



THE GREEN OPTION



Pick up any newspaper or industry trade magazine and you're immediately confronted with a myriad of articles addressing "going green" and "eco-friendly". Most advertisers are working green into their marketing messages, no matter the product. This is clearly a response to a growing public awareness of negative consequences on the environmental. Each industry is impacted, whether it's the products they manufacturer, the process of manufacture or the product's use and disposal. The fluid power industry is no different and faces its own set of unique challenges.

Historically, fluid power started by utilizing the most eco-friendly fluid of all, fresh water. The principles of hydraulics have been known and used for over 4 millennia and water worked nicely for a limited number of applications. However, during the 19th century new applications emerged for the use of hydraulics. The problem with water is that although it's a good force transmitter; it has low viscosity making it extremely difficult to seal, it has very poor lubricity; and it is erosive and corrosive. To take advantage of the advantages of hydraulics, engineers sought a fluid that would be a good viscous force transmitter with good lubricity and not erosive or corrosive. At just the same time as the need for hydraulics was revolutionizing manufacturing and equipment, petroleum and petroleum products were gaining widespread acceptance. At the time petroleum oils provided the compromise that was needed to fully utilize hydraulics. For the most part oils sufficed for most applications except for those where flammability is an issue. World War II created the need for fire resistant hydraulic fluids. Out of this need came a new type of fluid, water based synthetics.

The water based synthetic hydraulic fluid consists of essentially three parts; the water base, glycol thickeners and additive package. Water constitutes 30% to 60% of the fluid, rendering it fire resistant. However, the high water content limits the applications to where it can be used. Water based glycols lose some of their lubricity at extreme temperatures and ultra high pressures. Also, water based fluids will evaporate out the water at higher temperatures dramatically changing the performance characteristics of the fluid. Even with these limitations, water based synthetics provided the overall answer to a wide variety of applications requiring fire resistance. Until the 1990s the widest use had been in the metal forming and food processing industries. The legislation and regulation governing the environment, beginning in the 1970s, changed all that and created new opportunities for water based hydraulic fluids.

One of the most positive characteristic of water glycols is that they are not only fire resistant but also biodegradable and many are "readily biodegradable", which means that 60% of the fluid is degraded within 28 days or less when exposed to the environment. This is where the green option comes in. Although the origins of water glycols was not for their eco-friendliness it is that very characteristic that has created new opportunities in industries that never considered it before. Water based fluids are easily cleaned up with soap and water and will not harm water treatment facilities if small amounts get into the effluent, lakes and rivers, or the soil.

In the past the selection of fluid was primarily for specific features such as fire resistance or the ease of vehicle cleaning in the case of carwashes. Now fluids are not only being selected for the primary functional features but also their eco-friendliness. And, in some cases the eco-friendliness outweighs the particular performance characteristics in the decision making process. Today the user has many options and the availability and convenience of eco-friendly fluids are now affordable of all who wish to take advantage of the "Green Option". MRL provides a comprehensive service to the user who wants to take the step and "Go Green".