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STEEL WIRE ROPE CLEANING

Introduction

To maximise rope life, experience has proven that over and above good *lubrication*, ropes should be kept *clean* from backfill, water and dust that may be present in the shaft and adhere to the ropes. With any of these elements attaching themselves to the ropes, *abrasion and corrosion* on the surface and within the ropes will occur; a combination will *accelerate the detrimental effects*. Further wear will be experienced on the sheave inserts and to a lesser degree on the drums.

Merits of Cleaning

Depending on the severity of the wear elements, it makes no difference whether the ropes are dressed with a Bitumastic Rope Grease or oiled with a penetrating Wire Rope Lubricant. In the first instance, the dressing will be abraded at a much faster pace requiring frequent replenishment, and in the second instance, the penetrating oil will not reach the rope since it will either be absorbed by the dust or backfill or be washed away by excessive water on the ropes.

If the dust or backfill is not removed prior to dressing or oiling the ropes, a grinding paste will be formed. It is therefore imperative that the ropes be cleaned on a regular basis to prevent the unwanted elements adhering to the ropes.

There are various methods of cleaning ropes, viz.

1. *Dry Ice Cleaning* is the most effective and complete cleaning method if required to remove rope dressing, impregnated backfill or a combination of both, which cannot be removed by either brushing or compressed air. Due to the cost implications, this method would most probably only be used once or twice per year as a maintenance clean. It must be noted that if cleaned more frequently, the speed of cleaning can be increased and therefore the time and quantity of Dry Ice consumption reduced, thereby reducing the cost.
2. *Compressed air*, which is probably the most effective and simplest method of *ongoing maintenance* cleaning if applied correctly and frequently.
3. Brushing with *steel wire brushes*, which is cumbersome and not very effective and can therefore **not** be done regularly,
4. *High Pressure water*, which would be considerably easier and faster, is however detrimental to the ropes due to forcing water into the ropes thereby *accelerating corrosion* and can also not be done that regular,

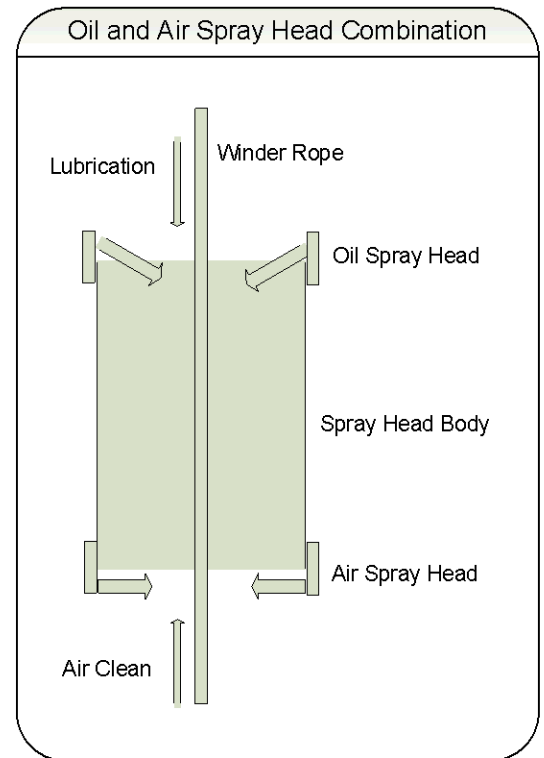
Compressed Air Cleaning

We have established that cleaning with **compressed air** would be the **most cost effective** method in cleaning ropes regularly, installed permanently.

Having an automatic lubrication system installed with each rope lubricated by an independent spray head is probably the simplest way in attaching a compressed air spray head per rope.

The basic principle of the *CWRM Spray Head Combination* is described below: -

1. The ropes must be cleaned while the skip/conveyance ***travels in the upward direction***. This will ensure that the backfill, water, dust will be removed before it reaches the sheave to prevent wear to the ropes and sheaves.
2. The ***frequency of air blasting*** depends entirely on the volume of backfill or water that is collected by the ropes during normal use. In some extreme instances, it may have to be cleaned ***every cycle***.
3. The ropes must be lubricated while the skip/conveyance ***travels in the downward direction***. This will ensure that the oil has a chance to spread and penetrate into the rope.
4. The ***frequency of lubrication*** in cycles depends on rope diameter and to a greater extent on shaft conditions.
5. The CWRM Spray Head body is designed for the ***Oil Spray Head*** to be fitted at the ***top*** and the ***Air Cleaning Head*** to be fitted at the ***bottom*** of the body.
6. It is imperative that when fitting the Air Spray Head to the bottom of the Spray Head Body that the body is ***carefully levelled and centralized*** and the air nozzles gauged correctly to prevent contact with the ropes.



Cleaning Logistics

Once the Compressed Air Cleaning Heads have been installed and the system is in operation, the ropes must be inspected regularly by a nominated responsible person to ensure that they remain clean at all times.. There are basically only two methods, viz.

Manually. This is the ***simplest method*** but unfortunately ***extremely unreliable***. Initially, when first introduced, cleaning would be done reasonably regularly however, unless controlled meticulously, the cleaning frequency will eventually become more and more erratic until it ceases completely.

Automatically. This method is a definite ***must*** if ***poor shaft conditions*** prevail, i.e. a wet shaft, regular backfill pipe leaks and breakages or a dusty updraught ventilation shaft. The compressed air to the Rope Cleaning Head can be easily controlled via an electromagnetic valve using an existing Lubrication PLC system or a stand alone electrical system. Cleaning frequency can be varied from one cycle plus.

Disposal of Backfill

Should there be an above normal amount of backfill that is being removed from the ropes, it could prove to be a major headache and would ***require serious attention***. In some instances, the backfill or water could be collected in a specially designed tundish fitted around the ropes and piped with water washing facilities to the bottom of the headgear and collected in large containers, i.e. ***concrete catchment area***. On some mines, it may even be possible to feed it back into the ***backfill mixing tanks***.