Learn more: https://www.youtube.com/watch?v=bs1vtEjZjbw&t=39s

Better Water at Lower Cost

Cuf is a Continuous Ultra-Filtration process with proven performance since 2013. It is a quantum leap forward in water purification; effectively rendering all other MF/UF membrane processes obsolete. ***Cuf*** has no pre-treatment, no filtrate loss, no membrane replacement, and absolute filtration at its rating over the 25-year design life of the system. ***Cuf*** will capture and reduce your carbon footprint.

The ***Cuf*** process is a disruptive game changer for conventional engineering, cost structures and performance criteria. ***Cuf*** is more than just a filter.

Cuf systems have a much smaller footprint and significant complexity reduction over all other membrane filtration processes. Low TMP (Trans Membrane Pressure) with unmatched flux (5 times) and duty further contribute to operating and capital cost structure reductions in the 50% range.

Cuf is comprised of patented SiC ceramic membrane and process technology which is fully developed and optimized with multiple installation and multiple regulatory environments.

Purification Capability

Removes and/or Recovers Particulate, Color, DOC, Pathogens (>5.7 LRV), TSS, VSS, Radium, Turbidity, Hardness, Oil, Cr^6, Metals, H_2S, Organic & Inorganic Phosphorous, THM & HAA Precursors, Taste & Odor compounds and Silica. All this is performed in a single ***Cuf*** platform which eliminates conventional pre, auxiliary and post treatments. ***Cuf*** is a complete Zero Liquid Discharge plant.

Applications

Drinking Water Wastewater Reuse IPR/DPR Remediation Solvent Filtration RO Pre-Treatment

Expertise

Purifics has been deploying its proprietary Ceramic Membrane Systems since 1993. Our installed global base (70+) provides unmatched Experience and Leadership in ceramic membrane system technology for Municipal and Industrial applications to Filter, Destroy and Recover (FDR) contaminants in water and other fluids.

Purifics' Experience and Leadership in ceramic membrane technology has let to unique innovations:

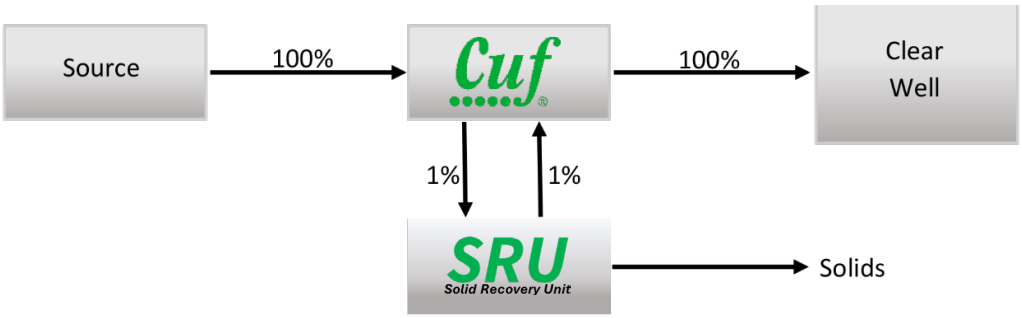
1. That Inhibit Fouling
2. Sustained High Flux Rates
3. Continuous Online Duty
4. Marker Based DIT
5. Enhanced Capability, Robustness, Efficiency & Durability
6. Eliminate or Reduce Chemicals

Concentrated Sweep Floc

Cuf enables Concentrated Sweep Floc to reduce coagulated demand by 60% over conventional charge neutralization and eliminates the need for Jar Testing and Zeta Potential dependence.

Process Description

Raw water is screened for “frogs and logs” and processed in a crossflow arrangement, TMP is modulated in the ***Cuf*** to maintain constant flux over the performance range to ensure that flow rate requirements are achieved. The membrane module is frequently subjected to a dynamic shock to self-clean the membranes which inhibits fouling, allowing continuous online duty (~99%).

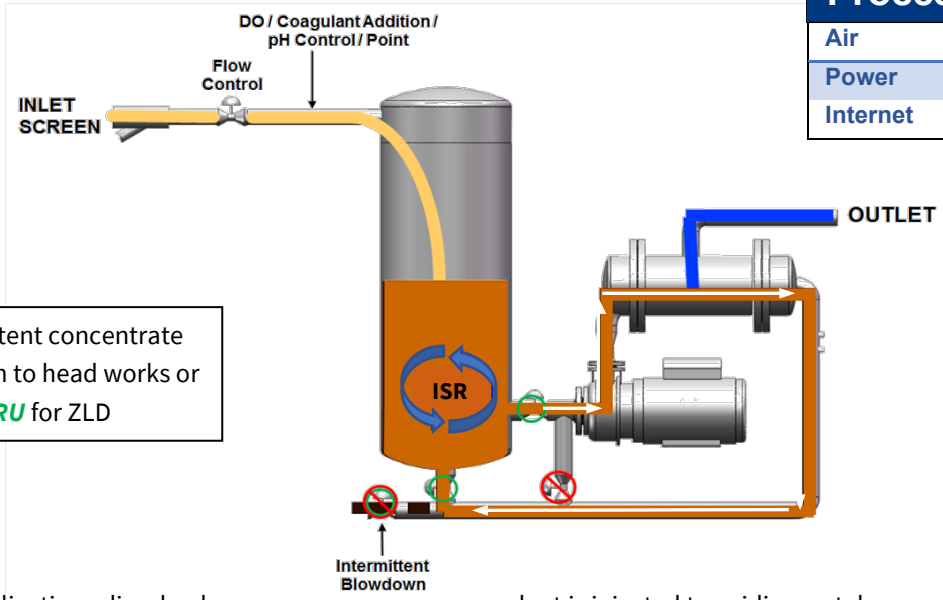


A concentrate blow down is sent to ***SRU*** (Solid Recovery System) where a 20% solid is achieved without the need for chemical or labor.

Cuf is not Trans-Membrane Pressure (TMP) limited like conventional membrane processes. ***Cuf*** is unique and runs at a constant flux and the TMP is modulated to maintain the desired constant flux. This means that the flux in a ***Cuf*** process is independent of the fluid turbidity or temperature and the plant is not de-rated as the fluid temperature drops. This means that a ***Cuf*** process can respond to changes in viscosity, load and demand and is only limited by the installed TMP pump’s capability.

Process Flow

Process Utilities	
Air	100psig
Power	480V 3 Phase
Internet	High Speed Static IP



Intermittent concentrate blowdown to head works or ***SRU*** for ZLD

In certain applications dissolved oxygen or a common coagulant is injected to oxidize metals or agglomerate or DOC. These reactions occur in the ISR (In-Situ Reactor). No upstream coagulation basins or clarifiers pretreatment is required, just the ***Cuf*** platform.

Dynamic Shock

Purifics' proprietary Dynamic Shock process self-cleans the ***Cuf*** membrane in a continuous online operation. The shock is generated and travels through the water (no mass transfer), the membrane, and the module to drive foulants off the membrane surface.

Remote Access & Control

Cuf utilizes a secure, cloud based VPN for remote control. This allows Remote Monitoring, programming/SCADA updates and remote technical support. The connection allows the ***Cuf*** to automatically message pertinent plant personnel in the event of a fault. The cloud based VPN requires any type of internet access including a mobile hotspot and does not require any programming.

Duplex & Redundancy System Options

For system design and regulatory requirement purposes to retain capacity in the event of an upset, ***Cuf*** systems are available in a Duplex or Dual Module (DM) platforms and expanded capability.

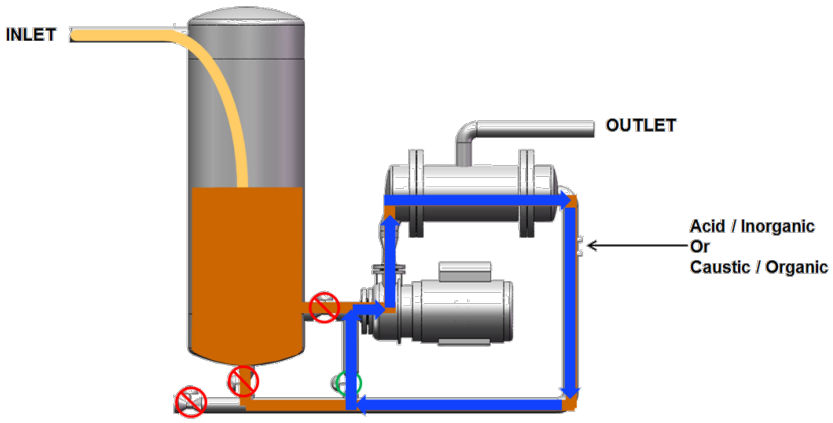
Ratings & Certifications Available

- LT2ESWTR Compliant
- ASME B31.1 & 31.3
- NSF/ANSI/CAN 61-372
- Class I Div 2

Regulatory Compliance

Regulatory Compliance in Multiple Jurisdictions since 2013 with the largest installed base of ceramic drinking water plants in North America.

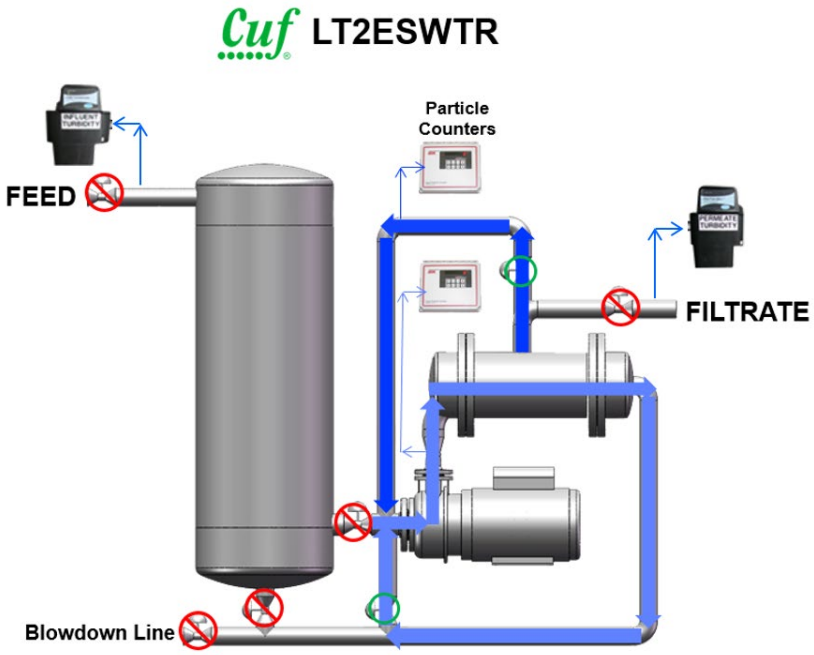
TMP Maintenance



There is no Clean-In-Place (CIP) or backwash with the ***Cuf*** process. Over time or extended shut down or an upset event the TMP may increase. When this occurs an automated TMP Maintenance Rinse Cycle (chemical rinse) is activated and the concentrate recirculation loop (in blue) is isolated from the process, the Loop pump recirculates high crossflow, the temperature may be raised, and the pH shift chemical is injected. Acid is used for inorganic, and caustic is used for organic fouling. The combination of heat, crossflow velocity and pH shift are used to scour and dissolve residual foulants from the membrane. The TMP maintenance fluid is discharged through the blowdown line. When this 30 minute cycle is complete, full TMP recovery is achieved and the system is brought back online.

LT2ESWTR Compliance for Membrane Integrity Verification

LT2ESWTR “Long Term 2 Enhanced Surface Water Treatment Rule” identifies the requirements for log removal of Cryptosporidium and the verification method to ensure the membrane integrity. This is achieved in the *Cuf* process by the following procedure.



Full details on *Cuf* LT2ESWTR compliance is provided in Document DOC2040 (LT2ESWTR Compliance & Verification).

Highest Capacity Membrane Modules in the World