



# GPS ENVIRONMENTAL

## WASTE WATER SPECIALISTS

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**A D V A N C E D   T E C H N O L O G Y  
A N D   D E S I G N**

# TECHNOLOGY PERFORMANCE BENEFITS

OLEOLOGY systems provide considerable benefits over conventional oil removal technologies and oily water treatment approaches.

These benefits fall into three performance categories: **efficacy, footprint & weight** and **operational reliability**.

## EFFICACY

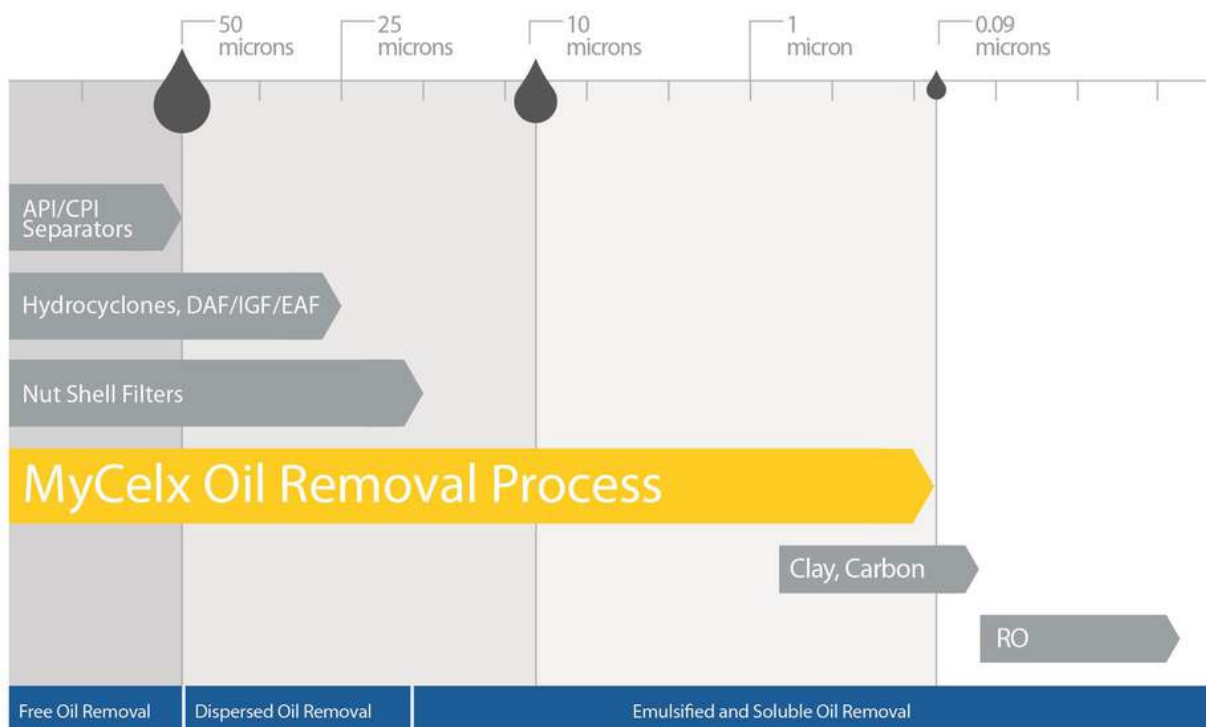
The key reason in implementing a MyCelx system is its' extreme effectiveness in removing oil and hydrocarbons from water. For a fraction of the cost of conventional filtration methods, MyCelx patented polymer and engineered solutions can remove oil to a critically low level. With smaller droplet size removal, discharging water with oil removed to less than 1ppm with a no-sheen discharge, key difference - treats emulsions not just free oil.

## FOOTPRINT & WEIGHT

OLEOLOGY engineered systems are smaller than traditional separators and enable oil free water discharge to below 1ppm. The compact size and weight make portable oil and water separation units easy to assemble, and ideal for offshore deployment and in space - constrained facilities or containerised delivered to site as a complete operational unit.

## OPERATIONAL RELIABILITY

MyCelx systems are engineered to be simple to deploy, install and operate with minimal instruction or training, and are consistently reliable in delivering water quality.





# TECHNOLOGY PERFORMANCE BENEFITS

## **.0001% Purity**

Less than 1 ppm, MyCelx is an oil-free water technology. It's a new and more advanced oil removal solution for the oil and gas, mining and water treatment industries. MyCelx isn't just a filter and is not a chemical treatment. The MyCelx process is based upon molecular cohesion for permanent removal of oil from water. Oil is removed to critically low levels of less than 1 ppm, well below standard requirements. Compliant with government regulations, this water can be **recycled** or **discharged** to the environment for example as dust suppression.

*MyCelx has been awarded the Lloyds register approval for water discharge to the ocean.*

## **Where Conventional Systems Fail**

Conventional systems try to remove oil and hydrocarbons from water by mechanical separation or in combination with chemical injection. That approach requires a long sequence of steps and is prone to system bottleneck and failures. When the composition or loading of oil and hydrocarbon changes, these systems can even release oil back into the effluent stream.

MyCelx doesn't just mechanically filter or separate oil – it permanently binds with oil through molecular cohesion. Once oil comes in contact with MyCelx, it cannot be released back into the water. MyCelx provides the lowest ppm levels and smaller droplet size removal than any other system on the market.





### **Scientific, Reliable Oil & Hydrocarbon Removal**

MyCelx systems use a scientific and reliable approach for removing oil and hydrocarbons for produced and process water or wastewater recycling and reuse. MyCelx answers the call for meeting and exceeding regulations for water purity. When you are unable to meet strict enforcement levels with conventional approaches, MyCelx can help meet or exceed those standards quickly, efficiently and at a surprisingly low cost.

MyCelx is an ecologically friendly water treatment – protecting the environment and your operation by keeping oil where it should be: inside your production environment. MyCelx can be deployed as emergency and remedial measures to supplement conventional oil water separators. These systems rely on mechanical separation by SG differential and do not meet required goals, however MyCelx can be used as a complete replacement of conventional systems. The MyCelx change can be a decisive and innovative driver of operational improvement for more efficient and lower cost of oily water treatment.

# ADVANCED TECHNOLOGY

The unique benefits of water treatment provided by OLEOLOGY include but not limited to:

- Emulsified & Soluble Oil Removal
- Mercury Removal (Condensate & Water)
- Backwashable Media - MyCelx REGEN
- EOR (Enhanced Oil Recovery)
- Oily Solids Filtering

## MYCELX REGEN - ENHANCED OIL RECOVERY / BACKWASHABLE MEDIA

The newest development of the patented, proprietary technology is the MYCELX REGEN, a deep bed media filtration technology that takes the extreme surface area of a media filter – and functionalizes it with a polymer with a strong affinity to hydrocarbons. This creates a process step that is able to remove oil droplets, dispersions and emulsions at 95% removal efficiency to 5 micron droplet sizes. The media also provides TSS removal at 95% removal efficiency to 5 microns. All of the accumulated contaminants are able to be backwashed out of the process, with oil able to be recovered back to the sales process and sludge to be dewatered.

The process is simple, with no need for chemical injection, as the MYCELX polymer is permanently coated to the surface of the substrate. Regeneration of the media bed is performed by fluidization and controlled shear across the substrate to lift suspended solids and oil droplets into the reject stream. After backwashing, the bed is settled and packed by the normal process flow, then returned for service.





# ADVANCED TECHNOLOGY

## MERCURY REMOVAL - CONDENSATE & WATER

MyCelx patented Mercury products are composed of an inner core of MYCELX modified coalescing media with an outer core of MYCELX precious metal modified capillaries.

**Stage 1:** The first stage is our standard MYCELX HRM filter technology. This technology is based on composition of matter patents, the most recent of which has just issued (publication number US 2012/0316251 A1), and the unique properties of this class of molecules. MYCELX modified substrates have the ability to render diverse organic species into a single cohesive viscoelastic mass.

**Stage 2:** Stage two is MYCELX proprietary technology for removal of ionic mercury. Its mode of operation is fundamentally different than the use of copper sulfide. In that it has extremely high efficiency in precipitating ionic mercury.

**Stage 3:** MYCELX MER-SEP element composed of an inner core of MYCELX modified coalescing media with an outer core of MYCELX precious metal modified capillaries. The purpose of this stage is to capture elemental or colloidal mercury.

Typically these components can be small (10" height) and are deployed in sequence. The testing can last from hours to days, as needed. The relatively long testing period obviates much of the uncertainty from trying to accurately sample and analyze extremely dilute solutions in dynamic equilibrium as a meaningful snapshot. Each component can be removed and destructively tested (AA or ICP) as the relevant information is already contained within the sequence. In this particular sequence mercury detected in the first stage will be colloidal and most likely organically bound. Mercury in the second stage will be ionic, and mercury in the third stage will be elemental.



# MORE QUESTIONS?

OLEOLOGY designs many unique and customised solutions and to view one in action is a great way to answer any remaining questions you may have.

Please call the OLEOLOGY office to schedule a visit and view the treatment systems.

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