CLAIMS

1. A method in rope condition monitoring of an elevator, in which method at least the following steps are performed:
   - electrical resistance between a first point (R') and a second point (R'') of elevator suspension and/or transmission ropes (R) is measured first time, and thereafter
   - a threshold value is determined based on the measurement, and thereafter
   - the elevator is used for transporting passengers and/or goods, and thereafter
   - electrical resistance between the first point (R') and the second point (R'') of said suspension and/or transmission ropes (R) is measured second time, and thereafter
   - results of said second time measurement are compared with said threshold value, and if said second time measurement meets said threshold value, predetermined actions are carried out,

   characterized in that said first point (R') and second point (R') are points of a non-metallic load bearing part (8a, 8b, 8c, 8d) of the suspension and/or transmission rope (R), or points of several electrically connected non-metallic load bearing parts (8a, 8b, 8c, 8d) of the suspension and/or transmission ropes (R).

2. The method according to the previous claim, **characterized** in that electrical resistance between the first point (R') and the second point (R'') of said suspension and/or transmission ropes (R) is measured first time before the elevator is taken into use for transporting passengers and/or goods.

3. The method according to any one of the previous claims, **characterized** in that electrical resistance between the first point (R')

and the second point (R'') of said suspension and/or transmission ropes (R) is measured first time during elevator installation.

4. The method according to any one of the previous claims, **characterized** in that the elevator car (1) is suspended on said ropes (R) while said first time and said second time measurements are performed on said ropes (R).

5. The method according to any one of the previous claims, **characterized** in that said first point (R') and second point (R'') are points of load bearing parts (8a, 8b, 8c, 8d) of said suspension and/or transmission ropes (R) made of fiber-reinforced polymer matrix composite material, such as carbon fiber-reinforced polymer matrix composite, preferably unidirectional carbon fiber-reinforced polymer matrix composite.

6. The method according to any one of the previous claims, **characterized** in that if said second time measurement value meets said threshold value between a first point (R') and a second point (R'') of elevator suspension and/or transmission ropes (R), an error signal is given.

7. The method according to any one of the previous claims, **characterized** in that rope identification code and error level indication are shown for each rope (R) on the LED or LCD display (2) of a rope condition monitoring device (4) if said error signal is given.

8. The method according to any one of the previous claims, **characterized** in that said error signals are routed to the elevator controller so that the elevator operation is altered or the elevator is taken out of service if said error signal is given.

9. The method according to any one of the previous claims, **characterized** in that the rope condition monitoring means monitors

the status of each rope (R), said threshold value and said measurement values at predefined time intervals, preferably once per second.

10. An arrangement in rope condition monitoring of an elevator, which elevator comprises

- a hoistway (S),
- at least one elevator unit (1, CW) movable in the hoistway (S), including at least an elevator car (1),
- lifting means comprising a lifting device (M), one or more suspension and/or transmission ropes (R), each said rope comprising one or more load bearing parts (8a, 8b, 8c, 8d) connected at least to one elevator unit (1, CW),
- rope condition monitoring means,

in which arrangement rope condition monitoring means are arranged to perform the following steps:

- electrical resistance between a first point (R') and a second point (R'') of elevator suspension and/or transmission ropes (R) is measured first time, and thereafter
- a threshold value is determined based on the measurement, and thereafter
- the elevator is used for transporting passengers and/or goods, and thereafter
- electrical resistance between the first point (R') and the second point (R'') of said suspension and/or transmission ropes (R) is measured second time, and thereafter
- results of said second time measurement are compared with said threshold value, and if said second time measurement meets said threshold value, predetermined actions are carried out,

characterized in that said first point (R') and second point (R'') are points of a non-metallic load bearing part (8a, 8b, 8c, 8d) of the suspension and/or transmission rope (R), or points of several

electrically connected non-metallic load bearing parts (8a, 8b, 8c, 8d) of the suspension and/or transmission ropes (R).

11. The arrangement according to the previous claim 10, **characterized** in that rope condition monitoring means is used to measure electrical resistance between said first point (R') and said second point (R'') of said suspension and/or transmission ropes (R) first time before the elevator is taken into use for transporting passengers and/or goods.

12. The arrangement according to any one of the previous claims 10-11, **characterized** in that rope condition monitoring means is used to measure electrical resistance between said first point (R') and said second point (R'') of said suspension and/or transmission ropes (R) first time during elevator installation.

13. The arrangement according to any one of the previous claims 10-12, **characterized** in that the elevator car (1) is suspended on said ropes (R) while said first time and said second time measurements are performed on said ropes.

14. The arrangement according to any one of the previous claims 10-13, **characterized** in that said first point (R') and said second point (R'') are points of load bearing parts (8a, 8b, 8c, 8d) of said suspension and/or transmission ropes (R) made of fiber-reinforced polymer matrix composite material, such as carbon fiber-reinforced polymer matrix composite, preferably unidirectional carbon fiber-reinforced polymer matrix composite.

15. The arrangement according to any one of the previous claims 10-14, **characterized** in that if said second time measurement value meets said threshold value between a first point and a second point of

elevator suspension and/or transmission ropes (R), an error signal is given by said rope condition monitoring means.

16. The arrangement according to any one of the previous claims 10-15, **characterized** in that said rope condition monitoring means comprises a rope condition monitoring device (4) and that rope identification code and error level indication are shown for each rope (R) on the LED or LCD display (2) of said rope condition monitoring device (4) if said error signal is given.

17. The arrangement according to any one of the previous claims 10-16, **characterized** in that said error signals from said rope condition monitoring means are routed to the elevator controller so that the elevator operation is altered or the elevator is taken out of service if said error signal is given.

18. The arrangement according to any one of the previous claims 10-17, **characterized** in that said rope condition monitoring means comprises a rope condition monitoring device (4) that monitors the status of each rope (R), said threshold value and said measurement values at predefined time intervals, preferably once per second.

CLAIMS

1. A method in rope condition monitoring of an elevator, in which method at least the following steps are performed:

electrical resistance between a first point and a second point of elevator suspension and/or transmission ropes is measured first time, and thereafter

a threshold value is determined based on the measurement, and thereafter

the elevator is used for transporting passengers and/or goods, and thereafter

electrical resistance between the first point and the second point of said suspension and/or transmission ropes is measured second time, and thereafter

results of said second time measurement are compared with said threshold value, and if said second time measurement meets said threshold value, predetermined actions are carried out,

wherein said first point and second point are points of a non-metallic load bearing part of the suspension and/or transmission rope, or points of several electrically connected non-metallic load bearing parts of the suspension and/or transmission ropes.

2. The method according to claim 1, wherein electrical resistance between the first point and the second point of said suspension and/or transmission ropes is measured first time before the elevator is taken into use for transporting passengers and/or goods.

3. The method according to claim 1, wherein electrical resistance between the first point and the second point of said suspension and/or transmission ropes is measured first time during elevator installation.

4. The method according to claim 1, wherein the elevator car is suspended on said ropes while said first time and said second time measurements are performed on said ropes.

5. The method according to claim 1, wherein said first point and second point are points of load bearing parts of said suspension and/or transmission ropes made of fiber-reinforced polymer matrix composite material, such as carbon fiber-reinforced polymer matrix composite, preferably unidirectional carbon fiber-reinforced polymer matrix composite.

6. The method according to claim 1, wherein if said second time measurement value meets said threshold value between a first point and a second point of elevator suspension and/or transmission ropes, an error signal is given.

7. The method according to claim 1, wherein rope identification code and error level indication are shown for each rope on the LED or LCD display of a rope condition monitoring device if said error signal is given.

8. The method according to claim 1, wherein said error signals are routed to the elevator controller so that the elevator operation is altered or the elevator is taken out of service if said error signal is given.

9. The method according to claim 1, wherein the rope condition monitoring means monitors the status of each rope, said threshold value and said measurement values at predefined time intervals, preferably once per second.

10. An arrangement in rope condition monitoring of an elevator, which elevator comprises

a hoistway,

at least one elevator unit movable in the hoistway, including at least an elevator car,

lifting means comprising a lifting device, one or more suspension and/or transmission ropes, each said rope comprising one or more load bearing parts connected at least to one elevator unit,

rope condition monitoring means,

in which arrangement rope condition monitoring means are arranged to perform the following steps:

electrical resistance between a first point and a second point of elevator suspension and/or transmission ropes is measured first time, and thereafter

a threshold value is determined based on the measurement, and thereafter

the elevator is used for transporting passengers and/or goods, and thereafter

electrical resistance between the first point and the second point of said suspension and/or transmission ropes is measured second time, and thereafter

results of said second time measurement are compared with said threshold value, and if said second time measurement meets said threshold value, predetermined actions are carried out,

wherein said first point and second point are points of a non-metallic load bearing part of the suspension and/or transmission rope, or points of several electrically connected non-metallic load bearing parts of the suspension and/or transmission ropes.

11. The arrangement according to claim 10, wherein rope condition monitoring means is used to measure electrical resistance between said first point and said second point of said suspension and/or transmission ropes first time before the elevator is taken into use for transporting passengers and/or goods.

12. The arrangement according to claim 10, wherein rope condition monitoring means is used to measure electrical resistance between said first point and said second point of said suspension and/or transmission ropes first time during elevator installation.

13. The arrangement according to claim 10, wherein the elevator car is suspended on said ropes while said first time and said second time measurements are performed on said ropes.

14. The arrangement according to claim 10, wherein said first point and said second point are points of load bearing parts of said suspension and/or transmission ropes made of fiber-reinforced polymer matrix composite material, such as carbon fiber-reinforced polymer matrix composite, preferably unidirectional carbon fiber-reinforced polymer matrix composite.

15. The arrangement according to claim 10, wherein if said second time measurement value meets said threshold value between a first point and a second point of elevator suspension and/or transmission ropes, an error signal is given by said rope condition monitoring means.

16. The arrangement according to claim 10, wherein said rope condition monitoring means comprises a rope condition monitoring device and that rope identification code and error level indication are shown for each rope on the LED or LCD display of said rope condition monitoring device if said error signal is given.

17. The arrangement according to claim 10, wherein said error signals from said rope condition monitoring means are routed to the elevator controller so that the elevator operation is altered or the elevator is taken out of service if said error signal is given.

18. The arrangement according to claim 10, wherein said rope condition monitoring means comprises a rope condition monitoring device that monitors the status of each rope, said threshold value and said measurement values at predefined time intervals, preferably once per second.

19. The method according to claim 2, wherein electrical resistance between the first point and the second point of said suspension and/or transmission ropes is measured first time during elevator installation.

20. The method according to claim 2, wherein the elevator car is suspended on said ropes while said first time and said second time measurements are performed on said ropes.