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Finding The Ideal Waste Oil Pump

Mouvex® Eccentric Disc pumps pass the test during waste oil applications for Chimirec Delvert

By Philippe Voilly

Pierre Delvert, Director of Chimirec Delvert, stands in front of one of his waste oil recovery trucks that utilizes the Mouvex CC20 Eccentric Disc Pump.

Introduction

Lubricant oils are a very common element in our daily lives, as they help many engines and mechanisms to function properly. However, during this use, lubricant oils become unsuitable for their original purpose due to the presence of impurities or loss of original properties. At this point, these lubricant oils need to be replaced and become what is known as "waste oils."

Waste oils are defined as any petroleum-based or synthetic oil that becomes unsuitable through use or because it has been mixed with other hazardous waste materials. Some typical waste oils include hydraulic, transmission, motor, black, electric transformer, cooking, fuel, and synthetic oils, as well as brake fluids and machining lubricants. Waste oils are very abrasive, environmentally harmful, have the potential to contain thin and thick particles, and have a tendency to become highly viscous in colder temperatures. Because it is considered an extremely hazardous material, waste oils pose an extreme risk to the environment. It only takes a liter of waste oils to contaminate a million liters of water, while severe soil contamination can occur from waste oils being exposed to the ground for a short period of time.

Unlike many other lubricants and oils that can be recycled and re-refined, waste oils must be collected and disposed of regularly. Although these disposal processes vary, it is no surprise that the collection and disposal of waste oils must follow strict environmental regulations. Also, to say the least, the collection of waste oils is an extremely precise and difficult process, often involving high capacity strainers and heavy-duty pumping equipment. So while most of us never give the waste oils that are removed from our engines a second thought, companies like France-based Chimirec Delvert have been able to turn waste into profit by specializing in the collection and treatment of hazardous waste oils and materials since 1928.

Mouvex A Series Eccentric Disc Pumps are also used within the storage tanks.

As part of the Chimirec Group since 1995, Chimirec Delvert got its start by specializing in the collection of used oil. They gradually extended their expertise to include the collection and treatment of hazardous waste. With a fleet of over 320 specialized trucks, the company currently serves customers throughout France, Poland, Turkey, Canada and Spain in industries such as automotive, transportation, aerospace, energy, construction, chemical, and pharmaceutical. Annually, the Chimirec Group collects over 80,000 tons of waste oils and 250,000 tons of hazardous waste from 27 depots and platforms for certified collection, grouping and pre-treatment throughout France and abroad.

Waste Oils Are Tough on Pumps

It was important that Chimirec Delvert serve its customers in the most environmentally friendly and efficient manner possible, while also protecting personnel. When Chimirec Delvert first became involved in the collection of waste oils, it placed the upmost importance on only utilizing equipment ideally suited for this type of application. This included the heavy-duty pumping equipment that it installs on all of its tanker trucks. Ultimately, the company needed to find a pumping technology that was extremely resistant to the abrasive nature of waste oils to avoid unwanted pump wear while preventing spillage. In addition, these pumps had to be designed with a high suction capability since many of Chimirec Delvert's tanker trucks use long suction hoses to remove product from drums and underground tanks.

"At Chimirec Delvert, we understand how difficult waste oils can be to work with," says Pierre Delvert, Director. "So, in order for our fleet of tanker trucks to efficiently serve our customers, we need components that continuously perform at their highest level, and one critical component on our trucks are the pumps. If we experience a pump failure on one of our trucks, it has the potential to put that truck out of commission and slow down our collection process."

In an effort to find the best pumping solution for its operation, Chimirec Delvert tried using several types of

Chimirec Delvert's Poitiers, France, facility also includes a chemical distribution warehouse.

The Mouvex CC20 pump allows drivers to easily recover waste oil and clear lines due to its superior suction capabilities.

pumping technologies over the years. However, when put to the test of working with waste oils, the company found that most of these pumps could not meet its expectations, experiencing consistent product loss and breakdowns that led to unnecessary downtime. For example, after installing gear pumps on a few of its tanker trucks, it was discovered that these pumps were not very efficient for transferring abrasive products. These inefficiencies led to large amounts of harmful pump wear and lower suction capabilities. In addition, lobe pumps were tested, but do not have the ability to run dry, which Chimirec Delvert considers a must during the collection of waste oils. Progressive cavity pumps were even considered, but the very long dimensions typically found on these pumps made them difficult to mount onto tanker trucks.

With all of these challenges, Chimirec Delvert began to question whether it was ever going to find a pumping solution that could satisfy its needs. That was until Chimirec Delvert discovered Mouvex® pumps, based in Auxerre, France, and the leading developer of eccentric disc pump technology.

Eccentric Disc Pumps Pass the Test

Mouvex eccentric disc pumps meet the operational parameters needed in the handling of waste oils because they have been designed with self adjusting discs that maintain consistent flow rates with minimal wear. Eccentric disc technology consists of a stationary cylinder and disc that are mounted to an eccentric shaft. As the eccentric shaft is rotated, the disc forms chambers within the cylinder, which increase at the suction port and decrease at the discharge port. During operation, the discharge pressure exerts itself against the eccentric disc, preventing it from slipping. This low slip between the disc and cylinder gives eccentric disc pumps the ability to self-prime and line strip. This pumping principle allows for the consistent transfer of fluids from suction to discharge, with very low maintenance.

A major benefit offered by Mouvex eccentric disc pumps in the handling of waste oils is their compact design with side-to-side ports. By utilizing small dimensions and reduced weight, Mouvex pumps offer a simple installation when vehicle mounted or used as a ground-based unit. In addition, Mouvex pumps have the capability to rotate clockwise or counter clockwise by moving the by-pass device from one side to the other, giving users the ability to operate the pump safely from both directions.

Another important consideration when selecting pumping equipment for use with waste oils is the pump's suction capability. In addition to the need to clear lines, many collection tankers require strong suction lift through long hoses from drums and underground tanks. Mouvex eccentric disc pumps not only meet this demand, but even at low speeds, the suction capability of the pump allows for perfect priming and draining. Many eccentric disc pumps utilize speeds ranging from 0 rpm to 500 rpm, with maximum capacities ranging from 333 L/min (88 gpm) to 666 L/min (176 gpm). Eccentric disc pumps can also handle working pressures of up to 5 bar (73 psi) and handle particle sizes up to 3 millimeters.

The Perfect Solution

After discovering eccentric disc pump technology, Chimirec Delvert began utilizing Mouvex pumps on all of its tanker trucks, specifically the Mouvex CC20 Eccentric Disc Truck Transport pump. CC20 pumps feature reduced weight


Mouvex CC20 Eccentric Disc Pump

Comparison of Eccentric Disc Pumps Vs. Gear Pumps	
Eccentric Disc Pumps	**Gear Pumps**
■ **High suction capability** ■ **Capacity to drain the pipes** ■ **Wear compensation** ■ **Particles tolerance (piston can move a little bit)** ■ **Easy maintenance**	■ **Limited suction capability** ■ **No wear compensation (performances are decreasing)** ■ **Short life span**
	

and easy installation, and have been specially designed to handle corrosive and viscous liquids such as waste oils. CC20 pumps are available in cast-iron, with optional bronze pistons and stainless steel shafts, and have built-in relief valves to protect the pump from overpressure situations. The CC20 is also available with flow rates up to 333 L/min (88 gpm) with pump speeds up to 500 rpm maximum. Optional features include drain plugs, ICE drive and drive through PTO drive shaft of hydraulic motor drive.

"When we started using Mouvex eccentric disc pumps in 1950, we had our doubts," explains Delvert. "But as it turned out, these pumps offered us the best balance between repeatability and performance. That is why we have been using Mouvex pumps for over 60 years for applications involving waste oils. Mouvex pumps work down to the last minute and only need to be replaced every two years or roughly after pumping 3.5 million liters. Since the CC20 pump is specifically designed to deal with resistant, abrasive product, it is by far the best pump technology that we have seen to deal with heavy-duty waste oils. If the CC20 was pumping clean oil, who knows how long it would last, maybe even over 10 years. If I would have to give some advice to other waste oil companies, I would say that the CC20 is the most efficient tool to be used for transporting waste oils."

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