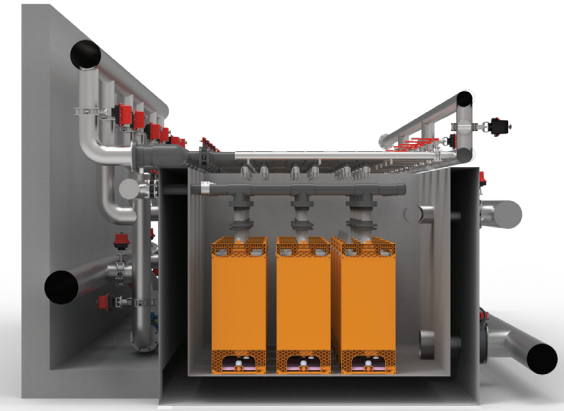
ultraBLOX™

TECHNOLOGY PROFILE

SiC | Advanced Reuse

THERE SIMPLY ISN'T ENOUGH CLEAN WATER IN OUR WORLD TODAY. FRESH WATER SUPPLIES ARE UNDER SEVERE DURESS DUE TO DEMAND AND POLLUTION. WHAT CLEAN WATER WE DO HAVE IS RAPIDLY VANISHING AS EXTREME DROUGHTS STRENGTHEN THEIR GRIP. SIMPLY PUT, WE NEED MORE WATER!



SECONDARY EFFLUENT, FROM MUNICIPAL WASTEWATER TREATMENT PLANTS IS A READILY AVAILABLE ALTERNATE WATER SOURCE FOR DIRECT/INDIRECT REUSE AND GROUNDWATER RECHARGE APPLICATIONS IN WATER STRESSED AREAS.

ultraBLOX is the most versatile and advanced tertiary system for creating clean, pure, and safe water.

At the heart of ultraBLOX is a robust low pressure Silicon Carbide (SiC) ultrafilter. Second in hardness to diamonds, SiC is an extremely hard, sintered, monolithic plate that eliminates membrane peeling and damage. It has ultra small 0.1 micron pores that creates a physical barrier against Metals, Total Suspended Solids (TSS), Pathogens and other trace contaminants performing filtration and disinfection in single step reducing the cost of advanced reuse.

Title 22

MADE IN USA
THE ONLY BABA COMPLIANT UF/MF MEMBRANE

NSF

Certified to NSF/ANSI 419

Certified to NSF/ANSI 61

Secondary effluent, despite being low in solids, poses challenges for membrane applications. Conventional wastewater treatment plants (WWTPs) use clarification for liquid-solids separation, requiring shorter solids retention times (SRTs) to maintain solids settling. Shorter SRTs result in younger sludges that release extracellular polysaccharides (EPS), which foul UF/MF membranes. This leads to frequent chemical cleaning, reduced hydraulic capacity, and high operating costs. Advanced Reuse regulations demand multiple unit processes, increasing project and lifecycle costs.

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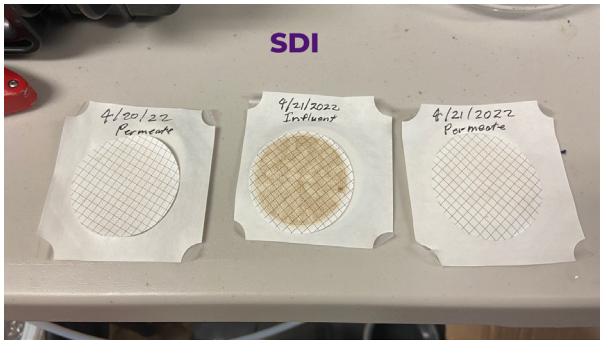
THE SOLUTION

The SiC ultrafiltration offers new approaches and solutions to tertiary applications. Less use of chemicals, coupled with its ability to recover completely from fouling, makes operations easier.

SiC being a chemically inert material, allows for enhanced treatment capabilities with use of strong oxidants such as Ozone and Chlorine Dioxide for pre-treatment as an option.

By combining ozone with SiC, numerous treatment functions are performed in a single step: flux enhancement, solids removal, disinfection, and removal of organic material. Ozone is found to be extremely effective at minimizing, and in some cases eliminating, the impacts of EPS fouling allowing sustainable flux rates roughly 6 times the flux rate of typical polymeric membranes.



RESULTS AND BENEFITS

Adding ozone before the SiC membrane allows for combined filtration and disinfection, removing or deactivating bacteria and viruses. This results in low silt density index (SDI) values, making ultraBLOX an excellent pretreatment for Reverse Osmosis (RO), enhancing RO flux and membrane life. The ozone + UF/MF combination improves permeate quality, potentially reducing or eliminating the need for AOP processes. High, sustainable flux rates offset ozone costs by requiring less membrane area, smaller tanks, and lower operating costs, thus reducing overall water treatment costs.

THE OVIVO DIFFERENCE

Ovivo's SiC Technology opens limitless possibilities of advanced treatment in minimal unit processes and smallest footprint reducing overall treatment costs.

EFFLUENT QUALITY

Parameter	ultraBLOX Effluent	ultraBLOX Effluent with Ozone pretreatment
BOD	2.9 – 3.1 mg/l	1.1 – 2.1 mg/l
E. Coli	<1 MPN/100 ml	<1 MPN/100 ml
Coliphage - Somatic	1-145 PFU/100 ml	<1 PFU/100 ml
Coliphage - Male Specific	1-11 PFU/100 ml	<1 PFU/100 ml
UV Transmittance	86.5 – 86.9%	85.5 - 90.8%
Silt Density Index (SDI)	0.06	0.03 - 0.08

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