

 **O.I.T.A.F.**
Work-Committee No II
Characteristics and Inspection of Ropes

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Lubrication and Re-lubrication




Bonjour
Buon giorno
Good morning
Guten Morgen


Full locked spiral ropes / track ropes

Name: Bruno Longatti Number of slide 1

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Have a look behind the curtain of the ropeways and their ropes


The guests are happy and enjoy the excursion

2


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It is unsafe and very expensive!

We do not feel happy and safe about this view!

4

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We do not feel happy and safe about this view!

5

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Lubrication and Re-lubrication

Topics

- ▲ Introduction, Differences to stranded ropes
- ▲ Lubrication (third body, manufacturing)
- ▲ Re-lubrication
- ▲ Specific rope areas
- ▲ Hazards

6



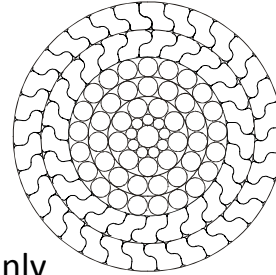
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Introduction

Differences to stranded ropes

- ▲ All wires are bright
- ▲ Locked ropes have z-shaped wires
- ▲ Ropes don't move, the cabins run only over a section of the hole rope length
- ▲ Different fatigue over the rope length
- ▲ Maintenance work only on the outer layer
- ▲ A repair peace isn't possible, only substitution of single wires



7



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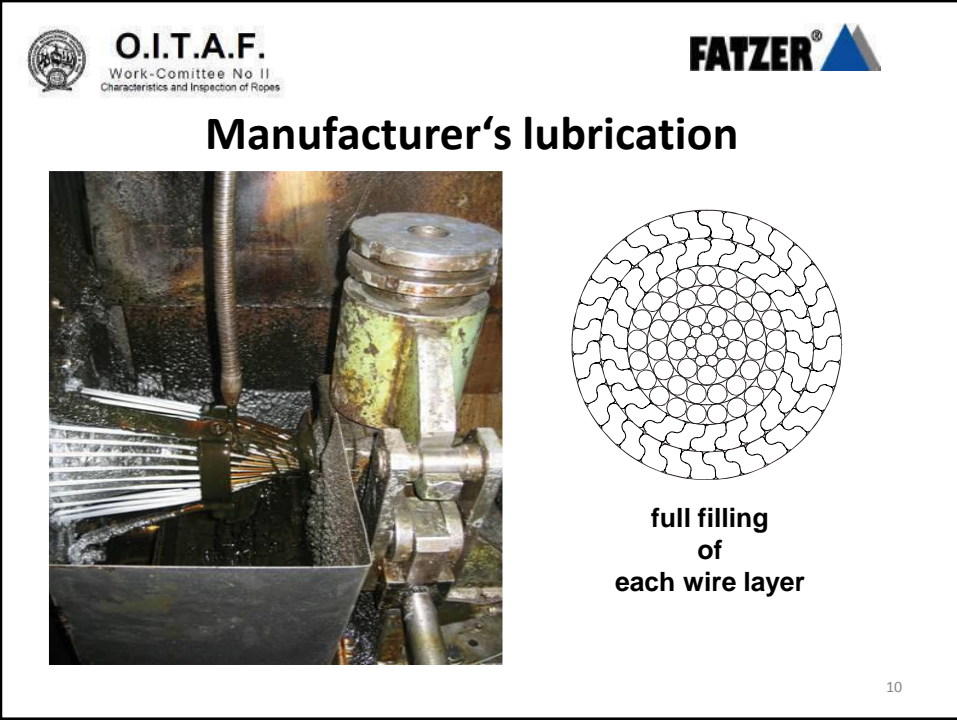
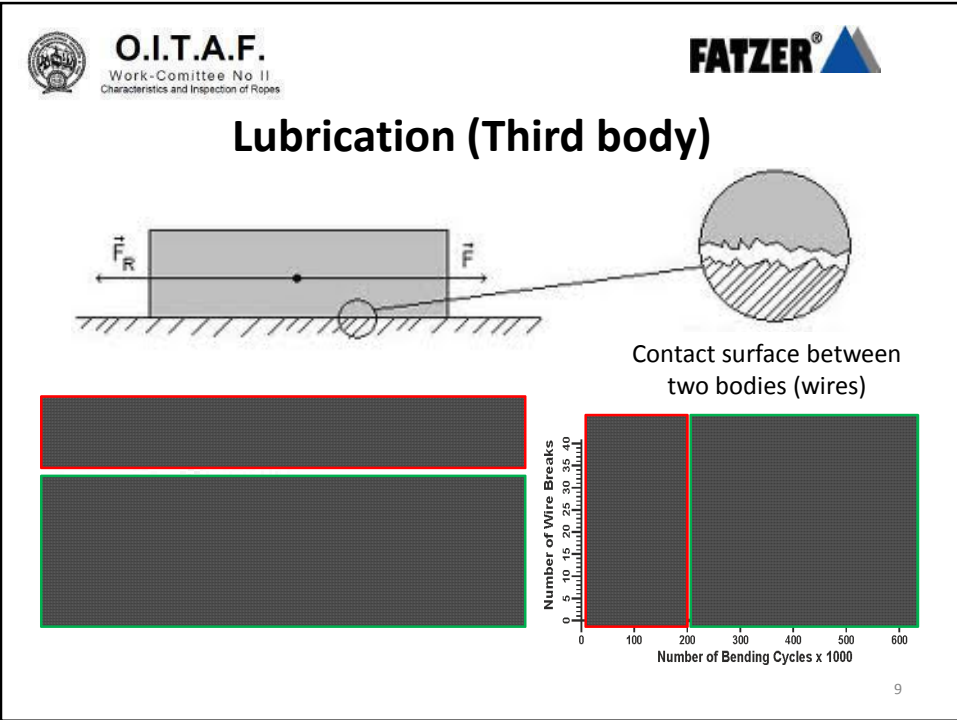
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Targets for lubrication

A steel wire rope needs to be lubricated:

- ▲ to prolong its useful service life
- ▲ reducing the coefficient of friction between the wires and the layers
- ▲ increasing the corrosion protection
- ▲ reducing the rate of development of the numbers of broken wires

8





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Hazards

Soiling of the installation and the guests



Track rope cleaning
Remove the lubricant on
the tight rope before the
installation goes in use!

11



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Why re-lubricate

- ▲ the bright wires in the outer layer must be protected against corrosion.
 - ➡ to build up a protective patina!
- ▲ lubricant is consumed in- and outside the rope and must be supplemented periodically once again!
- ▲ increased friction and corrosion is to prevent at contact points between rope and guiding element (saddle profile etc.)!

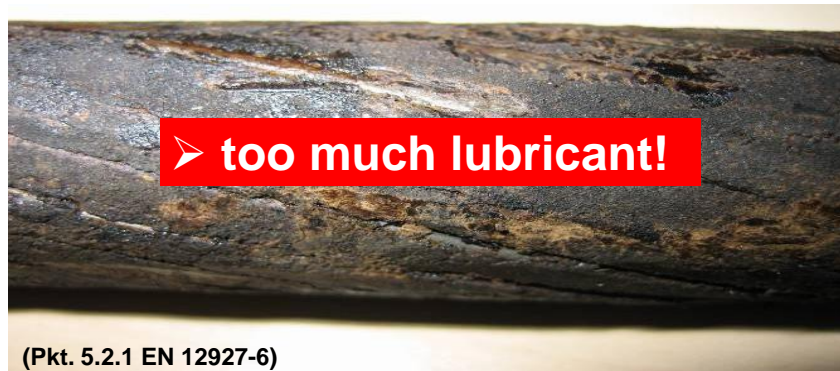
12



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Attention



(Pkt. 5.2.1 EN 12927-6)

«Ropes shall be discarded if their condition cannot, or can no longer, be assessed with the current methods of inspection.»

13



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Only clean ropes are to re-lubricate

With rotating brushes

Partial



Complete circumference



Attention

- ▲ No mechanical damages on the wire surface.
- ▲ No heat that influence a reduction of the strength

14



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How to re-lubricate

In the stations



Lubricant with solvent

- ▲ spraying
- ▲ brushing



15



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How to re-lubricate


On the free rope length




Lubricant with solvent
or
oil

- ▲ spraying
- ▲ dropping

16


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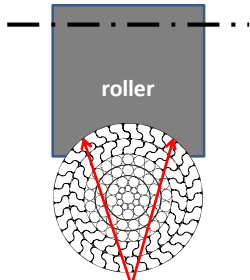
How to re-lubricate

Spraying tool

Lubricant is spraying with spray nozzles on the rope surface.





Lubricant with solvent



Attention
No or only a little lubricant on the contact surface with the roller

17


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How to re-lubricate

Drip lubricator

The subsequent lubricant dripping continuously or pilot-controlled on the rope surface

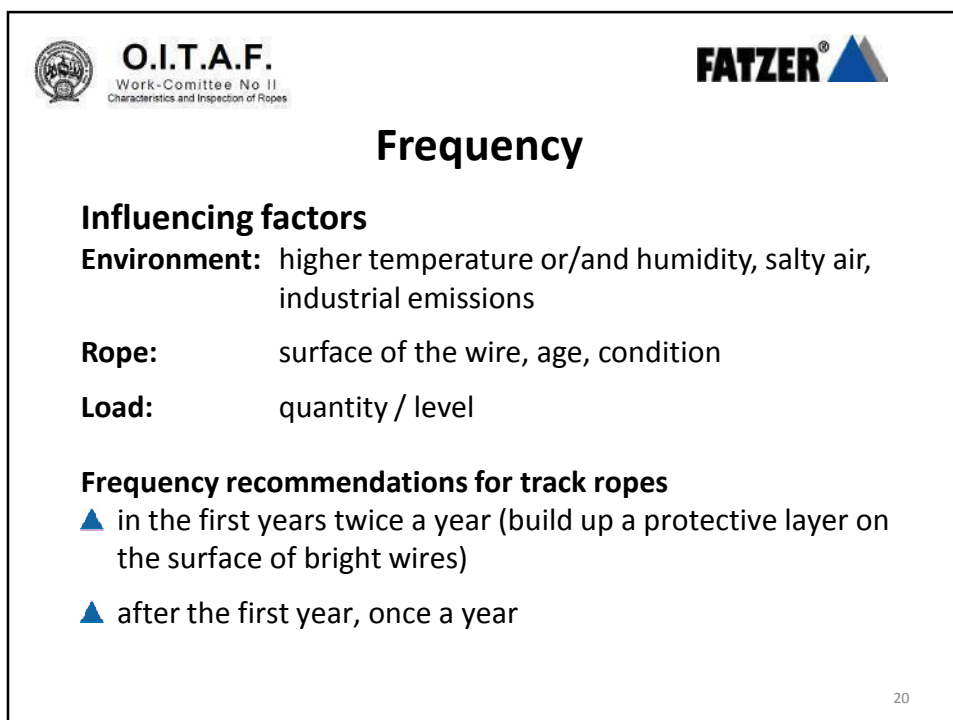
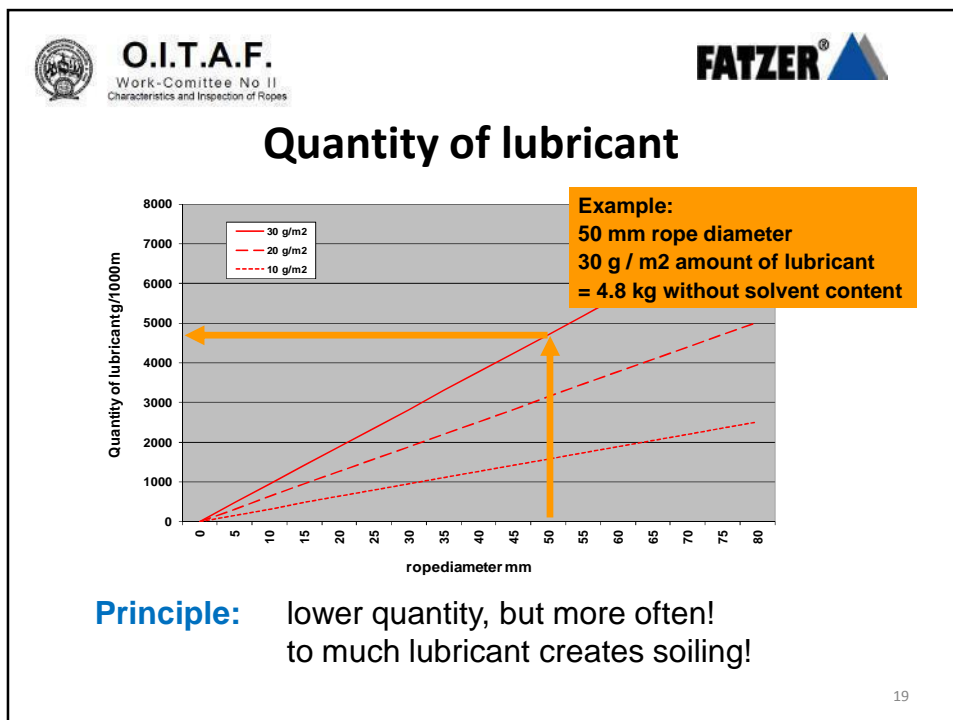


Lubricant with solvent or oil



Attention
influence on the roller liner

18





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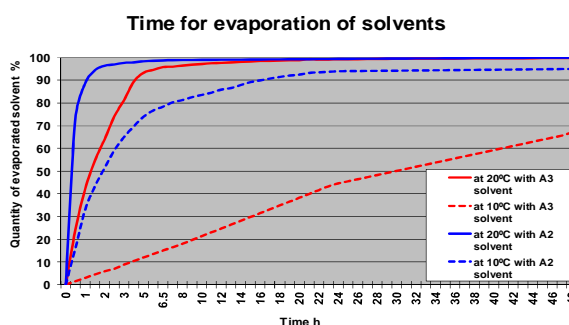
How to re-lubricate

Conditions

Re-Lubrication should be carried out only on dry ropes and by warm weather.

Attention:

If the subsequent lubricant with solvent is resolved, the operation may be not immediately resumed after a rope lubrication!



21



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Safety precautions

Employees, who are carrying out the re-lubrication needs:

- ▲ safety belts, warm wear, helmet, hard-toed shoes, glasses, gloves, etc.
- ▲ person who monitored the route and can stop the cabin at any time!
- ▲



22

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Lubrication of specific rope areas

Bollard



➤ **Moisture = collapse the liners + corrosion**

Necessary:

- ▲ rope maintenance (conservation)
- ▲ weather protection
- ▲ accessibility of appropriate inspections




23

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Lubrication of specific rope areas



no slip-stick!


Saddle 1


Reduction of the friction between the rope and the saddle profile



Fit support + No constant moisture!

24

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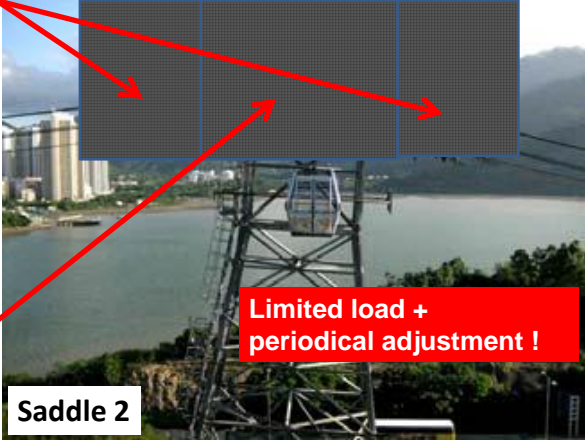
Lubrication of specific rope areas

Reverse bending's with restricted movement of the outer wires.


Ovalisation of the rope on the basis of increased shear force of the rollers.


Limited load + periodical adjustment !

Saddle 2



25

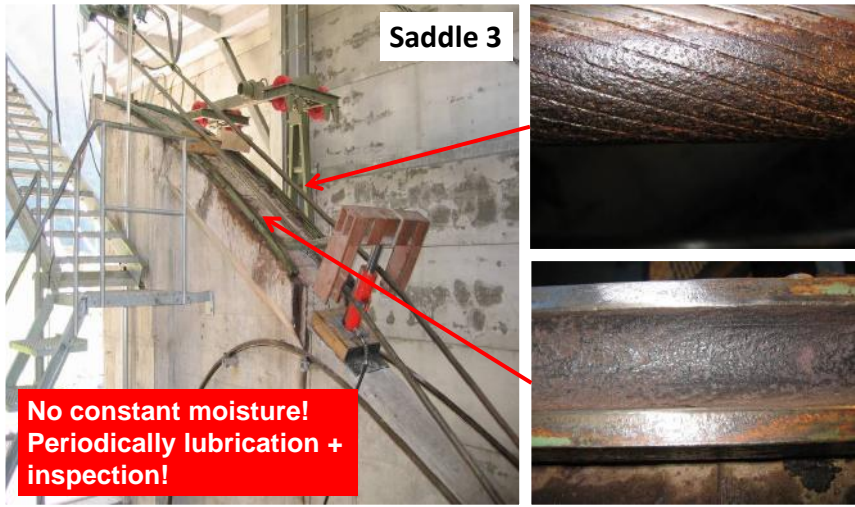
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Lubrication of specific rope areas


Saddle 3

**No constant moisture!
Periodically lubrication + inspection!**

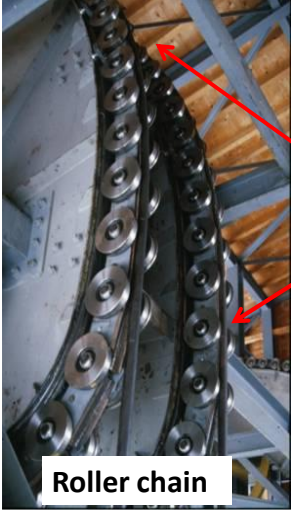


26


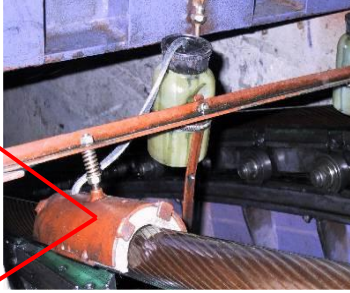
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Lubrication of specific rope areas




Roller chain




Attention
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Note: The lubricant must have good penetrate properties.

27


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Hazards

Track rope break

- No solid lubricant



28



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Conclusion

- ▲ We have different fatigue over the rope length
 - ▲ We need different type of lubricant
 - ▲ If one section of the rope achieve the discard criteria's, the track rope has to be changed
 - ▲ The most track ropes are changed by corrosion or local defaults (fatigue)
- ➔ Your effort with re-lubrication creates lower costs

29