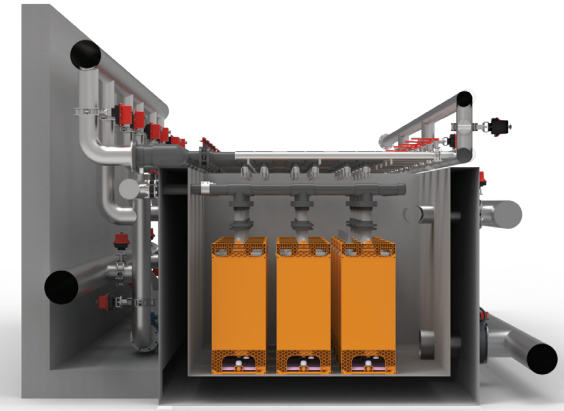
ultraBLOX™

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 can be a challenging membrane application even though it appears to be a low solids water source. Conventional wastewater treatment plants typically rely on clarification as the main liquid-solids separation step. To achieve efficient solids removal from the biological process, WWTPs must operate at shorter solids retention times (SRTs) in order maintain solids settling capability. Shorter SRTs mean younger sludges which tend to shed extracellular polysaccharides (EPS) which excel at fouling UF/MF membranes making it difficult to operate and maintain a tertiary membrane plant. Frequent chemical cleaning, compromised hydraulic capacity, and high operating costs are not uncommon in conventional UF/MF tertiary systems. Stringent regulatory requirements for Advanced Reuse require several unit processes to meet the tight limits. This ultimately increases the project cost, operating cost and thereby lifecycle cost.

OVIVO

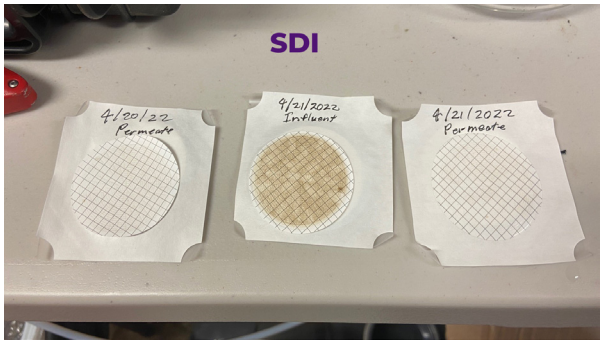
ultraBLOX™

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

The addition of ozone prior to the SiC membrane provides filtration and disinfection in a single step. Both bacteria and viruses are either physically removed and/or deactivated by the strong oxidant. The low silt density index (SDI) values allow ultraBLOX to be great pretreatment for Reverse Osmosis (RO) system increasing RO design flux and membrane life significantly. Whenever downstream processes such as AOP and/or RO are implemented after a tertiary UF/MF system, their design and performance is greatly impacted by UF/MF permeate quality. The ozone + UF/MF combination can reduce, or even eliminate, the need for AOP processes after UF/MF. By achieving high, sustainable flux rates, the added costs of ozone generation and addition are offset with less membrane area, smaller tanks, and lower operating costs significantly reducing the cost of treating water.

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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