

Hydraulic Oil Reclaiming System to 16/15/11 with <0.08 Moisture

It is recognized that hydraulic oil cleanliness prolongs the life of mechanical systems and reduces maintenance costs. Water, solid contaminants, and varnish contribute to abrasive wear and stiction. Plastic Injection machine OEM's often undersized the hydraulic filtration they provide or the filters are not efficient enough to prevent contamination build up over time. The OEM provided filtration will remove solid particle but does not address water removal or varnish remediation. Additional oil purification equipment is required but can be cost prohibitive to install on each machine. Replacing the oil in the reservoir with reclaimed oil can be the most economical way to address accumulated contamination.

As a part of a preventive maintenance program, it is common to periodically replace the machine hydraulic oil by draining the sump or reservoir. Replacing the oil with new oil can be cost prohibitive. It is a common practice to clean the contaminated oil outside of the machine and reuse the oil. Reclaiming and cleaning oil for reuse is often overlooked and over simplified. Depending on the contamination level of the oil, the reclaim process may include water, solids, and removal of varnish. When water removal is required vacuum dehydration provides the removal of free, emulsified, and dissolved water. The removal of solid contaminants should be done with progressively finer filters with low relative flow to surface area. Varnish remediation of hydraulic oils can be dependent on the base oil and additive package. Due to variations in oils, the selection of the proper varnish remediation system is a topic unto its own. Adsorptive medias or deep depth filtration can be viable options for varnish remediation.

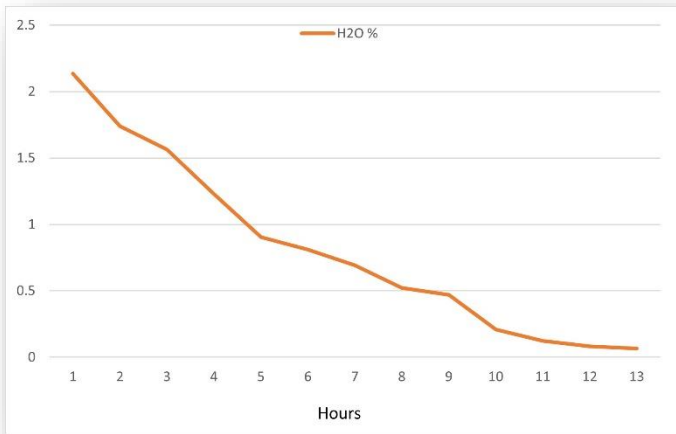
When cleaning oil for reuse, the OEM specifications should be the goal, removing solid contaminants to the ISO 4406 level, ensuring that there is no free water in the oil, and possibly removing soluble varnish from the oil. Automated systems are available that remove solids, water, and varnish with on board sensing. It is necessary to test the oil periodically to monitor viscosity and additive packages. The oil & additives will still degrade over time and will eventually need to be replaced.



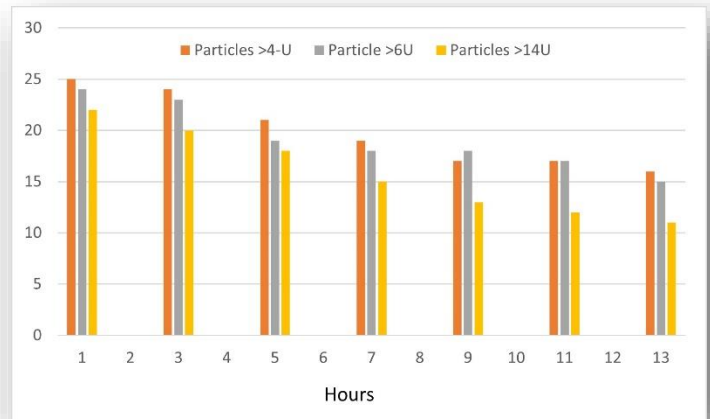
Application

A large Plastic Injection Molding facility operates over 200 plastic injection machines. They produce housewares and storage bins. Machine reservoirs range from approximately 200 gallons to 1,200 gallons of hydraulic oil. On a regular basis the hydraulic reservoirs are drained and refilled with oil that is reclaimed in their oil room. The customer had assembled a coarse bag filter (10-micron nominal) followed by a coarse paper cartridge filter (5-micron nominal).

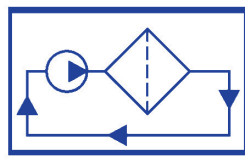
In-coming oil to the customer's reclaim system was typically 25/24/22 and after 48 hours of processing they were achieving 20/19/16 with no removal of water or varnish. The recommended oil cleanliness for the machines is 17/15/12 with 0.08% moisture. The customer required assistance to define the contamination load and needed a system with on board particle counter and moisture indicator. The customer cited premature pump failures, control valve and actuator failures. Components had visible scarring from wear, and in some cases a sticky residue.



Water Reduction



Particle Reduction



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A turnkey system was provided that included a vacuum dehydration system, absolute particle filtration, and auxiliary absorptive varnish remediation. The system processes 20 GPM of oil in a recirculation of 500 gallon batches to ensure adequate capacity.

Vacuum dehydration, particle removal and varnish remediation will help to prolong oil and machine life, but oil will still degrade over time. Customer purchases new oil to supplement and enrich their reclaim efforts. They had been buying replacement oil to supplement their reclaim operation 4-6 times per year. After installation of vacuum dehydration, filtration, and varnish remediation, they have reduced new oil purchases to 2 times per year. Overall component failures have been reduced as well.





About Oil Filtration Systems®



Oil Filtration Systems® manufactures Oil Purification Equipment designed to remove contamination (water, particulate, varnish, and/or entrained gases) from a wide variety of fluids, including Turbine Oil, Hydraulic Oil, Gear Oil, and Fuel Oil (#2 Diesel Fuel). When used in conjunction with our high-efficiency filter elements rated Beta(c)>1000 in a variety of micron sizes, our systems will enable you to achieve optimal fluid cleanliness to meet or exceed the most stringent OEM cleanliness specifications.

Author Profile



Ken Kaihlanen is the Director of Sales for Oil Filtration Systems. He co-founded Oil Filtration Systems in 1999 and has over 20 years of experience in the industry.

For more information, visit <https://www.oilfiltrationsystems.com/> or fill out the contact form [here](#).

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