

# Fluid Contamination Solutions for Oil & Gas

## Diesel Fuel Conditioning

Today's diesel engines require cleaner fuel with injector pressures approaching 30,000 PSI and the evolution of injectors into sophisticated expensive electronic components. Diesel engine manufacturers have learned that ultra fine particles that were of little consequence at 3,000 PSI are now causing premature failures at 30,000 PSI. Diesel fuel lubricity has also decreased with the move to ULSD (ultra low sulfur diesel) fuels.

COD coalesce skids rapidly remove water from diesel fuel with more than 99% single pass water removal efficiency and high efficiency particulate filtration. Units available with up to 200 gpm/750 lpm for high volume treatment of bulk diesel tanks. Typical applications include diesel tank farm bulk fluid conditioning, tanker truck filling transfer and filtration, stand-by diesel storage tanks (hospitals, emergency response), and more.

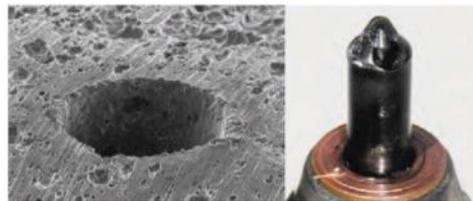
Diesel fuel cleanliness is more critical than ever with increasing combustion pressures and the sensitivity of modern fuel injectors. Keep diesel fluids clean and dry for reliable and fuel efficient engine operation and to keep stand-by fuel reserves ready for service.



Before & After CSD



Failed Fuel Injectors



## CAT Engine Lube and On-Board Fuel Filter Elements:



**\*Extend Lube Oil Change Interval from 1000 hours to 2000 + hours**

**\*Avoid Costly Contamination Related Engine Rebuilds**

**\*Hy-Pro One-Piece Element Design. Easy Service (Say No to Stacking)**

**\*Protect & Extend High Pressure Fuel Injectors**

Hy-Pro glass media is rated  $\beta_{x_c} > 1000$  which means it removes 99.9% of the rated size particles and larger. Glass media also excels at removing smaller particles below the absolute rating. Cellulose media is rated  $\beta_{x_c} = 2$  and only removes about 50% of the particles of the rated size and larger. All those particles that get through accumulate and can make lube oil like sandpaper wearing the inside of your engine. If you are stacking cellulose media elements like the ones listed below keep that engine rebuild in your budget, or upgrade to Hy-Pro elements and get serious about cleanliness, reliability and protecting the environment.



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## Mud Pump Water & Particulate

Mud pumps are notorious for water and mud ingress at the rod seals resulting in expensive, but anticipated, oil changes for the gear end. One of the largest rig manufacturers in North America was spending more than \$400k on fluid changes for just their mud pumps across 35 rigs per year.

The solution was to install a Hy-Pro LF housing into the customer's existing oil circulation system and add Guardian breathers for clean air exchange.

The result...the customer did not purchase a single drop of oil for any mud pump for an entire year and experienced 100% payback within the first three months!



## Gearbox Filtration (Draw Works and Top Drives):



Service often comes with confined space requirements. Changing the oil by traditional gearbox drain and refills can and should be avoided by using portable or permanent dedicated filtration systems that feature particulate and water removal filtration. Avoid premature gearbox rebuilds and fluid replacement with off-line fluid conditioning solutions for gearboxes.

Completely upgradeable for zone rated applications, the FSW is the perfect compact dedicated off-line contamination solution, ideal for any gearbox, small reservoir, or diesel engine crank case conditioning. Element media options are available for every application including particulate removal, varnish removal, acid and water removal, and sub-micron filtration.

DFE rated advanced media technology with options  $\beta_{0.9} > 1000$  + water absorption and an integral element bypass.

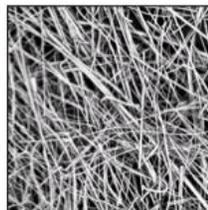
## Element Upgrades:

Over 250,000 DFE rated filter element upgrades for all major filter manufacturers and OEMs plus enhanced designs NSD (non-spark), Dynafuzz (stainless fiber media), lube specific, water removal.

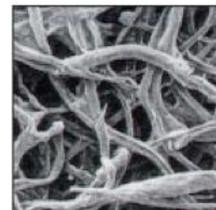
Direct interchanges with advanced micro-glass media for far superior compatibility with fluids, 500 times the efficiency of paper media and higher dirt holding capacity providing an element life that can last 4-5 times longer than cellulose elements.

Dynamic Filter Efficiency (DFE) is the evolution in hydraulic and lube filter element performance validation and development, and Hy-Pro's competitive advantage.

Glass Fiber



Cellulose



NEW OIL



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## Desiccant Breathers:

Air is often laden with naturally occurring contaminants like water and solid particles. These contaminants can enter lube and hydraulic oils and damage a hydraulic system. CFI offers desiccant breathers that not only dry incoming air, but also filter it via two micron filters at both ends of the breather. Furthermore, these desiccant breathers feature isolation check valve, which isolate the adsorbent from exhaust air to lengthen service life of the desiccant while also protecting it from volatile and splashing fluids. These breathers represent a first line of defense by cleaning the air and keeping harmful contaminants from entering a turbine, making them ideal for oil & gas applications.



## Color Coded Identification

Cross contamination of fluids can be a costly error, so being able to quickly and accurately identify fluids is an important precaution. To address this issue, CFI offers ColorGuard, a color coded anodized aluminum fitting system, allows users to quickly identify the contents of a reservoir or tube based on the color of the fitting, streamlining maintenance and eliminating handling issues. The ColorGuard system also incorporates adapter kits for quick installation of domed flanges, gearboxes, hydraulic reservoirs, breathers, and drums.



# Enhance Uptime With Total System Cleanliness



## Lube Oil Water Removal by Vacuum Dehydration and Coalescence:

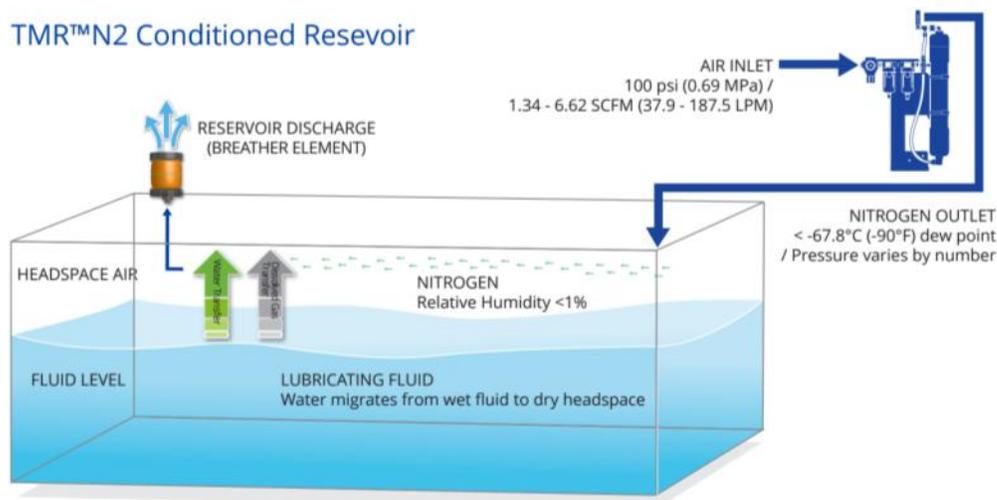
CFI offers two primary types of technologies to address the common problem of water entering steam turbine lube oil reservoirs. Vac-U-Dry vacuum dehydrators rapidly remove free and dissolved water to less than 10ppm combining heat, vacuum and intuitive design for ease of operation. Hydraulic fluid coalesce skids remove water from oil with mechanical coalesce and separator filter elements yielding more than 95% single pass free water removal efficiency with a performance guarantee to less than 150 ppm under normal operating conditions. Both the VUD and COT skids include efficient on-board particulate removal filters to achieve extremely low ISO fluid cleanliness codes.

## TMRN2 - Active Headspace Dehydrator & N2 Generator

TMRN2 is an active breather system that maintains the air in the headspace that continuously introduces clean dry nitrogen barrier at the oil - air interface. This barrier prevents airborne water, particulate, and metal ions from entering the reservoir and harming the hydraulic system. As the dry nitrogen transfers through the headspace at RH less than 1% the oil gives up its water striving to achieve equilibrium with the dry Nitrogen in the headspace. Nitrogen is an inert gas so it will also remove combustible gases from the oil to reduce oxidation and fluid breakdown, resulting in extended fluid life.



### TMR™N2 Conditioned Reservoir



(800) 722-2630

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Texas

Oklahoma



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