SWIRLTEX

A SPIN ON
MUNICIPAL WATER TREATMENT

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UNLOCKING LAGOON CAPABILITIES ACROSS CANADA

Swirltex is an Alberta-based solutions provider and manufacturer of wastewater treatment systems.

Our buoyancy-enhanced filtration process treats challenging wastewaters at higher throughput, lower energy consumption, and in a broader range of climates.

We take a different approach on concentrating the way we use membranes for wastewater streams that would otherwise be considered non-reusable.

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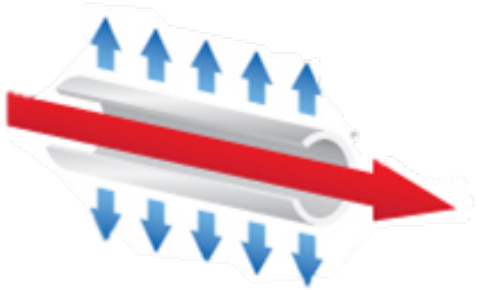
BUOYANCY-ENHANCED MEMBRANE FILTRATION

The Swirltex process manipulates the hydraulics of off-the-shelf tubular ultrafiltration membranes .

REVOLUTIONIZING how industries utilize wastewater.

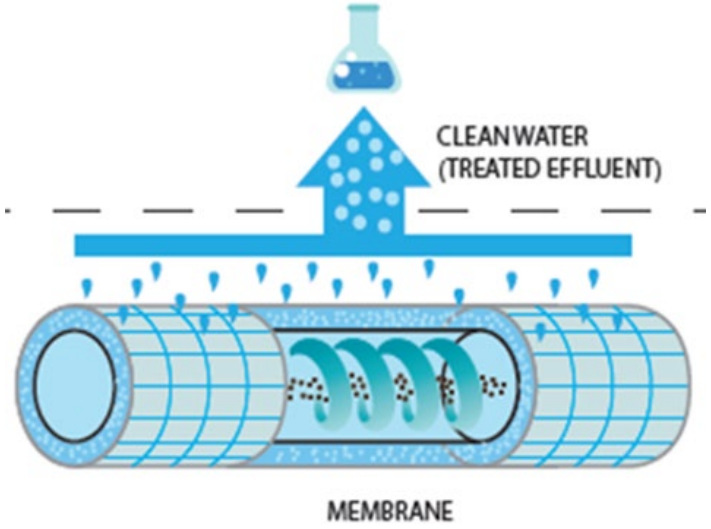
Conventional Tubular Membrane Laminar Flow



Swirltex Tubular Membrane Filtration with Induced Annular Flow

Step 1: Inject Micro-Gas
(Enhance Buoyancy of Contaminants)

Step 2: Induce Spiral Flow
(Create Buoyancy/Density Separation)



Gas/Oil/Solids flow through core of membrane tube & water flows along membrane surface

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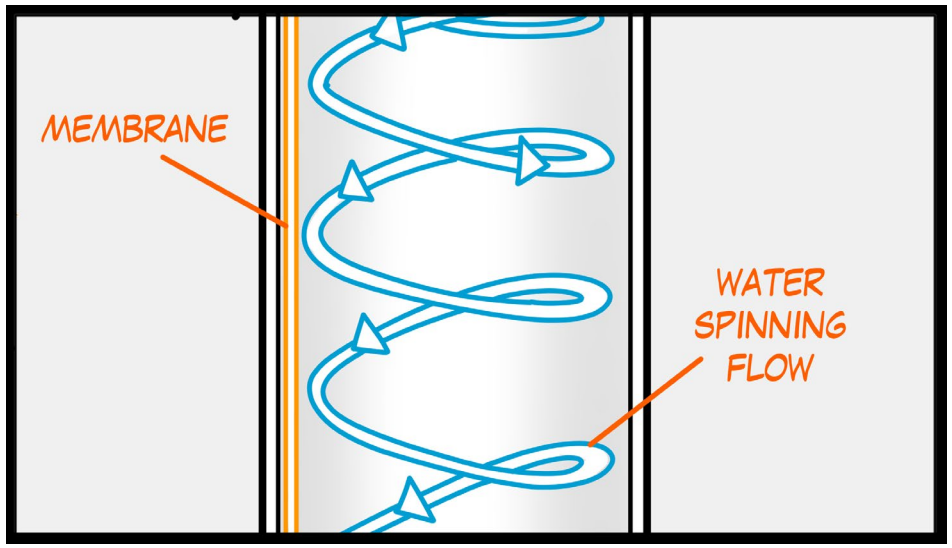
THE SWIRLTEX DIFFERENCE

We take traditional membranes and enhance them even further to promote efficiency and reduce environmental impact.



No concentration of contaminants due to open loop operation

Continual operation of system during cleaning and maintenance

Ease of operation and ability to handle different flow conditions

Clean and consistent water with minimal TSS and bacteria

Reduction in membrane fouling due to annular flow pattern

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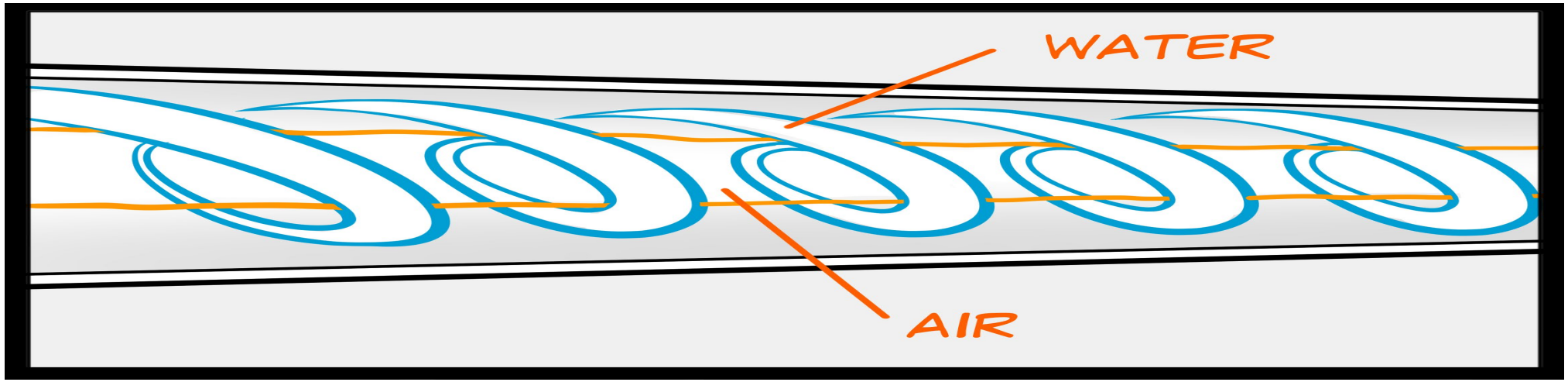
ENERGY CONSUMPTION AND ANNULAR FLOW



Swirltex's patented technology significantly reduces energy consumption because we inject air into our process. Our annular flow process increases efficiency and prevents fouling as well.

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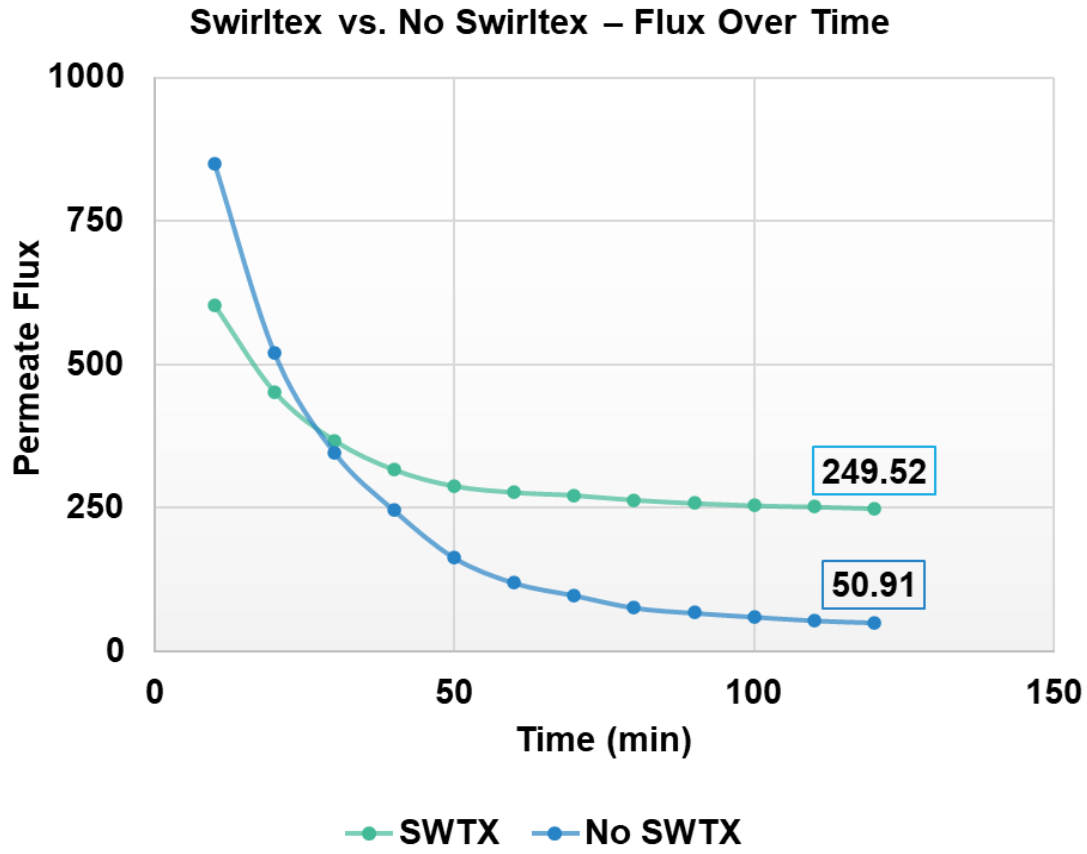
THE SWIRLTEX SOLUTION

Significant Flux Improvements

With the Swirltex process implemented, tubular membranes consistently operate at higher stabilized permeate flux rates compared to conventional tubular membrane operation.

Swirltex minimizes oil and solids interactions with the membrane and maximizes water velocity at the membrane surface.



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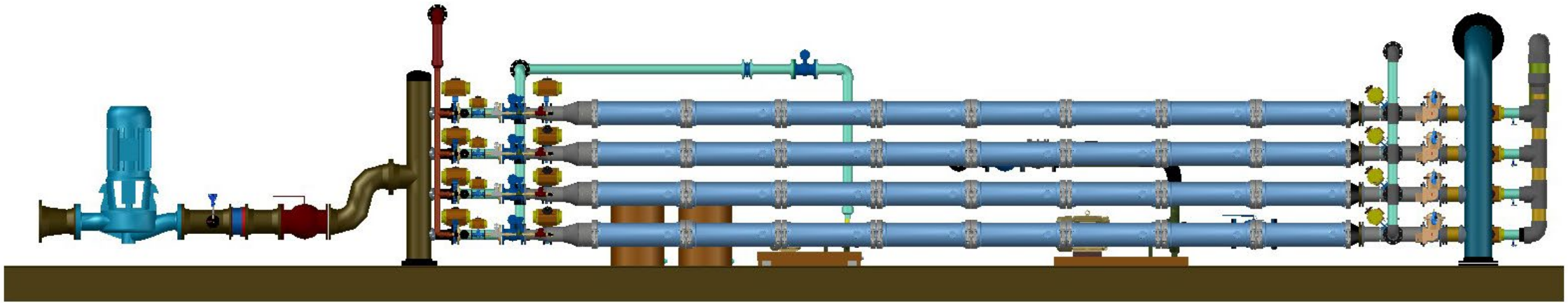
COMPARATIVE TECHNOLOGY MATRIX

	High Water Quality	Capacity	Efficiency	Footprint
Swirltex Buoyancy Enhanced Membranes	✓	✓	✓	✓

- Our modular units are compact, high-capacity, with a small footprint
- The Swirltex system significantly improves efficiency in comparison to conventional membranes
- Clean and consistent water produced even under variable flow conditions



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SWIRLTEX LAGOON UNIT (SLU)

The Swirltex Lagoon Unit (SLU) dimensions are approximately 55ft L x 12ft W x 12ft H.

The electrical supply required is 200Amp at 480V.

Swirltex will install temporary mechanical tie-ins. There will be a raw feed line (8”), concentrate loop (6”), and permeate/treated water line (3”) tied into the SLU.

Site access – a suitable foundation is required (flat and levelled surface) for the SLU.

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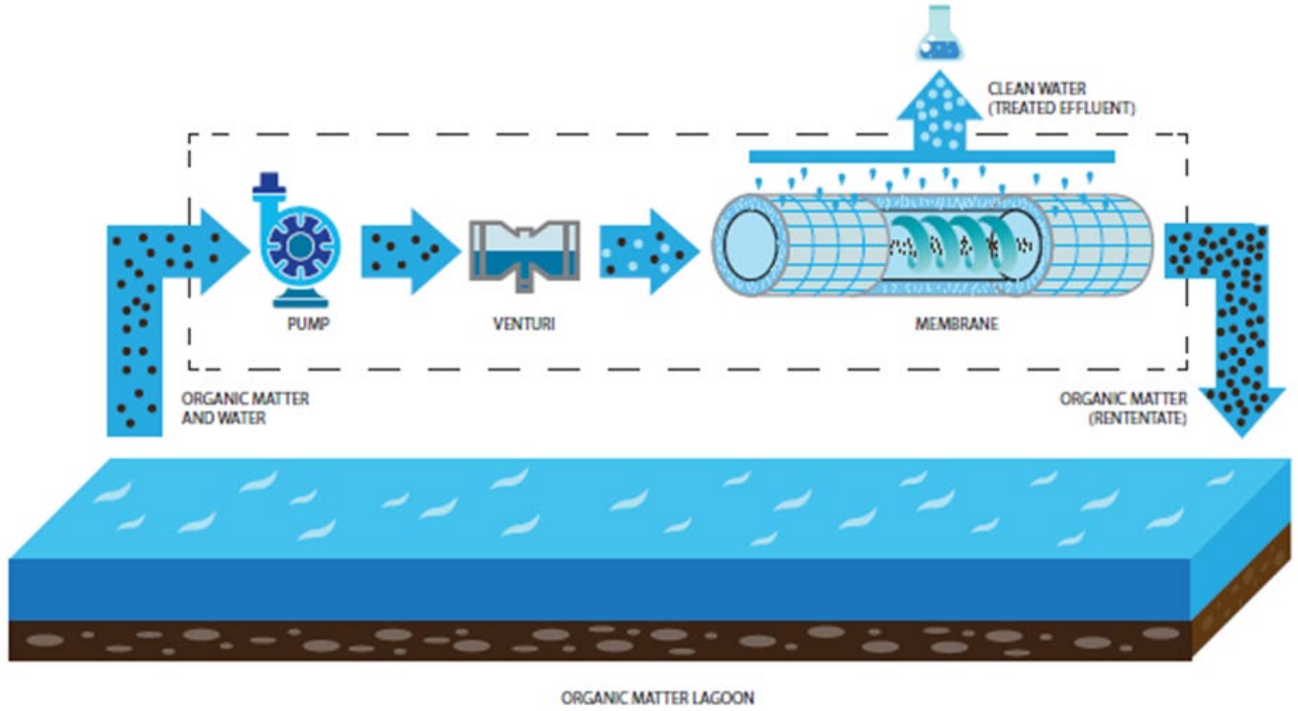
SWIRLTEX LAGOON UNIT (SLU)

REVOLUTIONIZING how industries utilize wastewater.

The Swirltex Lagoon Unit (SLU) is a unique portable system that provides membrane filtration while hype-oxidizing the liquid stream. The SLU system increases the capacity of a lagoon while providing high-quality effluent that can be reused for numerous applications.

The main benefits of the Swirltex Lagoon Unit (SLU):

- The SLU can treat high strength wastewater.
- Increases lagoon capacity through aeration and mixing of wastewater.
- Portable design can be transported to remote communities.
- High-quality, reliable effluent for environmental discharge or reuse in industrial applications.



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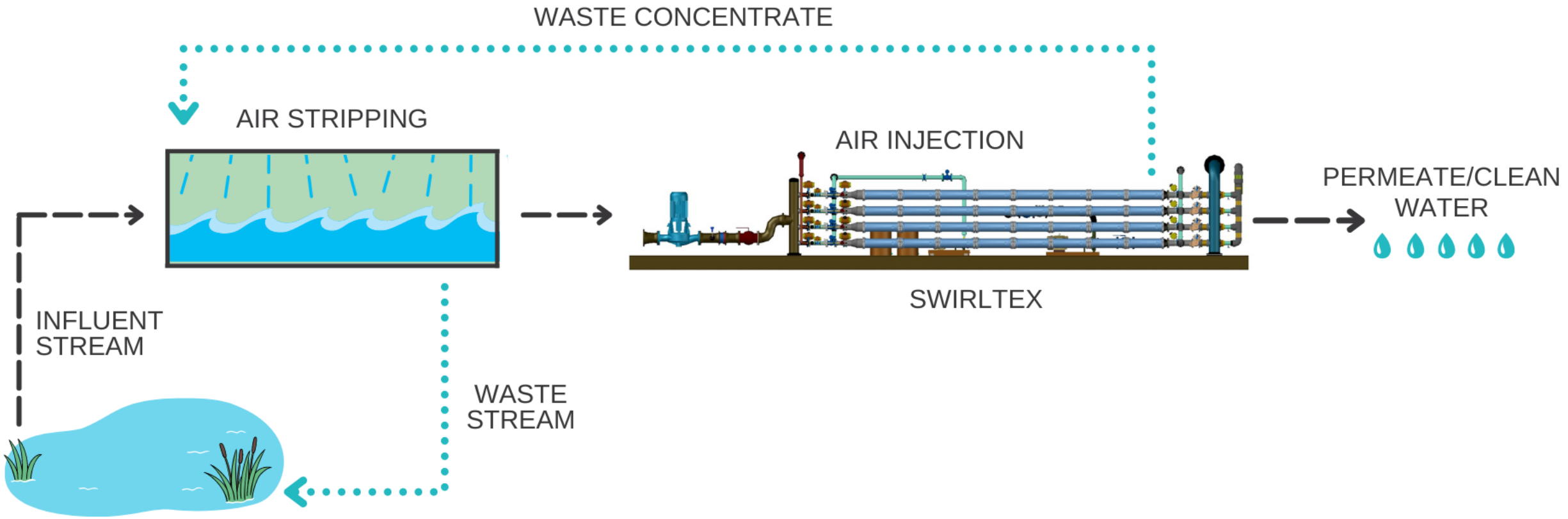
SWIRLTEX LAGOON UNIT BREAKDOWN



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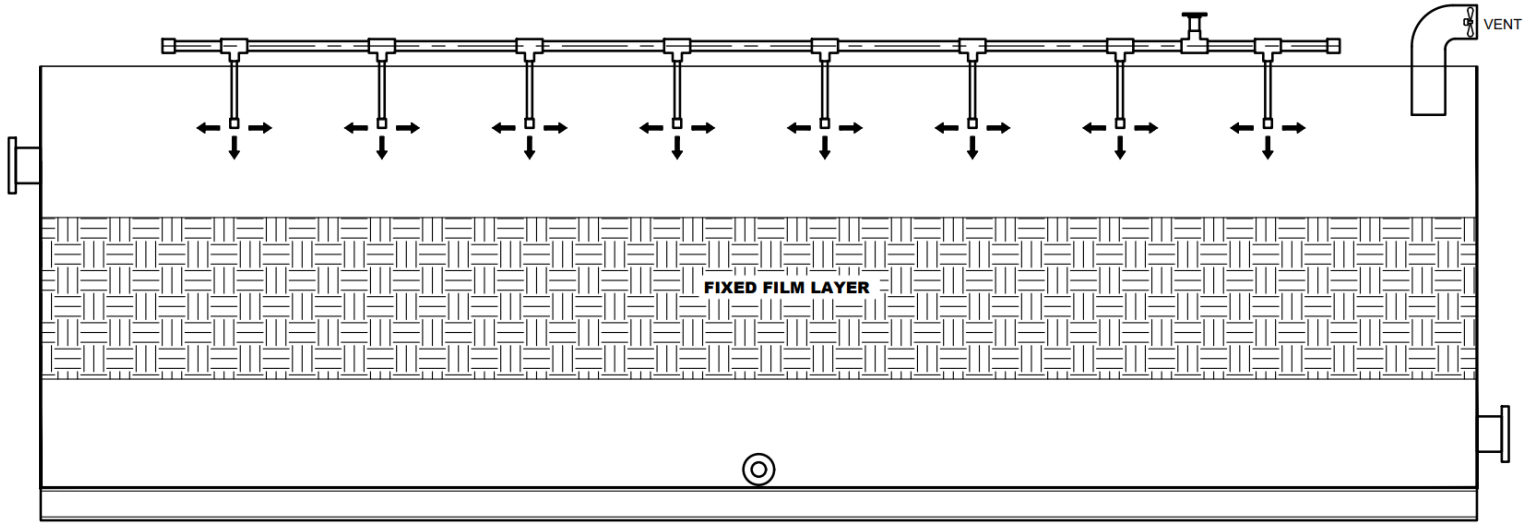
PARAMETER REMOVAL EFFIECIENY - AMMONIA

Ammonia output is a significant pain point for municipalities.

The SLU has a high success rate with organic compounds.

- Highly efficient ammonia removal all year long
  - 20 mg or below without the feed tank.
  - 20 mg or above will need feed tank.



AIR STRIPPING TANK

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PORTABLE CONTAINERIZED UNIT

One SLU can serve multiple communities or entire counties.

- This helps hit the environmental discharge spec
- Creates high-quality permeate, fit for reuse.

The SLU can be easily moved around, to be utilized among municipalities.

- Is able to support existing water treatment infrastructure without the need for massive upgrades.

ONE PIECE OF INFRASTUCTURE SOLVING PROBLEMS FOR MULTIPLE AREAS

SWIRLTEX LAGOON UNIT

COUNTIES

MUNICPAL DISTRICTS

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RESILIENT FILTRATION

Swirltex worked with the Town of Crossfield to treat their wastewater from their local lagoon. By using the SLU, the town was able to offset capacity limitations and meet environmental discharge compliance. The wastewater was treated to meet irrigation standards and provided the additional benefit of being sold to a nearby golf course for irrigation use.

Swirltex can handle a variety of different influent conditions and temperatures, even in waters that contain high counts of TSS, BOD, and algae.

	INLET	SWIRLTEX TREATED EFFLUENT	REMOVAL EFFICIENCY
TSS (mg/L)	125	<5	96%
COD (mg/L)	250	<50	80%
TOTAL COLIFORMS (MPN/100mL)	3000	<100	97%
FECAL COLIFORMS (MPN/100mL)	500	<10	98%

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PROJECT EXPERIENCE – EARLY STAGES

Parkland County

The first large scale installation was in Parkland County, AB. The Swirltex Lagoon Unit was in operation at Tomahawk for a year, starting in April 2015. The SLU produced 300 m3 per day of reusable water and improved the effluent quality by an average of 96%. The Swirltex system outperformed original expectations on power consumption while meeting all effluent quality requirements.

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PROJECT EXPERIENCE | EIA

Swirltex was asked to facilitate the water recycling process for the Edmonton Airport (EIA) in Canada. Swirltex's water filtration process allowed the airport to easily meet government-regulated wastewater standards and reduce the level of contaminants. The Swirltex Lagoon Unit showed exemplary results in filtering water to hit ESG goals, savings on disposal costs, and reduction in TSS and COD.

	INLET	SWIRLTEX TREATED EFFLUENT	REMOVAL EFFICIENCY
TSS (mg/L)	300	<5	98%
COD (mg/L)	350	<50	86%

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PROJECT EXPERIENCE | Town of Ponoka

The project was sponsored by Alberta Innovates and verified by Urban Systems, to show the operational capabilities of the Swirltex system to treat the Ponoka lagoon. The goal was to produce reuse-quality water while reducing the nutrients and ammonia levels in the lagoon.

	INLET	SWIRLTEX TREATED EFFLUENT	REMOVAL EFFICIENCY
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CLOSING SUMMARY

The Swirltex Lagoon Unit (SLU) is the most effective and feasible solution for stormwater and municipal wastewater needs.

Our technology is incomparable in terms of energy efficiency, low operational costs, a reduced environmental footprint, and reclaimed water for reuse or to meet discharge criteria. Swirltex is the ideal option for high-quality filtration requirements with our proven, cost-effective treatment system.

CONTACT INFORMATION

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Thank you for attending!

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