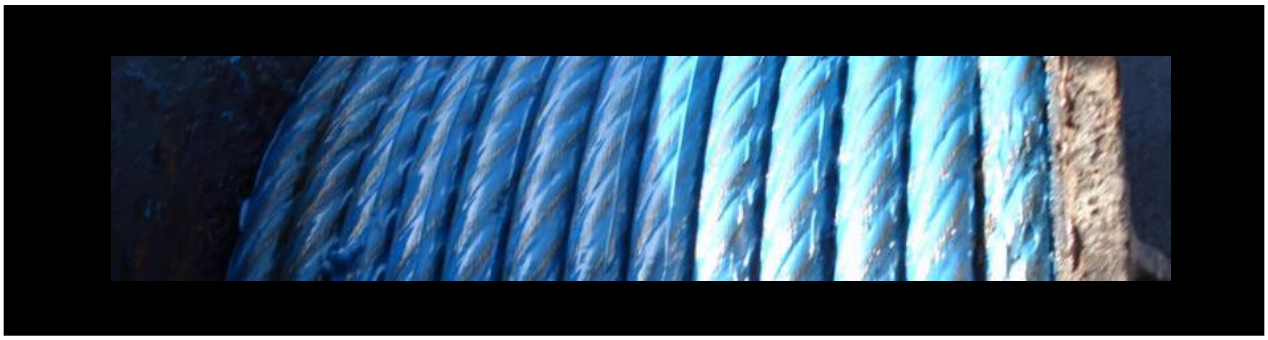
# THE KIRKPATRICK GROUP, INC.

Kirkpatrick Wire Rope Lubrication Systems
Dynagard™ Environmental Wire Rope Lubricants



## THROUGH THE CORE- WHAT DOES THIS REALLY MEAN?

When it comes to the application of wire rope coatings using a pressure applicator such as ours, you often hear the term, "through the core." Even though we have proof that our systems have penetrated to and through the core in many instances, the perception of "through the core" can be misleading.

Check out this photo series from the United States Coast Guard. This series shows a 3/4" section from the middle of the boom hoist cable as the strands were separated down to the core after its service life aboard. The wire rope had been pressure lubricated with our SU35B System during it's 2-year working life. As you can see from these photos, no pressure applicator has better, more lasting sealing action.

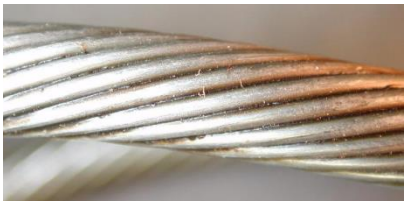
Wire rope before cleaning as strands are separated revealing IWRC (Independent Wire Rope Core- A wire rope used as the axial member of a larger wire rope). Note there is no corrosion.

Wire as the IWRC is separated and the actual core is exposed. Note once again, no corrosion.

IWRC with Core removed. Note the lubricant in the spot where the core had been located.

Wire rope Core after it has been cleaned and removed from the IWRC- no corrosion.

One of six outer strands after cleaning- no corrosion.



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## A NEW PHILOSOPHY ON "THROUGH THE CORE."

The perception of "through the core" can be misleading... In the broadest terms, optimum penetration depends on some factors:

- Strand density of the wire rope being treated
- Consistency of the original layup material
- Whether or not the wire rope has been cleaned of encrusted debris before the application of a new wire rope coating.
- Use of our Groove Cleaners can create a greater path for the lubricant to penetrate.

Above: Wire rope prior to cleaning

Right: Groove Cleaner removing encrusted debris, creating open pathways for the wire rope lubricant to penetrate.

We would now like to offer a new philosophy in regard to this subject to help you understand the process. *Our systems allow your rope to pass through a 100% consistent, pressurized immersion that forces lubricant to fill every open space in the wire rope that is open to receive it.* Conversely, manual hand applications will only achieve surface coating with no or minimal penetration. It is important to realize that if there are no open areas, the applied lubricant cannot fill them, hence the reason for components like the Groove Cleaners. **Systems Components**

The bottom line is that preventative maintenance should supplement the original layup material, and if that lay-up material is viscous enough, it is impossible to go through the core. This is because there is already a pre-existing protective coating barrier there*. This is not a negative thing, but a positive circumstance.* The goal is to keep the original layup material intact for as long as possible during the life of the wire rope. This provides optimum protection against strand rubbing and friction wear.

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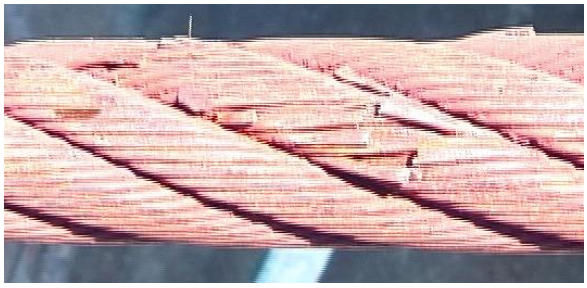
## HOW TO CUT THE LIFE OF WIRE ROPE IN HALF

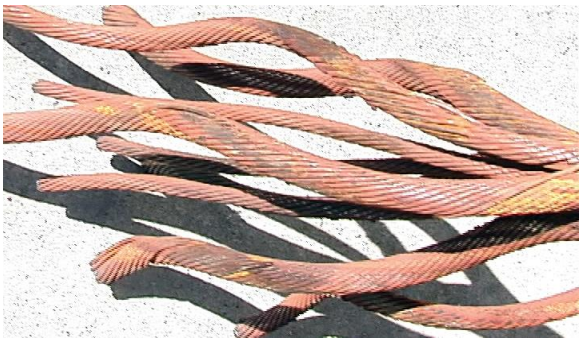
**Dynagard Environmental Wire Rope Lubricants**

One can see that fluid film protection was virtually non-existent in the photo series below. The wire rope was left with practically no protection against strand rubbing and damaging friction wear. Their wire rope life had been cut in half. According to our customer, they used our NLGI Grade 2 Dynagard Blue applied with our system and were able to bring their wire rope life back to the level that had existed previously. The increased fluid film protection the Dynagard Blue provided made this possible.

This offshore crane boom hoist photo series demonstrates what happens when you use a light weight oil after switching from a more viscous product. As you can see there are broken strands on the wire rope.



Broken, flattened and creased strands run throughout.



Flattened outer strands where it came in contact with inner strand wrap. Also, gouging from lack of fluid film support which should be provided by layup material.

Inner Core after outer strands removed. Note the gouges caused by outer strand abrasion.
Flattened outer strands where they came in contact with inner strands. Note the crease effect.

After outer strand wraps have been removed, gouging of the inner core strands can be seen. This is a result of outer strand abrasive contact. All of which are a result of inadequate fluid film support from layup material. **Dynagard Environmental Wire Rope Lubricants**

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## HOW MUCH PRESSURE INTERNALLY TO OPTIMIZE PENETRATION?

How much pressure is available internally in our lubrication systems to optimize wire rope penetration?

We have noted competitive lubricators out in the marketplace make the claim of over 5,000 PSI. We are mystified by this as it is an impossibility. We have tested these products and find minimal internal pressure using their own wire rope lubricants. In fact, our own testing showed their internal pressure to be in the 10 to 20 PSI range as compared to our system that achieved over 100 PSI utilizing the same wire rope configuration and coating product.

It would take a closed hydraulic system to get internal pressure up to 5,000 PSI. However, the wire rope lubricator is by design an open system and will never achieve 5,000 PSI. The fact is the internal pressure is created by the amount of lubricant contained within the seals at any given time. This creates the pressure to move the lubricant through and around the wire rope being treated. Of course, much depends on the wire rope construction and the lubricant viscosity as to how much pressure is created. We have achieved up to 800 PSI internal pressure using high density double armor oceanographic cable. On the other hand, we have achieved 180 PSI internal pressure utilizing a clean 1" (25mm) 6-Strand wire rope and our Dynagard wire rope lubricant.

There are many different variables to consider in optimizing the wire rope pressure lubrication process. We have been involved in this process for over 33 years. In fact, we developed the first successful wire rope lubrication system in 1982. Therefore, there is a very good chance we can provide you with the information and experience to optimize your wire rope preventative maintenance program.

TKG INC.
www.thekirkpatrickgroup.com
Phone: (972) 509-2468
Toll Free: (800) 466-4414