

Enereau nrPUR™ HS-High Strength Membrane BioReactor (MBR)

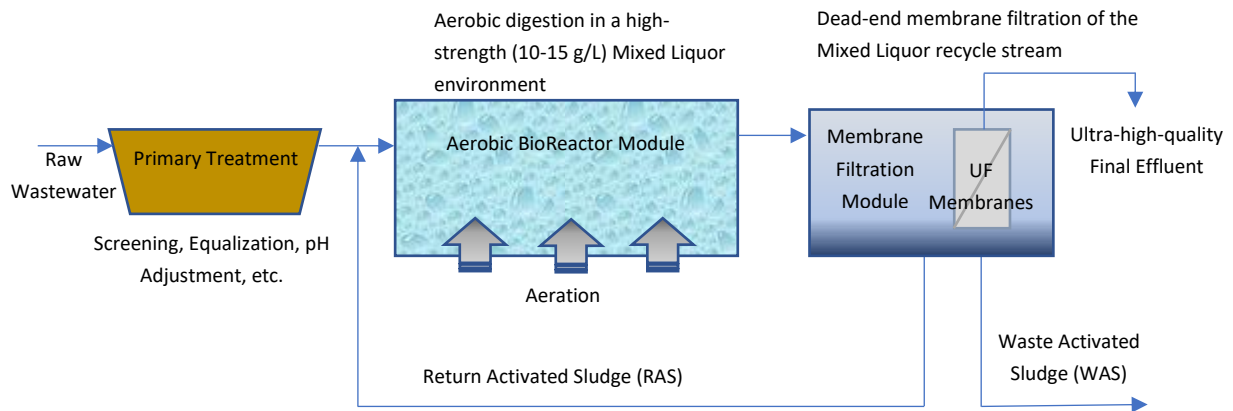


Globally, the Food & Beverage industry faces the challenge of how to meet the needs of its customers while ensuring the footprint of its operation do not adversely impact the community and the environment. Increasingly, these facilities are under pressure to conform to ever more stringent discharge guidelines from regulators and reduce or eliminate effluent strength prior to discharge. Designed uniquely for Food & Beverage applications, the Enereau nrPUR™ HS MBR platform is a fully standardized and modular MBR solution to treat high strength effluent streams. Leveraging Enereau's deep-domain experience on an extensive range of successful wastewater projects around the world, our advanced treatment platforms combine the highest quality components with the best available process expertise to provide our clients with the most robust, reliable, and cost-effective wastewater treatment solutions.

Capable of treating Food & Beverage wastewater streams to consistently safe and dependable reuse or discharge quality, Enereau's nrPUR™ HS MBR platform offers best-in-class treatment at the most affordable cost of implementation and operation.

The nrPUR™ MBR Process Description:

Facility wastewater is collected in an Equalization (EQ) tank where non-biodegradable solids are removed and where variations in flow and concentration are moderated. An integrated pH adjustment module monitors the influent wastewater and doses reagents as necessary to reach the desire range for biological treatment. The pre-treated and balanced wastewater is then transferred from the EQ tank to the BioReactor Module, a complete-mix reactor designed to ensure effective biological digestion of the organic materials in the aeration step of the well-proven Activated Sludge (AS) process. Wastewater is recirculated continuously between the BioReactor Module and the Membrane Module.

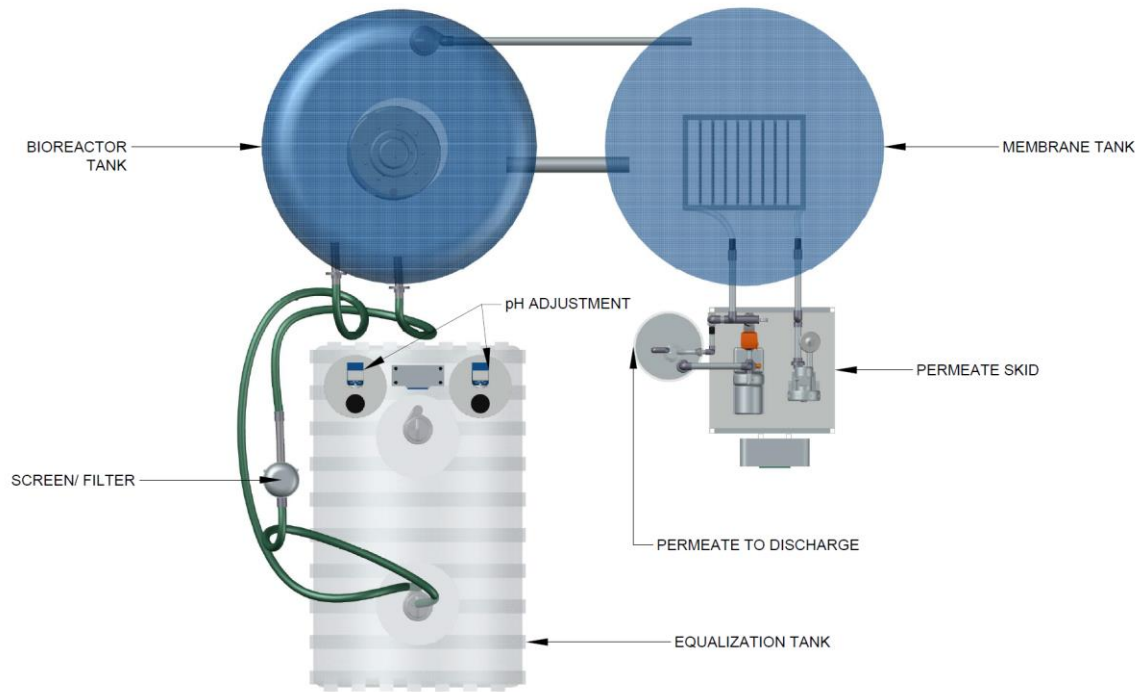
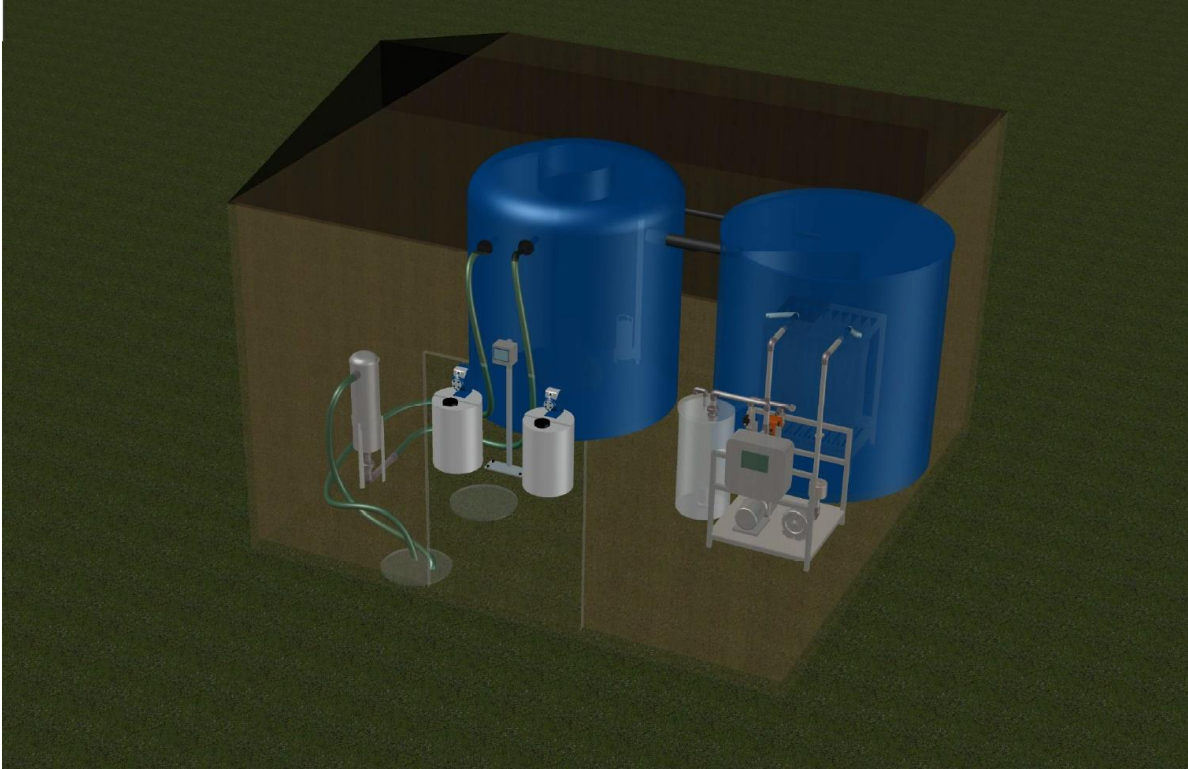


The Mixed Liquor Suspended Solids (MLSS) concentration, at 10-15 g/L, enhances the ability of the biomass to handle highly variable and higher strength wastewater influent.

The ultrafiltration (UF) membrane is an absolute barrier to any particulate matter larger than the membrane pore size, typically <0.1 μm in size. Typically, final effluent quality is suitable for many non-potable reuse applications with TSS <<5 mg/L and BOD reduced by 98% or more.

The Membrane BioReactor Process

The AS process converts the soluble organic material present in the wastewater into CO₂, H₂O and biological cell mass, while an aeration system provides the oxygen required for this process. The liquid phase of the mixed liquor (Permeate) is pulled through the membranes at a predetermined rate, or flux, established for each specific application and discharged to a clean water storage tank. The mixed liquor suspended solids (MLSS) are rejected and moved away from the membrane by an air scour and hydraulic action. Surplus biomass generated by the conversion of BOD into cell mass is wasted periodically from the system, on an as-needed basis, as Waste Activated Sludge (WAS), for off-site disposal or for further processing.



Flexible arrangements for both new build and retrofit applications

Key features and benefits of the Enereau nrPUR™ platform:

Developed around a series of standard, modular building blocks, the nrPUR™ MBR platform offers unparalleled flexibility and reliability for wastewater treatment at average daily flows from less than 5,000 USgpd (20 m³/d) up to 100,000 USgpd (400 m³/d). Factory assembled and tested prior to shipment, with integrated automation, mechanical equipment and instrumentation, the use of proven process modules ensures that each platform goes together seamlessly on site and starts up with no complications.



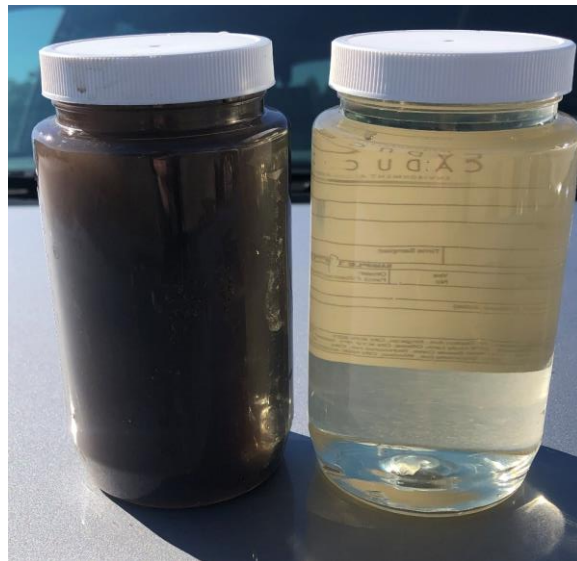
Compact Membrane BioReactor (MBR) solutions for flows ranging from < 5,000 USgpd to >100,000 USgpd

Leveraging the unparalleled space efficiency of the MBR technology, typically 75% less space required than conventional activated sludge processes, the nrPUR™ platform is one of the most compact systems in the industry.

Typical Process Performance:

The nrPUR™ HS-MBR platform is designed to treat light industrial wastewater coming from Food & Beverage facilities. Based on high strength wastewater characteristics, typical treatment effectiveness is:

Parameter	Standard Models	Influent	Effluent	Units
Average Daily Flow	nrPUR™ HS1	Up to 5,000		USgpd
	nrPUR™ HS2	>5,000		USgpd
BOD ₅		5,000	>98.5% Reduction	mg/L
TSS		1,500	<5	mg/L



Greater than 98.5% BOD₅ Reduction / Non-detectable TSS

For more information visit www.enereau.com or contact us at sales@enereau.com