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Redefining Used-Oil Handling

COLLECTION OPERATIONS FOR UNIVERSAL LUBRICANTS' INNOVATIVE USED-OIL "RE-REFINERY" RECEIVE A BOOST FROM NEW MOUVEX® CC20 ECCENTRIC DISC PUMP TECHNOLOGY

By Scott Jackson

Universal Lubricants made a high-profile commitment to green operations with the 2009 launch of its innovative used-oil "re-refinery." That commitment was further enhanced when it began using Mouvex® CC20 Series Eccentric Disc Pumps (inset) on its transport fleet.

Much like "blue" can become the new "black" in the world of clothing design, "green" has become the new color for conscientiousness in the business world. Over the past decade, most companies in virtually every industry have taken some measure to make their operations more "green," i.e. friendly to the environment. These measures can take many forms, from simple fixes like changing the type of light bulbs that are being used to complex plant upgrades featuring more energy-efficient equipment.

There are few companies, however, that have gone more "all in" with regards to the green movement than Wichita, KS, USA-based Universal Lubricants,® LLC. Founded in 1929 as a compounder, packager and distributor of petroleum products, Universal Lubricants has grown to include 36 distribution facilities across 16 states, from Ohio to New Mexico and Wisconsin to Texas. In that time, Universal Lubricants' oils, greases and other fluids have helped keep equipment working, motors running, engines turning and machines operating from the farm to the industrial park to the family garage.

As the 20th century closed, Universal Lubricants' management came to the realization that there would be a growing emphasis on renewable energy sources that would also prove friendlier to the environment. With that in mind, Universal Lubricants formed its Industrial Services Division, which placed an emphasis on collecting used oils that could be "re-refined" and reused. The work of the Industrial Services Division culminated in 2009 when Universal Lubricants – which was celebrating its 80th birthday – opened an innovative, state-of-the-art oil "re-refinery" in Wichita. This is a facility where used motor oil is re-refined and blended with additives to make premium motor and engine oils that meet all industry performance specifications. In fact, they perform as well or better than motor and engine oils manufactured from crude oil.

Guy Miller, Fleet Manager for Universal Lubricants, recently installed a Mouvex CC20 pump on one of his used-oil collection trucks since the gear pumps he was currently using were prone to leaks and premature wear. To date, the Mouvex CC20 has pumped more than 886,000 gallons in a 6-month period and was still pumping without a leak.

Today, approximately 1.3 billion gallons of used oil are generated each year in the United States and Universal Lubricants' re-refinery is one of a handful of such operations in the country that is designed to take that used oil and other vehicle fluids and re-refine them into high-performance end-products. In Universal Lubricants' case, that is its ECO ULTRA® line of premium engine oils, hydraulic oils, transmission fluids, tractor fluids and automotive coolants.

"In the past, before our re-refinery, used oil was predominantly used as an alternative fuel, such as No. 4 fuel oil, where it was burnt in asphalt plants, which destroys the fuel," explained Guy Miller, Fleet Manager for Universal Lubricants. "Now, when we collect the used oil, we bring it back to the re-refinery and refine it to strip away the old, used additives and separate them from the base oil. Used as a lubricant, the base oil virtually never wears out. The additives get dirty and once you split those out you can reuse the base oil many times. So we've created a closed-loop system where we can collect the used oil, re-refine it into high-quality base oil, blend it with quality additives and then resell it back to the customer as a premium semi-synthetic product."

Refining The Loop

Universal Lubricants' Closed Loop process™ consists of four stages: collection, re-refining, blending and servicing. The collection stage requires a fleet of 60 used-oil collection trucks to travel to Universal Lubricants' customer sites – places like Jiffy Lube oil-change centers or large retailers like Walmart that provide automotive services, as well as other smaller operations – to collect the used oil and fluids and transport them back to the re-refinery in Wichita.

A key component in this collection operation are transport pumps. These are used to facilitate the transfer of the used oil from the tote, barrel or storage tank where they are kept, into the tank truck and then out of the tank truck and into the storage tanks at the re-refinery. These used oils oftentimes feature high viscosities that also include a significant amount of abrasive particles that can negatively affect the operation of any transfer pump.

After the re-refinery opened, and in its ensuing years of operation, Universal Lubricants was relying on gear-pump technology on its tank trucks. While gear pumps are generally available at a bottom-line friendly purchase price and, when operating properly, can provide the product flow rates and suction that Universal Lubricants required, they also have a number of operational shortcomings. Most notably, the pump's shaft seal is packed, meaning that it is designed to "leak" in order to lubricate the shaft. This leakage can contaminate the product being pumped and also compromise the reliability of the pump's leak-prevention characteristics. Additionally, the internal wear inherent in the meshing of the gears causes reduced flow rate and increased product slippage, as well as creating the need for the pump to work harder just to meet the required flow rates.

"Gear pumps may pump fine and perform very well, but the packing is prone to leaking which makes them more labor- and maintenance-intensive," said Miller. "With used oil you get lots of viscosities, there's also the presence of some fuels, like diesel, in the oil and with that you get leaking. So, you're constantly having to adjust them and perform maintenance on them to keep them from leaking. When you're picking up used oil at lube centers like Jiffy Lube or places like Walmart, who are very image-conscious, you obviously don't need to be dropping oil, so a leaking pump is a big deal."

Additionally, keeping oil off the ground – or out of the soil or groundwater – means that there won't be any environmental-compliance issues to deal with. This is a major concern for handlers of any type of oil-based product and knowing that the pumps you are using will not leak provides an elevated level of peace-of-mind.

Where There's A Werts, There's A Way

Quickly realizing that the constant need to repair or replace the fleet's gear pumps was creating a problematic situation for Universal Lubricants, Miller was primed to identify an alternative. Into the picture stepped Werts Welding & Tank Service, Wood River, IL, USA. Founded in 1957 as a repairer of tank trucks and distributor of truck pumps and other equipment, Werts has grown to include seven distribution centers that are spread across the country from Tampa, FL, to Billings, MT. This distribution network has helped Werts Welding build a reputation as a top-line distributor of fuel trailers, dry-bulk trailers, fuel trucks, lube trucks, heating-oil trucks and vacuum trucks, along with their respective parts and equipment.

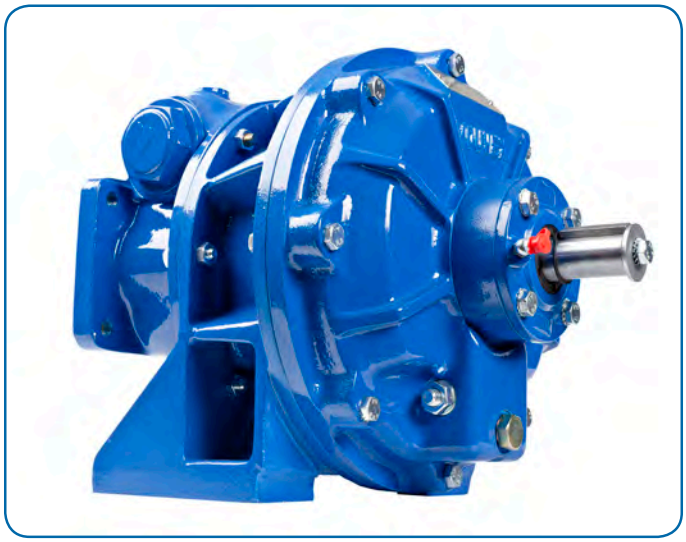
"We've done business with Universal Lubricants for a number of years and I go back about 30 years with Guy Miller, who's in charge of their fleet," said Bruce Cornelius, Sales Manager for Werts Welding & Tank Service.

For a number of years, Werts Welding has been a Master Distributor of hydraulic coolers and vane compressors from Mouvex® for use in the U.S. market. Mouvex was founded by French engineer Andre Petit, who invented eccentric-disc pump technology in 1906, and in 2008 became a founding member of the Dover Corporation's Pump Solutions Group (PSG®), which is based in Oak Brook Terrace, IL, USA.

As fate would have it in early 2011, as Miller began his search for an alternative to the leak-prone gear pumps his fleet was using, Mouvex made the decision to introduce its CC20 Series Eccentric Disc Pump technology to the U.S. market. CC20 pumps have been incorporated successfully in European used-oil hauling applications for nearly 60 years thanks to a design that features excellent self-priming capability, constant and smooth delivery, a small footprint, lightweight construction, simple installation and – most importantly – leak-free operation. The cast-iron CC20 pump offered by Werts has a built-in safety bypass, which is adjustable with a regulating screw, compensates for low-pressure pumping situations. Truck-mounted CC20 pumps can be driven via the vehicle's power take-off, by universal drive or hydraulic motor. Pump speeds up to 500 rpm with flow rates to 88 gpm (333 L/min), with the capability to handle viscosities ranging from 75 to 750 cSt (400 to 3,630 ssu).

So, knowing that Miller was on the lookout for a reliable replacement for the gear pumps Universal Lubricants was using, Cornelius suggested testing a CC20 pump on one of the company's used-oil haulers.

Universal Lubricants' re-refinery helps take some of the 1.3 billion gallons of used oil that is produced each year in the Unites States and convert them into the ECO ULTRA® line of premium engine oil and other automotive fluids.



Mouvex® CC20 Series Eccentric Disc Pumps have been setting the standard in used-oil handling in Europe for more than 60 years.

"Mouvex asked us to test them and Universal met the criteria for what type of customer they were looking to test the CC20s," said Cornelius. "As soon as I got the pumps, I contacted Guy and explained to him what we were trying to do, what the benefits would be for his operation and I asked him if he would test one and he said sure."

Since installing the CC20 test unit on one of his trucks in July 2011, Miller has treated it as he would any other pump that Universal Lubricants would use – he has pushed it to the limit. In fact, from Jan. 1, 2012, to July 10, 2012, the CC20 helped collect and deliver 211 used-oil loads, with an average load of 2,101 gallons, for a total pumped volume of 886,742 gallons – 443,371 gallons picked up at collection sites around the Wichita area and delivered to Universal Lubricants' re-refinery. On the collection side, the vehicle's inlet hose is approximately 30 feet long with the used oil flowing through a 1.5-inch barrel stinger and through an 8 in. by 26 in. mesh basket with approximately 1/8 in. holes before entering the pump. Vehicle discharge at the re-refinery is over the top of the storage tank through a hose 20 feet, 3 inches in length at pump speeds up to 500 rpm.

"The CC20 is a little smaller, a little lighter and the installation is easier – and the performance side has been very close to the gear pumps," said Miller. "We also haven't had to rebuild the CC20, so if we can go longer without having to perform that maintenance, that's a major deal, as well."

The only reason the CC20 was removed from the Universal Lubricants truck on July 10 was so that Mouvex engineers could take it apart and inspect it for signs of wear to determine if it needed any type of maintenance. (That pump was replaced with an identical CC20 model.) That inspection delivered good news for Mouvex and the CC20 as there was virtually no wear in the pump, despite the harsh operating conditions it had experienced for more than a year. In its used-oil handling experience in Europe, Mouvex has come to expect its CC20 pumps to operate for at least five years before needing to be replaced.

Conclusion

When it comes to the performance of the Mouvex CC20 Series Eccentric Disc Pump when used in used-oil hauling for one of the country's preeminent used-oil re-refiners, it's been "so far, so good." While the initial cost for a CC20 may be higher than that of a traditional gear pump, the total cost of ownership, when you factor in the CC20's reliability, reduced breakdowns and need for maintenance, makes it the much more sensible choice, as does the pump's environmentally friendly operation and product containment.

Most importantly, perhaps, the CC20 has earned the plaudits of Universal Lubricants' Guy Miller.

"The big selling point on the CC20 is the pump did not leak for more than one year. What gear pumps can do that?" Miller asked. "So, we get basically the same performance with no leakage and no maintenance. I'm extremely satisfied with the performance of the CC20s."

About the Author:

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Mouvex was incorporated in 1906 and is a leading manufacturer of positive displacement pumps and compressors for the transfer of liquids or dry-bulk products worldwide. Mouvex is a member of the Pump Solutions Group (PSG), Oak Brook Terrace, IL, USA. PSG is comprised of several leading pump brands such as Abaque,™ Almatec,® Blackmer,® EnviroGear,® Griswold,™ Neptune,™ Maag,® Mouvex,® Quattroflow,™ RedScrew™ and Wilden.® For more information on Mouvex, please go to www.mouvex.com.

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