



C²-UF WR Treatment System for Wastewater Reclamation

Clean Membranes' innovative **C²-UF WR** is the industry's most compact, packaged ultrafiltration (UF) system designed to reclaim non-potable, Class A reuse water from municipal wastewater. The C²-UF WR features the highly innovative **Gigamem[®] UF240** membrane module from Polymem, which contains the largest filtration surface area of any commercially available module, and makes it possible to easily achieve high levels of reuse quality water production within the plant footprint of municipal WWTP facilities.

The 24" OD **Gigamem[®]** module houses **52 individually replaceable fiber bundles** for a total of 5,813 ft² of filtration surface area. Each bundle can be independently installed, inspected, or repaired without dismounting the module, thereby overcoming the typical maintenance difficulties of conventional ultrafiltration installations.

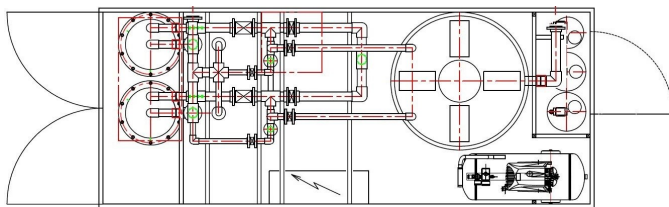
The **C²-UF 200 WR** is a fully-automatic and cost-effective system for achieving municipal wastewater reuse. As demonstrated by pilot testing, the system is able to generate Class A water for 10%-24% of the cost of purchasing potable water for non-potable purposes.

C²-UF WR Standard Models (custom available)

Standard Model	Optimized ¹ Class A Water Production per Day	# Gigamem UF 240 Modules
C ² -UF WR 100	100.3 HCF (75K gal)	1
C ² -UF WR 200	200.5 HCF (150K gal)	2
C ² -UF WR 400	401.0 HCF (300K gal)	4

¹ Optimized for energy and maintenance savings

C²-UF WR Containerized Pilot System Available



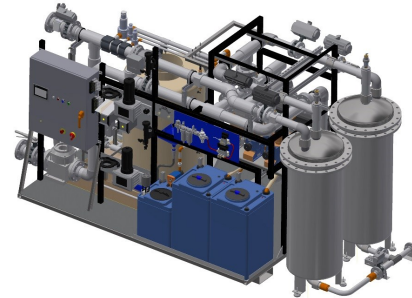
Schematic of the C²-UF WR 200C containerized unit available for piloting by cities and towns

Contact Clean Membranes for more information.

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C²-UF WR 200 System Illustration

The C²-UF WR 200 system features two (2) of Polymem's compact, high-capacity Gigamem[®] UF240 modules.



C²-UF WR Exceeds MA Requirements¹ for Class A Reclaimed Water (314 CMR 20)

Parameter	Class A Reclaimed Water Spec	C ² -UF Effluent
BOD₅	<10 mg/L	<2 mg/L (BDL) ²
TSS	<5 mg/L	0 – 0.2 mg/L
Turbidity	24-hour sample average <2 NTU; → ≤5 NTU for more than 5% samples; → ≤10 NTU for any sample. →	0.039 – 0.141 No results >5 NTU No results >10 NTU
Fecal coliform	Median of no detectable fecal coli form/100 ml over continuous seven-day sampling periods; Not to exceed 14/100 mL in any one sample	Below detection limits (BDL) in all samples

¹ Data from pilot testing in Amherst, MA; BOD₅ and bacteria testing conducted in certified laboratory

² Below Detection Limits

C²-UF WR 200 Lowers Water Supply³ Costs

Average Cost of Municipal Water Supply	\$/HCF
2017 Massachusetts Water Rate (State Average)	4.20
2017 Massachusetts Sewer Rate (State Average)	6.08
2017 Massachusetts Combined Rate	10.28
Cost⁴ of Reclaimed Water with C²-UF	\$/HCF
Combined capital, maintenance and operating	0.98

³ Supply for non-potable use purposes (field irrigation, cooling towers, chillers, etc.)

⁴ Projected using actual system/component cost data, 6 months of pilot operating experience, and some data inputs specific to Amherst, MA