

Oil cleaning/recycling system can cut costs for companies

by Julie Tunheim

“New bulk oil can be dirtier than the old oil you’re taking out of a machine,” commented Doug Mickelson of Oil Transfer System LLC.

New oil is **NEW PRODUCT FEATURE** dirty?

Mickelson has the evidence from independent labs to stand behind his claim that new bulk oil often can be dirtier than oil that has been used in an engine.

All that dirty new oil makes Mickelson’s oil handling system an excellent investment for contractors, companies and municipalities concerned about their equipments’ performance and long term investment.

Mickelson has just begun to market the system, which for now is assembled in his shop in Horace, N.D. Local metal fabricators make the metal components; another company makes the plastic components, using Mickelson’s molds.

Saw need, made machine

Mickelson says his product - like most inventions - originated when he saw the need for the system. As the owner of a tool and supply business, he saw the need for an oil scrubber/recycler and learned there was nothing comparable on the market.

“I designed this from scratch,” he recalled. “The first model was not good enough for production.”

But the model was good enough to clean oil - both hydraulic and crankcase oil - and he soon improved his design and



This front and rear view of two Oil Transfer Systems shows the controls, pump and filters of the patented system designed to save money by scrubbing oil and keeping equipment running better and longer. Hoses and the unique wire cloth drip pan are also pictured.

went into production on a small scale.

“I hand-built 10 units and sold nine,” Mickelson said. “I saw how these people liked it. ... I found an investor, applied and received two patents, and that’s how it got going.”

He credits his business partner, Don Pake, Felton, Minn., for his financial assistance and encouragement.

Mickelson estimates 550 units have been purchased since he first “went public” with his machine at Big Iron in the fall of

2001. Customers were skeptical at first, he says, until he was able to prove his claims through oil analy-

“We started using the Oil Transfer System to clean our hydraulic fluids and since that point we have eliminated the overheating problem and greatly reduced any pump breakdowns.”

*-Michael Puhlman, project manager
United Rentals Highway Technologies*



Oil Transfer Systems include four assemblies with custom, non-bypass scrubber elements - each labeled on the top. This one is for hydraulic fluid.

and number of particles in the oil sample.

Inexpensive lab reports

Oil can be tested and analyzed by labs inexpensively and easily, says Mickelson. A lab that automatically gives an ISO code (most don’t) is necessary. The Butler Caterpillar lab in Bismarck automatically provides an ISO rating.

Many specific oil conditions and contaminant levels are revealed in an oil sample report, but there are four easy ones, including a color strip (if given) of green, yellow or red.

The ISO code indicates four things:

- the dirt particle size (5 microns the first and most important number of the two)
- how many times cleaner the oil has been made (twice as clean for each number decline)
- indicator of how many times equipment life will be extended
- if desired cleanliness levels have been achieved.

Mickelson says Cat’s goal for new oils is an ISO of 16/13 and 18/15 (or cleaner) for used hydraulic oil.

An oil sample is taken using only a one milliliter sample (two-tenths of a teaspoon). There are 3,785 milliliters in a gallon.

The lab report should have a 5 micron box that has the exact number of 5-micron particles and larger (mostly silica sand)

in the sample. Subtract a before and after test sample, multiply that by 3,785 and this will indicate how many particles have been taken out of each gallon.

Multiply that number by the size of the reservoir for overall particles removed, Mickelson explained.

“It is not uncommon to remove 45 million particles from a gallon or 2 billion plus from a 55-gallon reservoir!” he added.

Typical new crankcase or hydraulic oil is 21/18, which isn’t good enough for equipment companies such as Caterpillar. Because it is necessary, Caterpillar cleans all new crankcase and hydraulic oil for in-house use at the factory and dealer level. Cat has a goal of 16/13 for new oils and 18/15 or cleaner for used hydraulic oil.

Mickelson says he purchases new oil for his vehicle, scrubs it in his machine and uses the scrubbed

Dirty oil?

Heavy contamination in bulk oils is due to high amounts of silica sand, which is typical in new oils. The contamination wears out equipment prematurely, causing early failures in the newer super tight tolerance equipment and servo valves.

The only solution is to filter both new and recycled oil to reduce the silica sand particles by the billions and improve its ISO, the key being the OTS custom scrubber elements and system procedure.

Oil cleanliness is given an ISO rating that describes the number of particles per milliliter of oil. Expressed in microns (millionth part of a meter), the two-digit system of ratings represents the size

oil when having his oil changed.

He points out that his machine is not set up to scrub used crankcase oil, but is made to scrub all new oils and recycle used hydraulic oil, transmission fluid and synthetic oil.

“Our system will work on one or a hundred different oils without cross contamination and is inexpensive to purchase,” he pointed out. “You could run 10,000-plus hours on many oils – with great test results,” he said.

Not only does the scrubbing system save on the cost of purchasing new oil, but it also saves money by keeping the equipment running better and longer.

Lower oil costs, fewer breakdowns

As such, companies and municipalities - especially ones that run hydraulic equipment - are investing in the oil scrubbing system.

Michael Puhlman, project manager at United Rentals Highway Technologies, West Fargo, N.D., is one of many using Mickelson’s system.

“The Oil Transfer System has been an invaluable tool for us here at United Rentals Highway

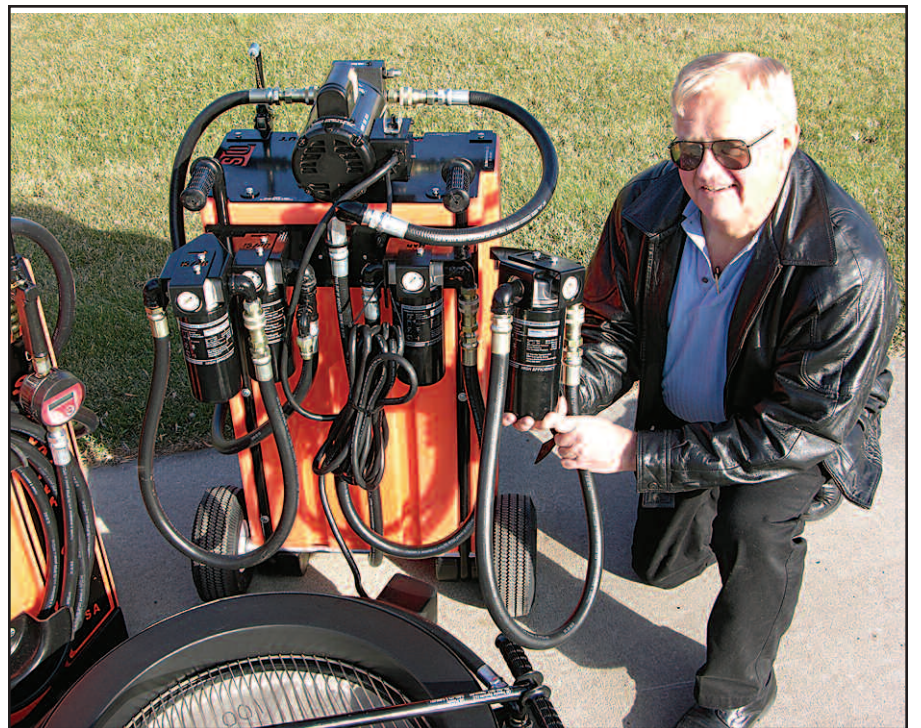
Technologies in West Fargo, N.D.,” Puhlman stated. “Much of our equipment is run by hydraulics, with overheating and destruction of hydraulic pumps being major problems for us.

“We started using the Oil Transfer System to clean our hydraulic fluids and since that point we have eliminated the overheating problem and greatly reduced any pump breakdowns,” he continued. “I would highly recommend using this system to keep their equipment running smoothly.”

Extending engine, hydraulic life

Mickelson says that according to independent studies, each time the ISO code number is improved by one number, the oil is twice as clean. For example, if the oil starts with an ISO 21/18 and is scrubbed to an ISO 18/15, the first number dropped three numbers and the oil is now eight times cleaner.

“According to the support letter we received from a Caterpillar lab, you could improve engine and hydraulic life a minimum of 2 times and a maximum of 7 times for each drop in the ISO



Doug Mickelson invented and patented the oil scrubbing system designed to improve the ISO rating of oil.

code number,” Mickelson stated.

He says that this unbelievable equipment life increase is also stated by the SKF Bearing manufacturer service bulletin. The bulletin reports that if you keep your dirt particle size smaller than the oil film the bearing rides on, you can “achieve infinite life” on a bearing.

“If all new oils were super-cleaned, it would nearly stop wear on the engines,” he stated. “Super clean used hydraulic fluid (recycle) and continue to use 10,000-plus hours with no ill effects (test to verify the quality), nearly stop wear on the hydraulic system and save thou-

sands on the cost of the hydraulic fluid.”

Mickelson suspects the oil industry won’t be supportive of his Oil Transfer System.

“I’m sure the billion dollar companies don’t want this to go,” he commented. “They want to sell hydraulic fluid. ... Big oil companies want to sell oil!”

Web site marketing

While sales have been made one at a time for the past few years, Mickelson’s Web site, www.oil-transfer.com, has been generating considerable interest and making



Oil Transfer Systems filter unit includes a gauge and quick-connect hoses.



Oil Transfer Systems units are mobile and lightweight, each unit offering two sets of filters; one set can be used for new crankcase oil and the other for hydraulic fluid.



This bird's-eye view of two Oil Transfer Systems plus the unique wire cloth drip pan shows both sides of the system, as well as the top.

sales. He expects interest to grow in this country, as well as in Europe and Asia.

A large company with government contracts in Iraq has shown considerable interest in the system, as has the North Dakota Army National Guard, which recently purchased two systems for its Fargo and Devils Lake locations with the intent to purchase seven more.

Duane Mann, senior purchasing agent for the Grand Forks Air

Force Base, believes the Oil Transfer System would be a great purchase and would save the base a tremendous amount of money. Mann is moving forward, passing on the information to the decision makers.

Once a couple of large contracts are signed, he says production will need to drastically gear up.

Meanwhile, Mickelson assembles the units in his small shop in Horace, N.D., and offers friends this advice:

Since tests have confirmed bulk oil is generally dirtier than quarts of oil, he recommends using the costlier quarts of oil as a second-best alternative to scrubbed oil.

"They're more expensive, but usually cleaner," he stressed.

He knows his oil scrubbing system isn't cost-effective for single automobile owners, but he does know scrubbing oil makes a difference in the life of an engine and transmission.

"This machine is a one of a kind – in the world!" he said. "For many companies, the machine offers an instant pay-back!"

Once the world figures that out, things could get hectic in his shop in Horace, N.D.

To learn more, check out the testimonials and support letters at www.oiltransfer.com or call Doug Mickelson at (701) 282-3617 or (701) 388-3666. ●