MICRO-BUBBLE FLOTATION (MBF®)

MBF technology helps attain cleaner water in the most challenging processes. With Exterran MBF, oil is removed from produced water more efficiently and effectively. Unlike dissolved air flotation (DAF) systems that rely on solubility or typical induced gas flotation (IGF) technologies that use large bubbles, our technology introduces trillions of microscopic bubbles to the untreated water. Due to the increased surface area and contact time, micro-bubbles are superior in capturing the smallest of oil particles and bringing them to the surface for skimming. When properly applied, the most challenging waters can be treated efficiently. Exterran offers two methods of creating micro-bubbles:

- **Gas Liquid Reactor (GLR®)**, a pressure vessel that uses hydraulic flow, shear, pressure and impaction to create micro-bubbles of gas.
- **Onyx® Pump**, a unique multi-stage pump that creates micro-bubbles through hydraulic shear and pressure with no cavitation.

SOLVING WATER PROBLEMS

Exterran provides a full range of treatment solutions for removing oil and suspended solids from produced water with primary, secondary and tertiary treatment. Our unique service offerings allow us to understand water challenges and clean-up requirements through expertise in the field, lab studies and equipment design. Our clients range from top oil producers to water disposal companies, each interested in retrofitting existing equipment or implementing Exterran’s standard or customized products. We help recover oil and reduce disposal cost whether shipping it offsite or reinjecting on location.

FIELD SERVICES

Our trained staff will visit your site to help evaluate your needs. Upon completing a Water Characterization Study, Exterran will offer a site specific technical review to identify which products and water treatment solutions will best fit your requirements.

CFD & RETROFIT SERVICES

Make the most of your new or existing equipment. Through Computational Fluid Dynamic (CFD) modeling (single or multiphase), Exterran can identify short-circuiting and problem areas then demonstrate how modifications can improve performance. Retrofitting existing equipment using Exterran’s patented designs and technologies can help dramatically lower your CAPEX and OPEX.

LAB SERVICES

Exterran has the capability to run actual site samples through our lab to validate CFD models and qualify equipment performance. Our lab allows us to test variables such as highly sheared oils, high oil loading, varied retention times, and chemical programs for conventional or polymer applications to make sure sites are operating smoothly and efficiently.

MICRO-BUBBLE FLOTATION (MBF®)

MBF technology helps attain cleaner water in the most challenging processes. With Exterran MBF, oil is removed from produced water more efficiently and effectively. Unlike dissolved air flotation (DAF) systems that rely on solubility or typical induced gas flotation (IGF) technologies that use large bubbles, our technology introduces trillions of microscopic bubbles to the untreated water. Due to the increased surface area and contact time, micro-bubbles are superior in capturing the smallest of oil particles and bringing them to the surface for skimming. When properly applied, the most challenging waters can be treated efficiently. Exterran offers two methods of creating micro-bubbles:

- **Gas Liquid Reactor (GLR®)**, a pressure vessel that uses hydraulic flow, shear, pressure and impaction to create micro-bubbles of gas.
- **Onyx® Pump**, a unique multi-stage pump that creates micro-bubbles through hydraulic shear and pressure with no cavitation.
STANDARD PRODUCTS FOR PRODUCED WATER DEOILING

PRIMARY
Hydrocyclone Oil-Water Separation
• The P-KLONE™ uses centrifugal force to separate oil from water in less than two seconds with a turndown capacity of 50%. This is a well-proven method for taking water from the production separator with oil concentrations up to 5% and readying it for secondary treatments.

SECONDARY
Advanced Micro-Bubble Flotation Systems
• The RevoLift® HS IGF vessel is a high-volume MBF® system that targets oil separation outputs as low as <10ppm and trouble-free separation at rates up to 150,000 BWPD.

CUSTOM PACKAGES
When production processes call for unique specification and custom features, Exterran delivers. Our engineers work closely with you to develop exactly the right configuration. From purchase to lease to contract services, we can add custom features to any of our water treatment solutions.

SOLUTION PLATFORMING
Exterran has developed equipment packages that will take the headache out of product integration. Solve your deoiling problems from primary to tertiary treatment with our pre-designed solutions. These integrated packages reduce duplicate emergency shutdowns, control panels, valves and instrumentation; reducing site footprint for an optimized process solution that helps save time and money.

TERTIARY
Black Walnut Shell (BWS) Filtration
• Sabian® BWS Filters remove the smallest traces of oil and solids that remain in produced water after other treatments. The system removes oil in water and total suspended solids (TSS) achieving a target water quality of <3ppm. Capacities range from 2,000 to 125,000 BWPD with a turndown capability of 45%.

• The RevoLift® VS is a portable and compact IGF unit that utilizes MBF with target outlet oil concentrations <10ppm and flow rates up to 27,500 BWPD.

Visit us at exterran.com to learn more.