



CWRM Holdings

"CARING FOR OUR ENVIRONMENT"



CWRM WHARF CRANE ROPE LUBRICATION SYSTEMS

Patent Pending

Steel Wire Ropes corrode in the presence of moisture, oxygen and salt. Since 1994, CWRM Holdings have been developing methods and systems to protect these valuable assets and extend their useful lifespan using specially developed wire rope lubricating oils.

Wharf Cranes, i.e. Ship to Shore Container Cranes, normally utilise three sets of ropes, viz.

1. **Hoist and Travel Ropes** that operate a trolley to load and offload containers from a vessel.
2. **Boom Ropes** that lift the boom into the "park position" when the crane is not servicing a vessel. When a vessel is to be off-loaded and loaded, the boom is dropped over the vessel allowing access to the containers on the vessel.
3. **Auxiliary Ropes** normally used in conjunction with the travel ropes to prevent them from sagging.

The Rope Lubrication Systems

CWRM have developed two systems, viz.

- A. The Hoist and Travel lubrication system that is mounted on the trolley.
- B. The Boom and Drum lubrication system normally mounted in the winder room.
- C. Manual Lubrication.

A. The Hoist and Travel System

The Power Pack is mounted in a suitable location on the trolley and supplies oil to the ropes via suitably gauged spray nozzles for optimal lubrication and prevent overspray. They are positioned to ensure maximum lubrication coverage.

B. The Boom and Drum System

This Power Pack is normally mounted in the winder room and has two functions, viz.

- a. Lubricate the boom ropes at the sheaves mounted on top of the boom tower
- b. Manually lubricate the ropes on the winder drums with a spray lance, viz.
 1. The section of the Hoist and Travel ropes that cannot be lubricated from the Automatic System,
 2. That section of the Boom Ropes that cannot be lubricated from the Automatic System,
 3. The Auxiliary Ropes.

C. Manual Lubrication

Obviously, the short tail ends of the Hoist and Travel Ropes, the Boom Ropes and the Auxiliary ropes cannot be lubricated from either of the two systems above. In these cases, the rope ends must be lubricated periodically with a brush or portable spray system.

System Details

A. Power Pack

The Power Pack consists of a gear pump and a 50 litre replaceable PVC oil reservoir. The system pressure is adjusted by a suitable control valve and an in-line oil filter is fitted to prevent any solid particles entering and damaging the pump.

B. Electrical Controls

The Automatic Lubrication System is controlled by a Programmable Logic Controller (PLC) with the following functions: -

a. Motion Proximities.

These proximities provide the following functions: -

- * They sense that the rope is in motion.
- * The direction it travels.
- * To ensure that oil is only applied when the rope is in motion.
- * The position of the trolley or boom respectively.
- * Counts the number of containers loaded or off-loaded.

b. Oil Reservoir Sensor.

This sensor will stop the system when the reservoir is empty and trigger a rotary alarm light.

c. Operator Control Pad.

The Operators Control Pad complete with screen mounted on the electrical control board, is an operators communication system with the PLC. It can be used by an authorized person to modify cycle settings within the PLC and provide visual identification of an Alarm indication of the system.

C. Lubrication Spray Nozzles

Suitable spray nozzles are gauged and placed in suitable positions to provide optimal lubrication and minimize overspray.

Benefits of using Oil

The benefits of using Wire Rope Lubricating Oils can be enumerated as follows: -

- a. They have a greater affinity to metal surfaces than water and displace water on contact.
- b. They have the ability to penetrate and protect the ropes from wear and corrosion internally and externally.
- c. Oils are easy to apply and water cannot adhere to the rope.
- d. With no water and oxygen present, corrosion is reduced substantially.

