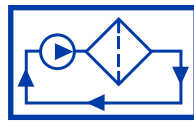


PRODUCTS

FILTER ELEMENTS

RENTAL EQUIPMENT

FLUSHING SERVICES



**OIL
FILTRATION
SYSTEMS®**

A CLARK-RELIANCE COMPANY

Bulletin No.: FS-16

High Velocity Oil Flushing Contamination Control Oil & Fuel Purification Services

We have highly qualified and experienced field service technicians performing a variety of filtration and flushing services worldwide.



Services Exceeding Your Expectations™

Oil Filtration Systems®
Flushing Services

We Set the Standard for Oil Purification™

Maintenance Managers and Reliability Engineers around the world know how important it is to keep the oil and piping in their critical rotating equipment ***absolutely*** clean and dry.

This applies to pre-commissioning of new equipment as well as maintenance of existing equipment, and with this purpose in mind, Oil Filtration Systems® provides a wide range of customized high velocity oil flushing, contamination control, and oil & fuel purification services.

We can help:

- Extend The Life of Rotating Equipment
- Minimize Premature Failure of Critical Components
- Reduce Emergency Outages and Downtime
- Maximize Equipment Reliability
- Reduce Overall Maintenance Costs

Turnkey Reliability Solutions

Oil Filtration Systems® has factory-trained and experienced personnel who will meet with your maintenance staff to conduct a pre-flush walk-down of all piping, and develop a complete and customized flush plan and procedure specific to your job.

Power Generation



Petrochemical



Refining



Fast Response

We mobilize quickly for emergency outages, scheduled outages, routine maintenance, and pre-commissioning of new equipment.

“The Field Services Group at Oil Filtration Systems® was very knowledgeable about oil cleanliness standards and went above and beyond to get my turbine oil dehydrated and free of particulate so we could operate our Dresser-Rand Steam Turbine.”

— **Roger Bishop**, Plant Manager
South Texas Electric Cooperative



High Velocity Oil Flush of a compressor during a petrochemical plant turnaround on the Gulf Coast



Cooler Bundle Flush –
Initial Inspection Screen
(Before Flush)



Cooler Bundle Flush –
Final Inspection Screen
(After Flush)

Results of Varnish Flush



Before Filtration
ISO 22/21/19
MPC* Value = 38

After Filtration
ISO 15/13/10
MPC* Value = 8

* Membrane Patch Colorimetry

Steel



Pulp & Paper



Maritime



Oil & Gas (Land & Offshore)



Flushing Services

High Velocity Oil Flush

Welding slag, dirt, debris, and water often contaminate the inside of the tubing and piping of critical hydraulic oil, lube oil, and fuel oil systems. OFS utilizes state-of-the-art high flow flushing equipment to achieve “turbulent flow” and a Reynolds Number of >4000 to effectively “flush” all contamination out of the piping, meeting or exceeding stringent cleanliness specifications established by leading OEMs (including GE, Solar, Caterpillar, etc).

Varnish Removal Flush

Hard varnish deposits often plate out on the metal surfaces of gas turbines, compressors, and other lube oil and hydraulic systems, adversely affecting the operation and performance of the equipment. Using a specialized flush procedure and cleaning agent, hard varnish deposits can be effectively removed from the piping, reservoirs, and other metal surfaces (i.e. servo valves, pressure control valves, etc.), thereby improving the system’s performance and reliability.



High Velocity Oil Flushing Equipment on Turbine Lube Oil System

Thermal Transfer Fluid Flush

Sludge, solids, and other contaminants often accumulate within the piping of Thermal Transfer Systems, adversely affecting their thermal conductivity and overall performance. Utilizing specialized cleaning agents, flush procedures, and state-of-the-art flushing equipment, OFS can quickly clean the entire system and restore it to “like new” condition and performance.

EHC Fluid Flush

OFS manufactures and uses specialty flushing equipment designed for use with phosphate ester and other synthetic EHC fluids (including Fyrquel®).

Typical Flushing Services Include:

- High Velocity Oil Flush
- High Velocity Fuel Flush
- Varnish Removal Flush
- Thermal Transfer Fluid Flush
- EHC Fluid Flush (Including Fyrquel®)
- On-Site Oil Analysis
- Confined Space Entry Reservoir Cleaning



Varnish Removal Flush at a petrochemical plant in Trinidad



High Velocity Oil Flush of cooler bundles at a manufacturer's plant in Texas



Compressor Lube Oil System commissioning High Velocity Oil Flush at a LNG plant in Louisiana

Oil Filtration Systems®
Flushing Services

We Set the
Standard for
Oil Purification™

On-Site Oil Analysis

Our highly qualified and experienced Field Service Technicians analyze oil samples onsite using a Portable Fluid Analysis Kit and Laser Particle Counter to accurately determine the ISO/NAS cleanliness level and amount of water contamination in the oil.



On site oil analysis at a power plant in Mexico

Oil Samples



Left
Initial Sample
(Pre-flush)
ISO 21/12/18

Right
Final Sample
(Post-flush)
ISO 16/14/11

Confined Space Entry Reservoir Cleaning

All of the OFS Field Service Technicians are trained and certified for Confined Space Entry, and we regularly perform internal Tank Clean-Outs on both lube oil and fuel reservoirs. Wiping down the inside of the reservoir with lint-free rags to ensure optimal cleanliness is an important part of most stringent OEM flush procedures.



*Confined space entry reservoir
before cleaning*



*Confined space entry reservoir **after** cleaning*

Oil and Fuel Purification / Reclamation Services

OFS will send a qualified and experienced Field Service Technician to your jobsite along with state-of-the-art Oil and Fuel Purification Equipment to “polish” your fluid (remove all particulate and water contamination) and quickly meet or exceed even the most stringent OEM cleanliness specifications.



- STEAM TURBINES
- GAS TURBINES
- COMPRESSORS
- HYDRAULIC SYSTEMS
- GAS ENGINES
- PAPER MACHINES
- HEAT TRANSFER SYSTEMS
- FUEL DELIVERY SYSTEMS
- BACK-UP GENERATORS
- COOLERS



Oil Purification Service at a power plant in Florida



Mobilizing to perform a High Velocity Oil Flush at a power plant in Oklahoma

Safety Is Our PRIMARY Concern

Our Technicians All Have Extensive Safety Training Credentials & Certifications:

- Basic Plus
- Confined Space Entry
- TWIC
- MSHA
- OSHA
- H2S
- Lock-Out Tag-Out



Oil Filtration Systems is Registered With:

- ISNetworld
- Avetta
- Browz



The Experts at Oil Filtration Systems®

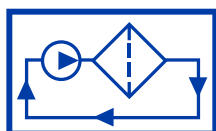
We will assist in determining your system needs and improve your fluid quality.
We design and build the COMPLETE SOLUTION.
We manufacture the cartridge filters, pressure vessels, and the complete systems.
We know Oil and Fuel Purification!

Oil Filtration Systems® are designed for easy start-up and operation.
Our team is highly trained and ready to assist; on-site, on-call, start-up, commissioning and training.

Oil Filtration Systems® Provides Results.



High Velocity Oil Flush of cooler bundles at a manufacturer's plant in Houston, Texas



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