LUBE TECHNI-GRAM

FROM:

LEWIS FOX
DIRECTOR OF TECHNOLOGY

August 2005

PROPER LUBRICATION OF CHAINS AND CABLES

"SMEARING GREASE ON A ROLLER CHAIN IS A WASTE OF TIME AND MATERIAL EXCEPT THAT IT MIGHT AFFORD SOME PROTECTION TO THE SPROKET TEETH."
-Lubrication by Raymond C. Gunther

Proper lubrication is at the root of every components useful life. Yet, how often do customers remember that every external and internal surfaces of pins, bushings, leaves, and rollers of chains or every wire in every inch of wire rope, is a component. Each must be free to move and adjust each minute a machine is operating. Unless it is surrounded by lubricant, a chain or wire rope's essential movement is impaired, thus resulting in increased friction, wear and shortened life.

A well-lubricated chain or cable lasts three to ten times longer than a chain or cable running dry under extreme conditions. Some customers operate under the misnomer that the "heavier" or "thicker" the chain and cable lubricant, the better it is. Actually, for most applications, the key to properly lubricating chains and cables lies in its ability to penetrate links (chains) or strands (cables), where the destructive wear takes place. It should also form non-sticky coating that sheds dirt.

Open Roller Chain Lubrication

Effective lubrication of chains operating in a harsh, abrasive atmosphere can be challenging. The objective with chain lubrication is to place a small quantity of lubricant between the pin and the barrel in each link. Because it is impossible to directly inject the lubricant to the correct locations, practitioners try other methods, including running the chain through a bath, spraying, pouring and painting lubricant on the chain's outer surfaces.

For slower turning chains, the oil bath is a practical, useful approach. Some attention is required to maintain an appropriate sump level and clean any excess lubricant off of machine surfaces. Slowly turning, heavily loaded chains require a heavy body of oil. **SWEPCO's 402 Roller Lube** has proven to be superior lubricant for this application.

SWEPCO 402 Roller Lube clings to metal, forming a protective film which assures proper lubrication at all times. It seals out dirt and water, and prevents costly "metal to metal contact", greatly increasing chain life. In addition, SWEPCO 402 Roller Lube flows readily through tiny entrances to pins and rollers, giving positive lubrication when needed. SWEPCO 402 Roller Lube lubricates all the time, at

low and high speeds, whether it is hot or cold, wet or dry, or under heavy or light work loads. In cold weather, it does not harden excessively even at -40°F below zero. At high temperatures it retains body and does not flow away. In addition, there is no "wash-out" with SWEPCO 402 Roller Lube. It forms a perfect seal and protects chains from moisture, corrosion and rust.

For higher speed chains, chain lubricants should (1) have low viscosity to reach internal surfaces, but sufficient to maintain an oil film under bearing pressures, (2) be non-corrosive, and (3) maintain lubrication properties under conditions of temperature, moisture, etc. Airborne contaminants or conveyed materials coming in direct contact with chains are the most troublesome problems. Grit, dust, acids, and moisture will promote wear and corrosion. An incorrect lubricant (too sticky) can even serve as a carrier for abrasive particles and form a grinding paste. These applications are good candidates for SWEPCO's 803 Chain and Cable Lube due to its lighter oil and solid film additives. The light oil penetrates, carrying the solid additives to the contact point. The solid additives remain behind to provide "dry film" protection after the carrier has been displaced. Additionally, the exterior of the chain does not accumulate as much atmospheric contaminant.

Cables

A cable, or wire rope, is composed of strands of metal wire laid up evenly around a core. The core supports the strands and in some instances provides some internal lubrication during the cable's early use. To maintain the cable in good condition, a system of intermittent or continuous lubricant application should be followed. Some of the important lubrication rules are as follows:

The lubricant used must be fluid enough to flow into all spaces to completely cover the wire surfaces. It should have good adhesive and cohesive qualities. Wire rope lubricants must not surface harden, which entraps moisture within the rope and causes corrosion. The lubricant must have a high film strength to withstand the high rubbing pressures exerted between the wires and contact under load. Imperviousness to water to minimize lubricant loss when the cable is exposed to rain or wet environment.

NOTE: in cases of extreme exposure to fresh or salt water, cables that have been treated with a lubricant fluid enough to penetrate the inner strands, may be coated with a grease for extra protection against severe outside contaminants. Or, in applications such as mines, where temperatures are fairly constant at some level between 50° and 70°F, a semi-fluid grease capable of penetrating the inner strands might be desired. **SWEPCO 113 Moly Fluid Grease** has proven extremely effective in these applications.

Other special chain and cable applications can be found and met with:

SWEPCO 719 Paint Line Conveyor Lubricant- formulated specifically for industrial painting lines. Eliminates lubricant related pin holes, fish eyes, craters and other blemishes.

SWEPCO 722 HiTemp Chain and Roller Lubricant- outstanding performance in high heat applications in baking, drying and curing applications exceeding 500°F.