authority



Who is the University Area Joint Authority?

- **Regional Wastewater Entity that services the community surrounding Penn State University and greater State College Metropolitan Region**
- **One of the most Advanced Wastewater Treatment Facilities in Pennsylvania**
- **Serving approximately 100,000 residents**
- **Incorporated in late 1960's, expanded as community grew and increasing regulatory limits**
- **Annual Budget of \$18mm with 52 Staff between Operations, Collection and Administration**



Overview Map of the Centre Region's Municipalities and location in Pennsylvania



Tertiary Standards with Biological Nutrient Removal Requirements:

Plant Capacity	10.6 MGD
Avg Influent Flow	5.57 MGD
BOD/TSS Limit	10 mg/l
Total Nitrogen Limit	6 mg/l
Dissolved P	0.13 mg/l

**Former EPA 503 Class A
Biosolids Production Facility
with In-Vessel Composting
(1994 - 2024) converting to
Anaerobic Digestion and
Sludge Drying**

**Advanced Water Reuse
Facility with Indirect Potable
Reuse Quality Standards**

~50% Powered by Solar

Phase I and II Solar Array



Why Water Reuse and Recycling?

- Area supplied entirely with Groundwater Supplies for Drinking Water
- Spring Fed Creek with World Class Brown and Rainbow Trout Population
- Completion of 316A Temperature Impact Study (extremely rare for Municipal Authority)
- Results found that flows in excess of 6.0 MGD could harm aquatic environment
- Reviewed Options from Interbasin Wastewater Transfer to Refrigeration of Effluent
- Community chose Water Reuse over other options as it provided sustainable, long-term approach and could balance growth and its impacts



Water Reuse and Recycling (2026)

- Operational 22 Years
- 2 MGD of Capacity
- Reuse of over 4 Billion Gallons
- Customers and Uses:
 - Hotel
(Irrigation/Laundry/Swimming Pool)
 - Industrial Laundry
 - Car Wash
 - Governmental (HVAC)
 - Country Club (Irrigation/Swimming Pool)
 - Constructed Wetland for Groundwater Recharge operational for Four (4) Years
- Annual Reuse ~500 Million Gallons





Drivers for the Biosolids Project



- **Reduce operational expenses associated with previous biosolids management**
- **Current Costs were exceeding \$105/wet ton**
- **Regional Demand for Reduced Biosolids Costs from Neighboring Communities**
- **Maximize Asset Life and Reuse of Infrastructure**
- **Compost Facility Aged with 26 Years of Service and in Need of Major Upgrades**
- **Potential Revenue Generation from Renewable Natural Gas or Tipping Fees**
- **Local Government Actions for Greenhouse Gas Reduction Goals**
- **Modernize the remaining major processes in the Plant and be positioned for future PFAS regulation**

Technical Overview

Client Wants



**Process
60,000 gpd
of biosolids**



**Process
48,000 gpd
of biowaste**



**Biowaste pre-
processing**

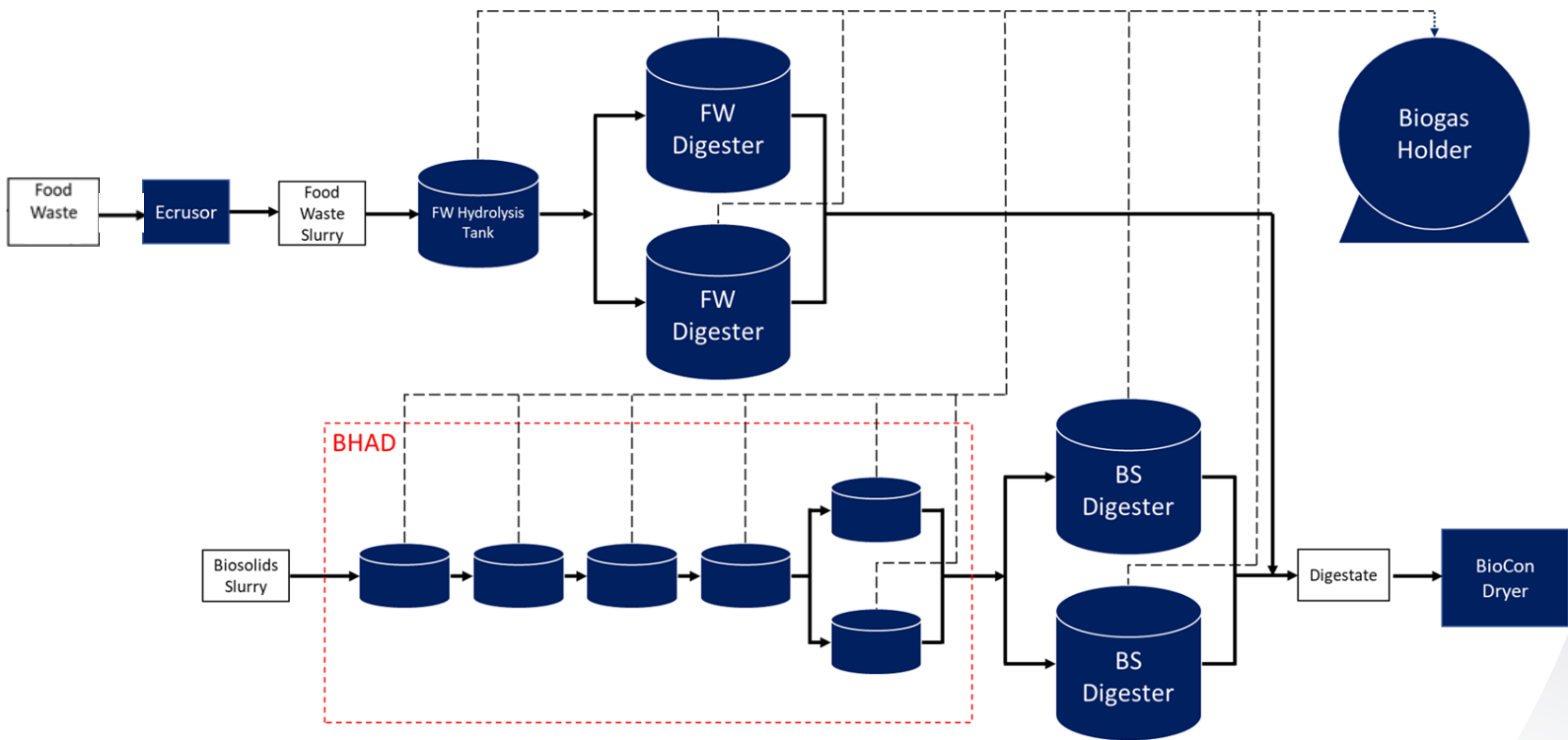


**Digestate
drying**



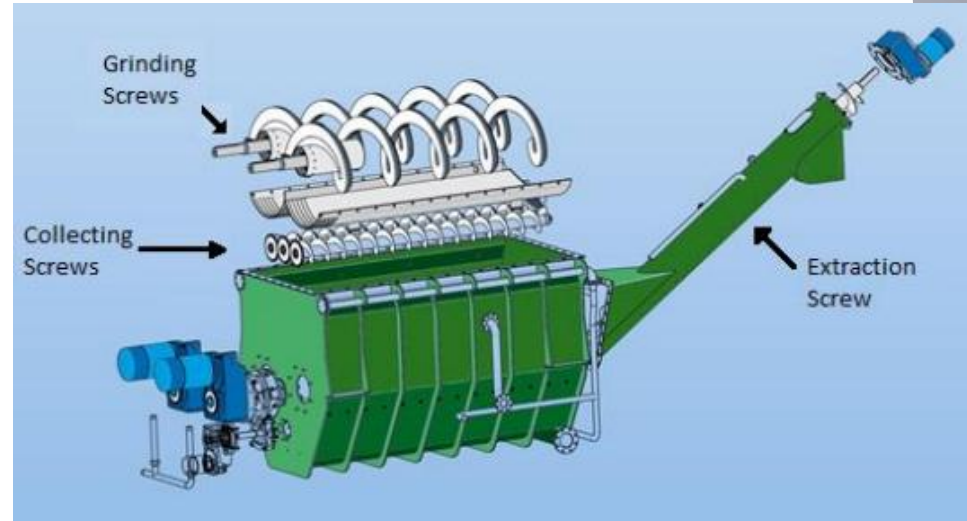
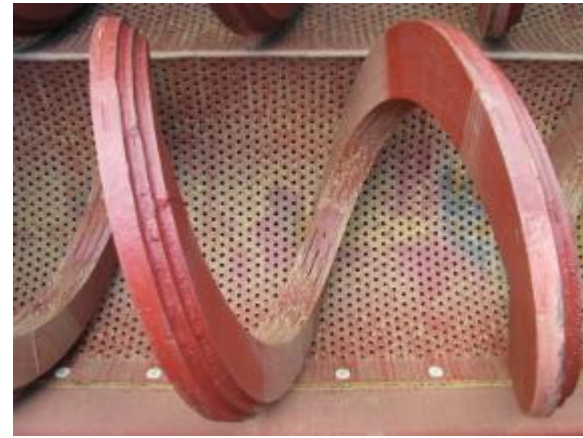
**Optimal
biogas
production**

Veolia's Offer

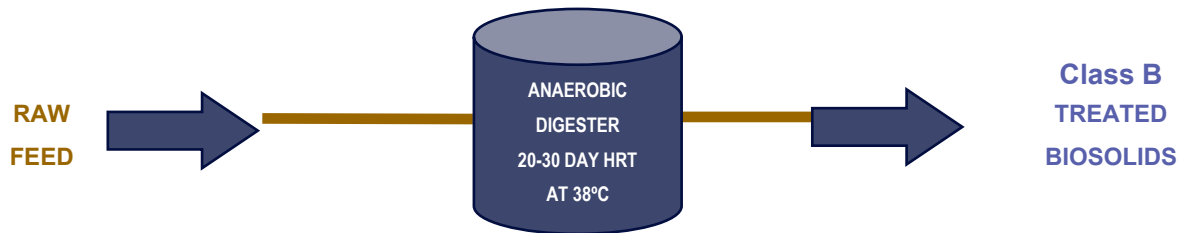


Ecrusor

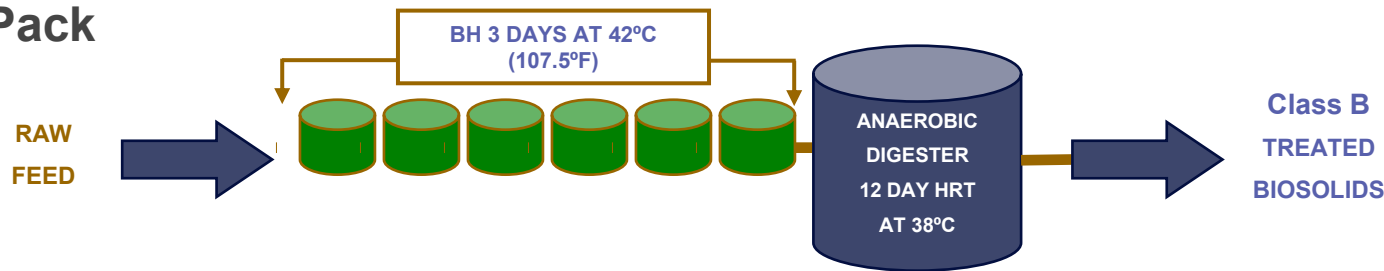
- Punctures packaging to allow organic waste slurry to be sent for processing
- Packaging stays in large enough pieces which means that separate screening units are not needed
- Can de-package up to 42 cubic yards of biowaste per hour



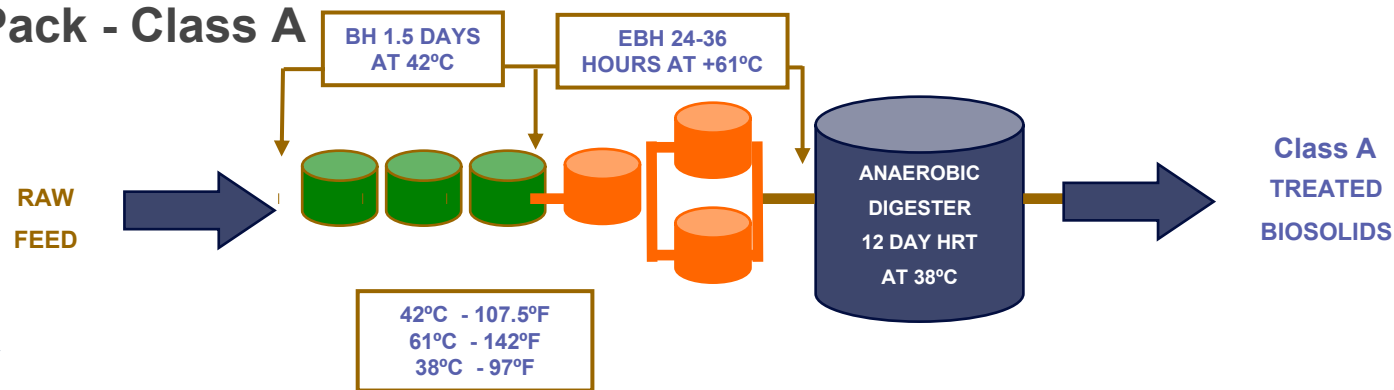
BHAD - 6 PACK



6 Pack

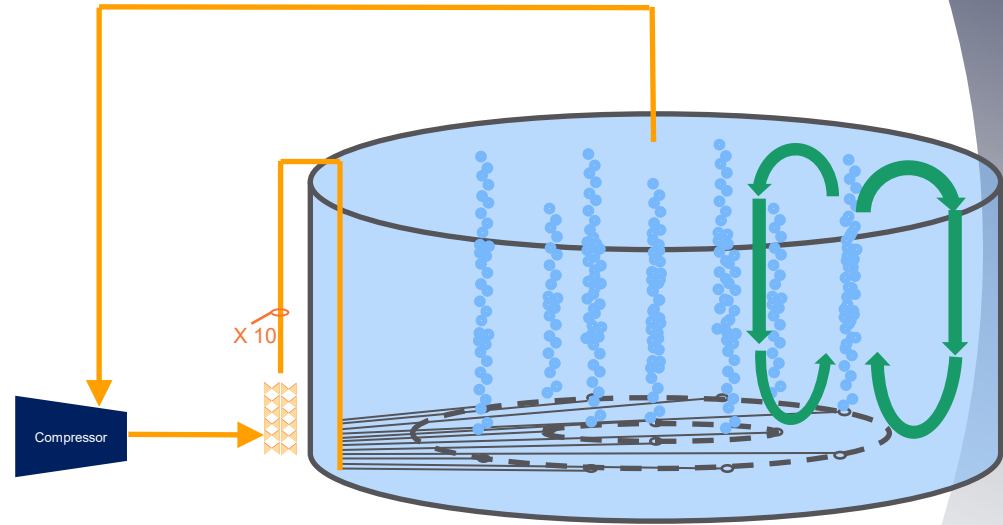


6 Pack - Class A



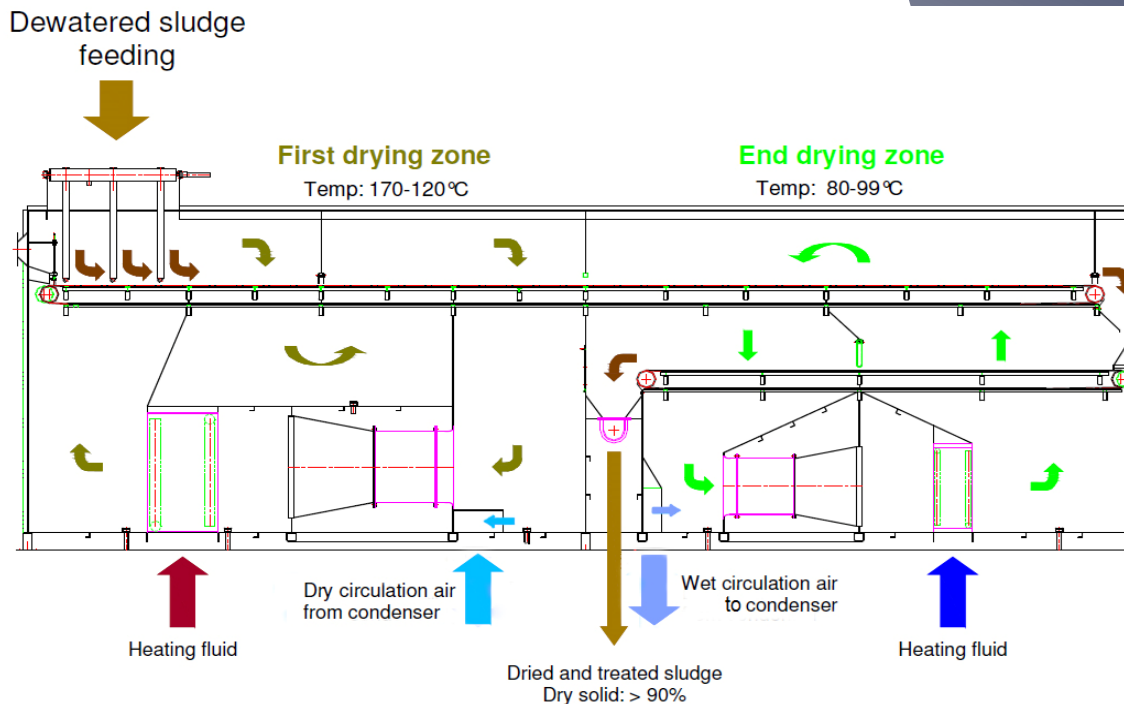
Sequential Gas Mixing

- Achieves 90% active volume mixing in the digesters
- Complete tank turnover in less than 2 hours
- Low energy usage (1.5 W/m³)



BioCon Dryer

- Produces Class A Biosolids
- Receives 15%-25% DS sludge and produces 90% DS product
- Sludge weight and volume reduced by the water being evaporated, which reduces hauling costs
- Drying air treatment and external heat exchanger allows for more energy to be recovered

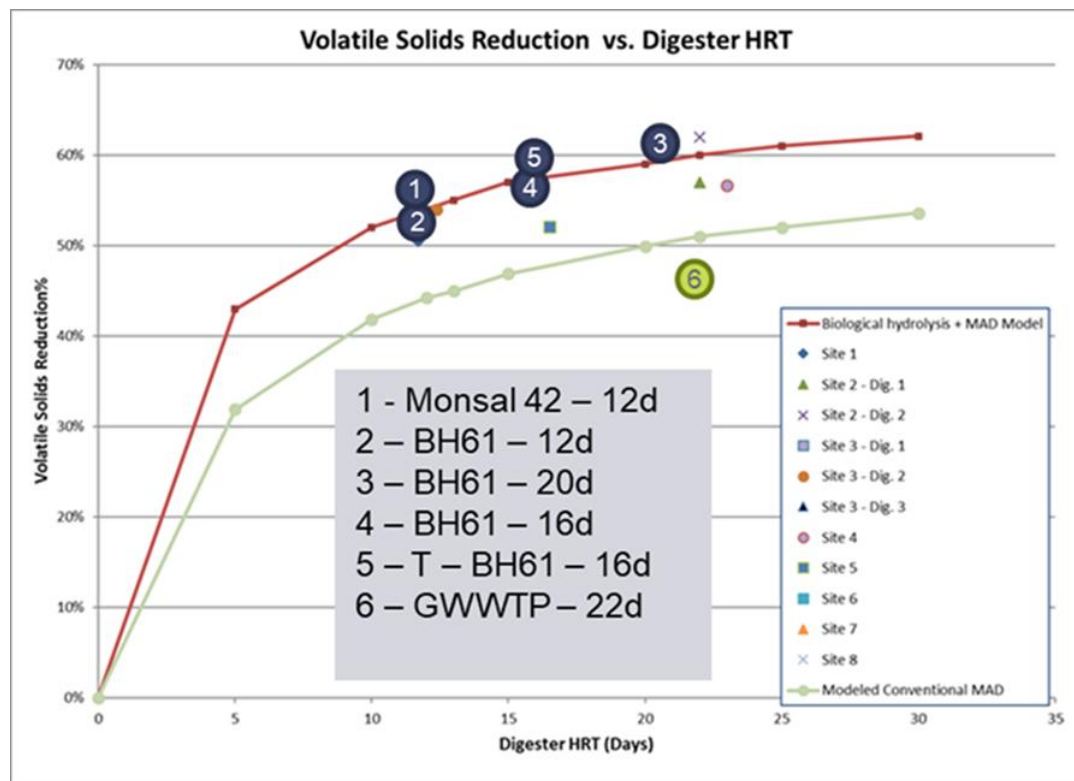


BHAD Pilot Study

BHAD - Pilot Study

Mode		Stage1		Stage 2		Stage 3		MAD	VSR	Biogas Production
		Reactors	Temp/ SRT	Reactors	Temp/ SRT	Reactors	Temp/ SRT	Temp/ SRT	%	m ³ /tonne of VS fed
1	M42-12	1-6	42°C / 3 day	-	-	-	-	37°C / 12 day	53%	494
2	BH61-12	1-3	42°C / 1.5 day	4	61°C / 0 - 6 hours	5 or 6	61°C / 6 hours	37°C / 12 day	51%	453
3	BH61-16	1-3	42°C / 3 day	4	61°C / 0 - 6 hours	5 or 6	42°C / 6 hours	37°C / 16 day	55%	500
4	BH61-20	1-3	42°C / 1.5 day	4	61°C / 0 - 6 hours	5 or 6	42°C / 6 hours	37°C / 20 day	60%	543
5	MAD	-	-	-	-	-	-	37°C / 23 day	45% (17 days) 50% (23 days)	451

BHAD - Pilot Study



Site Photos



























Project Outcomes



Biosolids Project Financials



- **Total Capital Expenditure of \$85mm, financed by the Authority through issuance of AA Bonds and secured by User Rates**
- **New Revenue of ~\$1,100,000/yr from Imported Biosolids from Neighboring Communities**
- **New Revenue of ~\$300,000/yr from Imported Organics**
- **New Revenue/Savings of ~\$1,200,000/yr from RNG**
- **Investment Tax Credit Direct Reimbursement as Government Entity. 50% ITC (derated to 42.5% due to public financing)**
- **Impact to User Rates of Customers, Single Family Residence:**
 - **Pre-Project \$113/qtr**
 - **Post-Project \$125/qtr**
- **Rate Impacts are based on most conservative assumptions on tipping fees, RNG value, etc. Significant potential for higher revenues and reduced impacts**

Outcomes



- Regionalized eight (8) community wastewater facilities into a single, innovative facility with long-term stable biosolids disposal rates for UAJA's partner communities
- Plant is at 85%+ capacity on total operations and 95% capacity on Monday-Friday operations. Fully met all feedstock contracting goals
- Introduced new revenue into the community to support wastewater infrastructure, as opposed to rely solely on regional growth and existing rate base to fund operations and improvements
- Reasonable, long-term contracting strategy to align risk between the Authority and its feedstock partners to maximize the relationship. Flexibility and diversity of feedstock
- Adaptability of the project allows Authority to change operations or RNG usage to take advantage of new regulations, market conditions or incentives

Thank you!

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