

Bion has developed the ARS — a patented, closed-loop process that transforms ammonia and CO₂ released during anaerobic digestion into high-value organic nitrogen fertilizer and clean water. Bion converts ammonia from a disposal liability into a revenue-producing asset.

Ammonia Recovery System



Pilot plant at Fair Oaks, Indiana

- 5,000 gpd feed capacity
- 100 gpd production capacity
- Built by Buflovak/Hebeler Process Solutions (Carrier Process Equipment Group, CPEG Inc.)
- Process conceived 2012: developed 2019
- Pilot test system built in 2023
- Operating at 1/10th scale since Sep. 2023
- Obtained OMRI certification on Aug. 21, 2024
- Over 1,500 operating hours
- Capacity for receiving test loads

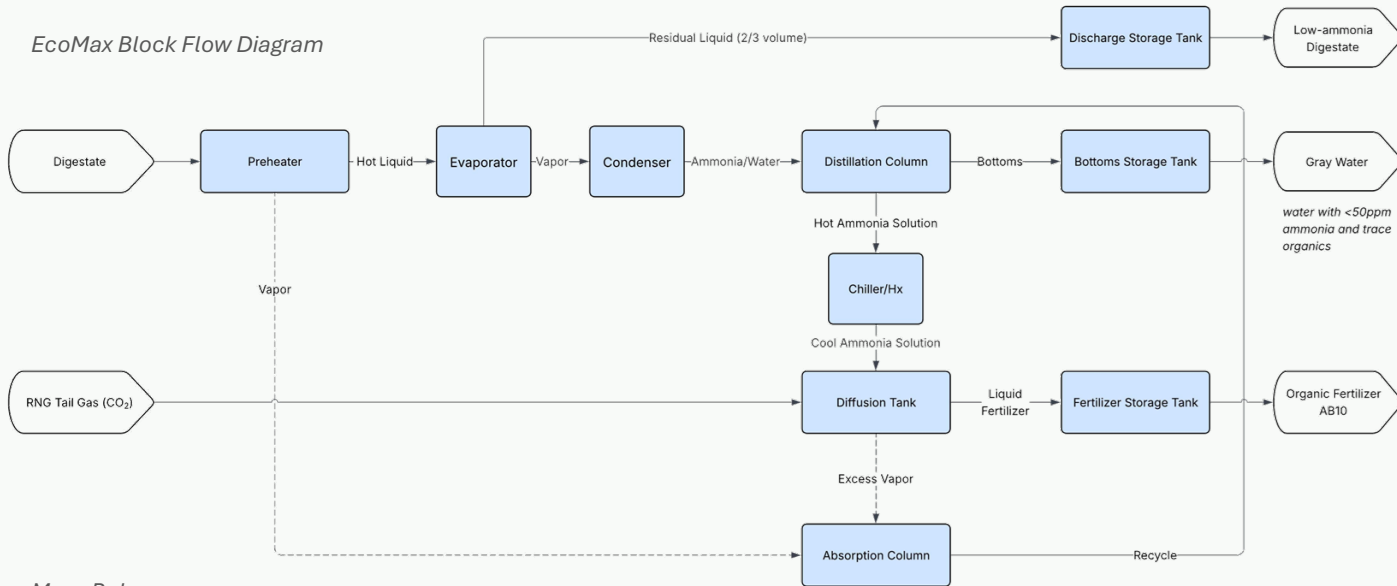
EcoMax

Full-scale commercial system
Includes a preheater, evaporator, condenser, distillation column, chiller, diffusion tank, and absorption column. Designed for large RNG facilities, dairies, and industrial digesters with high solids digestate (up to 8% TS).

EcoLite

Compact / modular configuration
Streamlined footprint for operations with less than 5,000 ppm TSS in the digestate. Shares core process chemistry with EcoMax and generates the same liquid fertilizer, at a fraction of the cost.

EcoMax Block Flow Diagram



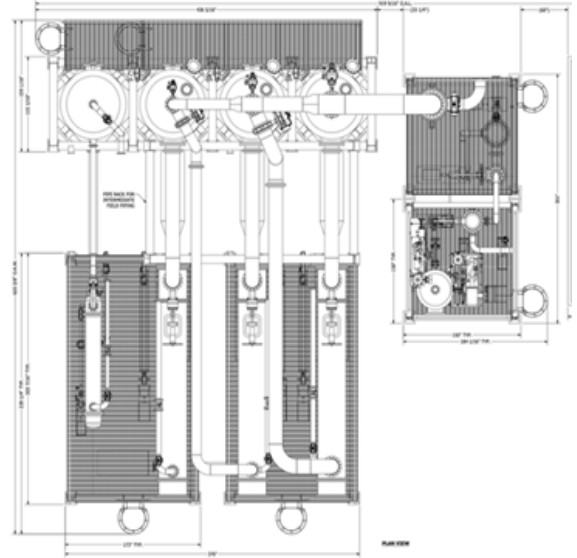
Mass Balance

Stream	In / Out	Notes
Digestate (feedstock)	IN	High-ammonia digester slurry; 1,500–3,000 ppm NH ₃ typical; the higher the better
RNG Tail Gas (CO ₂)	IN	Sourced from co-located RNG upgrading unit; used for AB10 stabilization
AB10 Organic Fertilizer	OUT	Up to 10% N by weight as ammonium bicarbonate; OMRI-certified liquid
Low-Ammonia Digestate	OUT	~2/3 of feed volume; ammonia reduced ~90% for further treatment or disposal
Greywater	OUT	Trace NH ₃ and VOC, no salt; suitable for irrigation, wash-down, process water, or discharge

Engineering Specifications

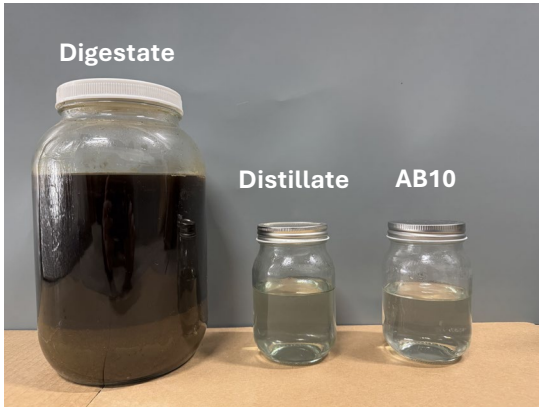
Parameter	EcoMax	EcoLite
Feedstock	Anaerobic digestate 4,000 ppm NH ₃ 1 – 9% TS	Anaerobic digestate 4,000 ppm NH ₃ <5,000 ppm TSS
Feed Capacity	100,000 gpd	100,000 gpd
AB10 Fertilizer Output	4,070 gpd	4,400 gpd
Greywater Output	25,930 gpd	0 gpd
Ammonia Recovery	89%	97%
Footprint	5,000 ft ² (w/o storage)	2,000 ft ²
Power Demand	240 kW	240 kW
Heat Input	340 mmBTU/d	120 mmBTU/d
RNG Tail Gas (CO ₂)	27 scfm	29 scfm
AB10 N Content	9% by weight	9% by weight
OMRI Certified	Yes (organic use)	Yes (organic use)

Indicative Footprint and Arrangement



Parameters are provided for indicative preliminary site planning. Contact Bion for project-specific values.

AB10 Liquid Organic Soluble Nitrogen Fertilizer



AB10 is a clear liquid ammonium bicarbonate fertilizer, stabilized with CO₂ from the RNG tail gas stream. It is a certified organic (OMRI Listed) 10-0-0 clear, sediment-free, liquid fertilizer that fills a unique gap in organic crop nutrition. AB10 can be applied via fertigation, direct injection, or foliar spray any time during the growing season to specialty, row, and cover crops; turf; and horticultural or home-garden settings. It is a proven, effective, soluble nitrogen fertilizer that is agronomically equivalent to conventional fertilizers but derived from organic resources and allowed for use on organic farms.

Partnership Opportunity

Bion is seeking partners to co-develop first commercial-scale ARS installations. Target partners include:

- RNG producers and biogas plant operators seeking to manage digestate and ammonia compliance
- Livestock, food processing, and food waste treatment operations with anaerobic digesters
- Food, beverage, and biofuel processing facilities generating high-ammonia waste streams
- Agricultural distributors and cooperatives interested in OMRI Listed organic fertilizer supply

Bion offers technology licensing, engineering design support, and long-term operating expertise. Partners benefit from new fertilizer revenue streams, reduced environmental liability, and a credible sustainability story for regulators and consumers.

Partner with Bion

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