Case 1

Porter, Texas conducted four membrane filtration surface water pilots simultaneously to compare the cost and performance for a new 4+ MGD Drinking Water Plant. Surface water was drawn from a reservoir hydraulically linked to the San Jacinto River, upstream of Lake Houston. A unique feature of the test program is that no membrane pretreatment was provided, and the raw feed water was simultaneously sent to all four membranes pilots, to process the water as they see fit.

Competitive Test Program Set Up

Pilot plants arrived on site in the summer of 2019. These pilot plants were operated by the city and the test program was managed by Ardurra Consulting Engineers. The pilot program was completed in January 2020.

Purifics

Toray

Pall (Veralto/Trojan/Aria)

Koch

Comparative Performance

TCEQ requires a 90-day pilot in 3 stages. Stage 1, optimization, Stage 2, 30-day sustained operation at optimized parameters (i.e. TMP, Flux, Coagulant dose), and Stage 3, a minimum 10-day period to demonstrate membrane integrity with no irreparable membrane fouling.

Process	Purifics	Toray	Pall (Veralto/Tojan/Aria)	Koch
Specific Flux GFD/psi	31 (250 GFD)	2.8*	8.6*	7.7*
Filtration Cycle	21 days	15-30 min	15-30 min	15-30 min
NTU (Feed 150)	0.013	0.036	0.012	---
TOC Removal % (Feed 6ppm)	58%	38%	28%	28%
ACH Dosage (ppm)	18	35	20	30
TOC Removal % / ppm ACH	3.2	1.1	1.4	0.9

* May or may not be corrected for backwash

Conclusion:

Purifics *Cuf* process selected for multiple full-scale awards with no pre-treatment and Zero Liquid Discharge.

Case 2

A pilot verification was conducted in Shingle Creek, FL to confirm the cost structure and performance of a full-scale design for a 6 MGD drinking water plant with Zero Liquid Discharge. The Nanostone system required Actiflo pre-treatment and did not demonstrate sustained water treatment after several months of piloting. Purifics *Cuf* pilot was installed shortly after and proved its capability to purify the water consistently within 48 hours of operation. *Cuf* then operated over the next three months with sustainability.

Competitive Test Program Set Up

Purifics

Actiflo/Nanostone

Comparative Performance

Process	Purifics	Actiflo/Nanostone*
Flux GFD	250	
Filtration Cycle	21 Days	
NTU (Feed 150)	0.003	
TOC Removal % (Feed 19ppm)	76%	
ACH Dosage (ppm)	38	
TOC Removal % / ppm ACH	2.0	
Pre-Treatment	None	Yes
Process Time	4 Min	Hours
Water Efficiency	100%	

* No data availability, unable to process water on a sustained basis

Conclusion:

Purifics *Cuf* process selected for full-scale design with no pre-treatment.

Case 3

The city of Bronte, TX conducted a 120-day pilot to evaluate the cost and performance of three major water filtration processes. Purifics proved to be the only system to successfully operate demonstrated sustained performance without pre-treatment.

Competitive Test Program Set Up

Pilots arrived on site in April 2024. The units were managed by the city and the test program was overseen by Jacob Martin Consulting Engineer. The pilot program was completed in September 2024.

Purifics **Veralto/Trojan/Aria (Pall)** **Dupont/Memcor**

Comparative Performance

Process	Purifics[1]	Veralto/Trojan/Aria/Pall	Memcor/ Dupont
Flux GFD	250		
Filtration Cycle	30 Days		
NTU (Feed 150)	0.021		
ACH Dosage (ppm)	15		
Pre-Treatment	None	Yes	Yes
Process Time	4 Min		
Water Efficiency	100		

[1] Zero Liquid Discharge Operation

Conclusion:

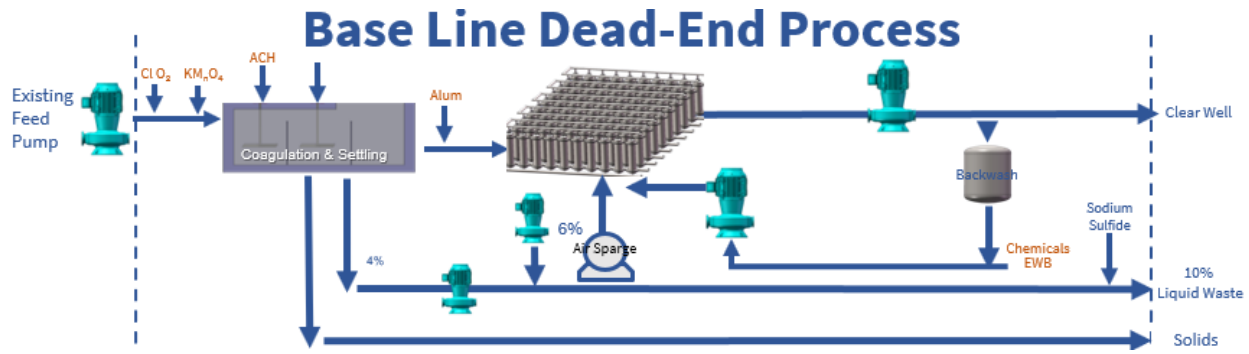
Purifics *Cuf* process selected for full-scale design.

Case 4

HPUD of TN conducted a competitive surface water to drinking water evaluation between the *Cuf* process, Ovivo **SiCBLOX** process & its existing 10 MGD polymeric treatment train using Dupont / Memcor polymeric membranes. The pilots have been operating for more than 90 days. The operator is considering phased retrofit and green field replacement options. Life cycle cost assessments are being conducted.

Base Line Process

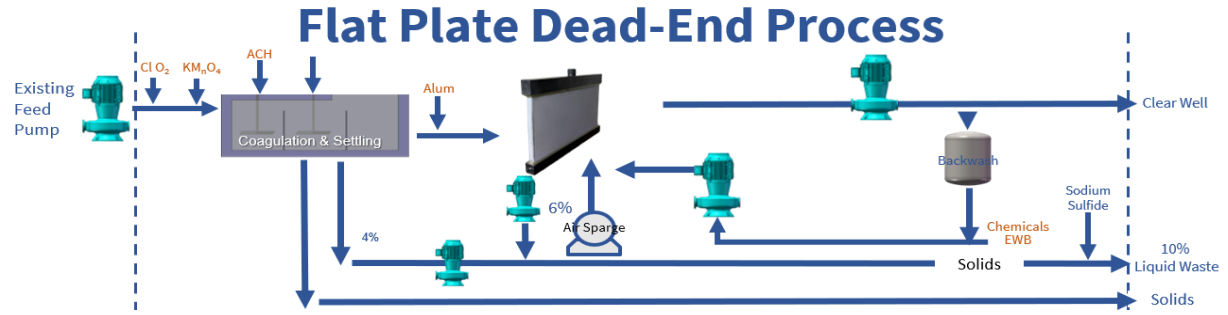
The base line dead end Polymeric membrane process shown below is fed with pretreated water with annual cost data provided.



- Process Time ≈ 20 hours
- Flux 50 GFD
- Chemical Enhanced Backwash
- 90% Water Efficiency
- Multipal Process Chemical Additions (5)
- Multiple Pumps (4)
- Multiple Unit Operation
- 6 yr Membrane Replacement period

SiCBLOX Process

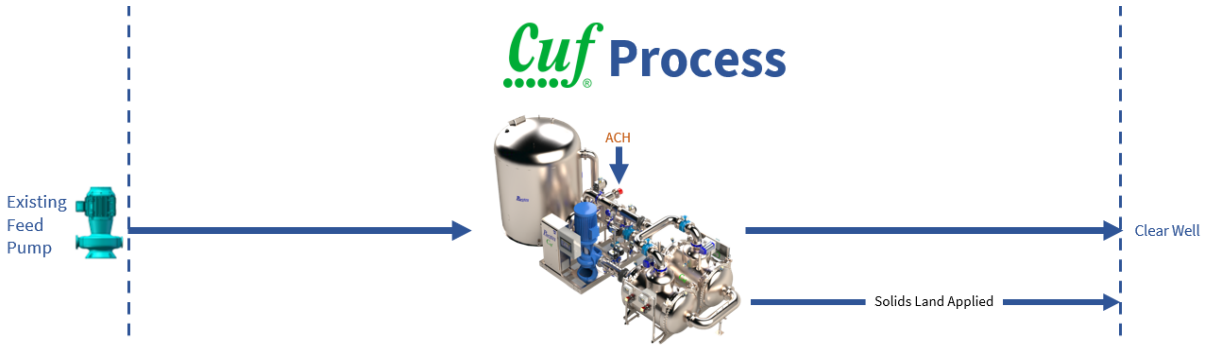
The Ovivo **SiCBLOX** is a flat plate, outside in, SiC membrane process has a chemical enhanced back wash, air scour and blowdown. It is fed with pretreated water followed by an additional coagulation process step.



- Process Time Many Hours
- Greater UVA (Lower TOC Removal)
- <93% Water Efficiency
- Multiple Process Chemicals (5)
- Multiple Unit Operation
- Flux 170 GFD
- Chemical Enhanced Backwash Interval 2 days
- Multiple Pumps (5)

Cuf Process

The Purifics *Cuf* is a patented inside out SiC membrane process. *Cuf* process features insitu Concentrated Sweep Floc Coagulation, Dynamic Shock, and Zero Liquid Discharge. *Cuf* eliminates pre-treatment, backwash, CIP and 4 chemical Process.



- Process Time 4 min
- Flux 250 GFD
- Rinse Interval 21 days
- Lower UVA (Greater TOC Removal)
- 100% Water Efficiency (Zero Liquid Discharge)
- 1 Process Chemical
- 1 Pump
- Single Unit Operation

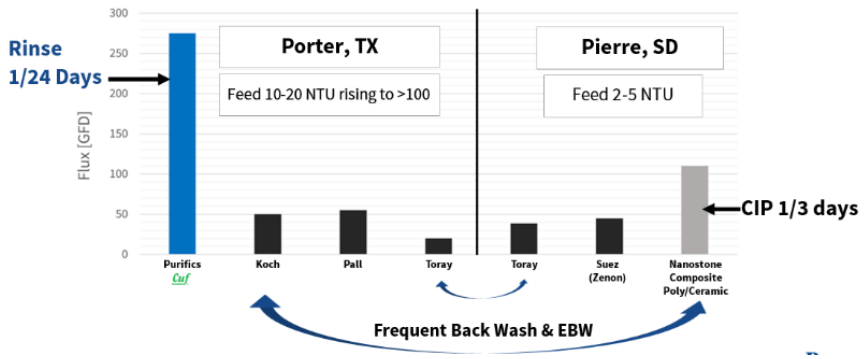
Conclusion:

Cuf **Offers Better Water at Lower Cost**, with less complexity, fewer process chemicals, No pre-treatment and No liquid waste. Cost effective Life Cycle cost for Greenfield or Retrofit Upgrade

Case 5

Sustained Pilot Study Comparison

Below is a comparison between *Cuf* & Nanostone Pilots. *Cuf* Operated on much higher turbidity water with significantly less cleaning at much greater flux than Nanostone.



Purifics

Cuf Competitive Surface Water Evaluations

Case 6

Cost & Complexity Advantage

Pall (Veralto/Trojan/Aria) Dead-End Membrane

CLIENT
Six Nations of the Grand River

LOCATION
Ohsweken, ON

SIZE
50L/second

DELIVERY MODELS
Design/Bid/Build

COMPLETED
2013

MARKET
Water/Wastewater Treatment

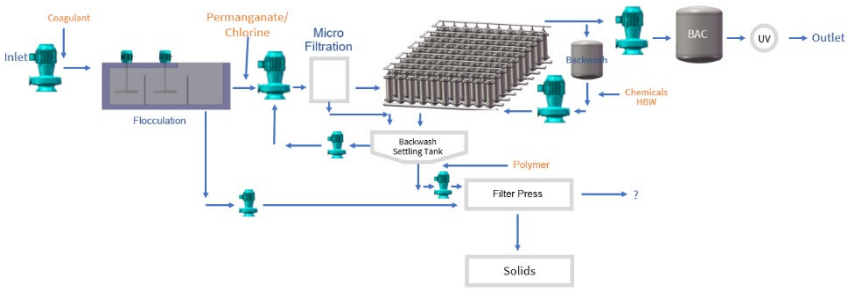
Cost: $ 40M*

Size: 16,000 ft²

Capacity: 4MLD/ 1MGD

Process Time: Hours

Pre-Treatment: Yes



Cuf Process

CLIENT
Village of Granisle

LOCATION
Granisle, BC

SIZE
50L/second

DELIVERY MODELS
Design/Bid/Manufacture

COMPLETED
2020

MARKET
Water/Wastewater Treatment

Cost: $6M*

Size: 3,500 ft²

Capacity: 4MLD/ 1MGD

Process Time: 4 Minutes

Pre-Treatment: None

Conclusion:

Cuf Demonstrate Economic Advantage

CapEx Reduction	Footprint Reduction	Chemical Reduction	Energy Reduction	OpEx Reduction
80%	75%	80%	50%	50%

*Inflation Calculator 2024 $

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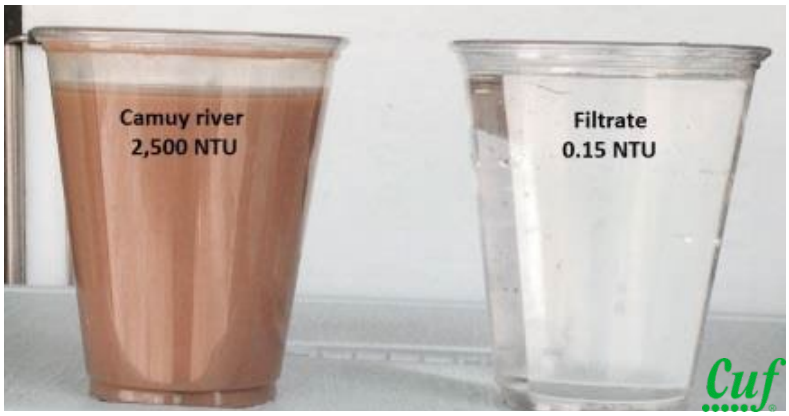
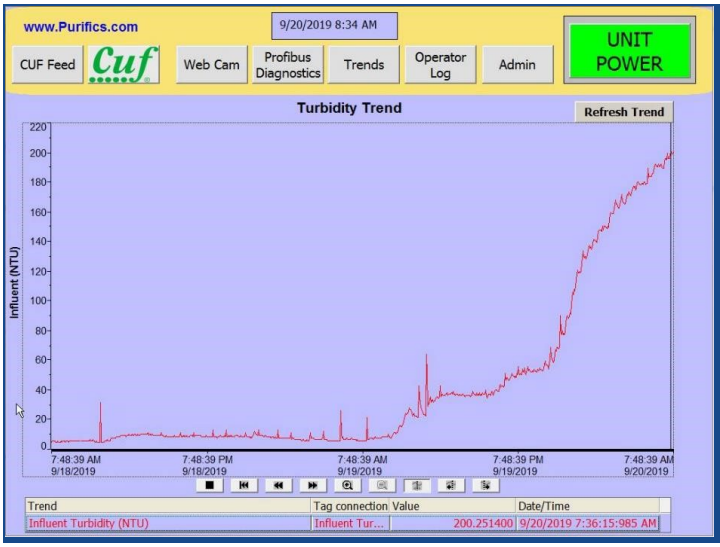
Rev: 23-07-2025

Case 7

The *Cuf* process is not dependent on Zeta potential like other membrane processes. Therefore, *Cuf* is not impacted by storm events, lake inversions, seasonal fluctuations or temperature and is able to sustain filtration performance and flux. The example below shows *Cuf* ability to process water after a storm event.



The pictures below demonstrated *Cuf* ability to process water directly after tropical storm Imelada in Texas while other membrane process had to go of line and even days latter could not achieve the desired water quality



CUF Feed & Filtrate

CUF Concentrate