Claims:

1. Method for operating an elevator (1) for maintenance,
wherein the elevator (1) comprises

- a cabin (2) and an elevator shaft (4), wherein the cabin being displaceable along the elevator shaft (4),
- a drive (6) for displacing the cabin (2),
- a plurality of shaft doors (8), at least one of the shaft doors (8) being arranged at each of multiple floors (10) including at least a lowermost floor (10') and a uppermost floor (10'')
- an elevator control unit (12),

wherein the elevator control unit (12) performs the following steps:

- the elevator control unit (12) receives a start-maintenance-request sent by a technician (14), wherein the start-maintenance-request is preferably sent via a mobile electronic device (16);

- the elevator control unit (12) switches from a normal operation mode to a maintenance mode;

- the elevator control unit (12) receives a stop-maintenance-request sent by the technician (14), wherein the stop-maintenance-request is preferably sent via a mobile electronic device (16);

- the elevator control unit (12) checks whether a person is within a predefined danger zone (18), wherein the predefined danger zone (18) preferably is the elevator shaft (4);

- the elevator control unit (12) switches from the maintenance mode back into the normal operation mode if there is no person within the predefined danger zone (18);

wherein the step of checking that no person is within a predefined danger zone (18), comprises the steps of

- capturing a pre-maintenance-status, preferably of the danger zone (18), of the elevator (1) after the start-maintenance-request was received by the elevator control unit (12) and before the elevator control unit (12) switches form the normal operation mode to the maintenance mode; and/or

- capturing a post-maintenance-status of the elevator (1) after the stop-maintenance-request was received by the elevator control unit (12) and before the elevator control unit (12) switches from the maintenance mode back to the normal operation mode;

- evaluating a difference between at least two out of the group of the pre-maintenance-status of the elevator (1), the post-maintenance-status of the elevator (1) and a predefined value for the pre-maintenance-status and a predefined value of the post-maintenance-status and

- concluding that no one is in the predefined danger zone (18) if the evaluated difference and/or differences is below a predefined threshold, preferably within ±5%, especially preferred within ±2% of each other.

2. Method according to claim 1, wherein the capturing of the pre-maintenance-status and the post-maintenance-status of the elevator (1) comprises
- measuring a pre-maintenance- and/or post-maintenance-load of the cabin (2) and storing it in the elevator control unit (12).

3. Method according to claim 1 or 2, wherein the capturing of the pre-maintenance-status and/or the post-maintenance-status of the elevator (1) comprises

- capturing a snapshot of the elevator shaft (4) with a camera, a TOF-camera, a thermographic camera and/or a lidar system.

4. Method according to any of the preceding claims, wherein the step of verifying that no person is within a predefined danger zone (18), comprises the steps of
- verifying the technician (14) presence within the cabin (2) and/or on a floor (10) after the elevator control unit (12) receives a start-maintenance-request of a technician (14) and before the elevator control unit (12) switches from a normal operation mode to a maintenance mode, and/or
- verifying the technician (14) presence within the cabin (2) and/or on a floor (10) after the elevator control unit (12) receives a stop-maintenance-request of the technician (14) and before the elevator control unit (12) switches from the maintenance mode back into the normal operation mode.

5. Method according to claim 4, wherein verifying the technician's (14) presence in the cabin (2) and/or on a floor (10) is verified by identifying the technician (14) by means of
- displaying a code on a screen (20) in the cabin (2) and/or on the floor (10), which the technician (14) has to scan with a mobile electronic device (16), and/or
- using another camera (24) and/or near field communication device (24) in the cabin and/or on the floor (10) to identify the technician (14).

6. Method according to any of the preceding claims, wherein the start maintenance-request of a technician (14) is a request to enter the elevator shaft (4) at a specific shaft door (8), and wherein the method comprises the step of
- displacing the cabin (2) to a pre-defined position in proximity of the specific shaft door (8).

7. Method according to any of the preceding claims, further comprising the step of restricting the displacement of the cabin (2) in solely a

- a upward direction if the maintenance mode was requested at the lowermost floor, and/or
- a downward direction if the maintenance mode was requested at the uppermost floor after the stop-maintenance-request was received by the elevator control unit (12).

8. Method according to any of the preceding claims, wherein at least one, preferably all, of the shaft doors (8) having an associated active door drive (28) for opening and closing the shaft door (8) and/or an active door lock (30) for locking and unlocking the shaft door and wherein the method further comprises the steps of
- unlocking and/or opening the specific shaft door (8) by means of the active door lock (30) and the active door drive (28), respectively, so that the technician (14) can access the elevator shaft (4) after the maintenance mode was entered, and/or
- closing and/or locking the specific shaft door (8) by means of the active door drive (28) and/or the active door lock (30), respectively, so that the technician (14) cannot access the elevator shaft anymore before the maintenance mode is left.

9. Method according to any of the preceding claims, wherein the method further comprises the step of assuring the cabin (2) is empty after the elevator control unit (12) receives a start-maintenance-request sent by a technician (14) and before the elevator control unit (12) switches from a normal operation mode to a maintenance mode.

10. Method according to any of the preceding claims,
wherein in the maintenance mode, the elevator control unit (12) prevents the drive (6) from displacing the cabin (2), and/or
wherein an elevator brake (28), preferably a cabin brake (28), is engaged before the technician (14) is granted access to the shaft (4).

11. Method according to any of the preceding claims, further comprising the step of
- initiating verification of the braking capability after the maintenance mode was left and/or before mode is entered by performing a static brake test.

12. Elevator (1) comprising:

- a cabin (2) being displaceable along an elevator shaft (4),
- a drive (6) for displacing the cabin (2),
- a elevator control unit (12)
- a plurality of shaft doors (8), at least one shaft door (8) being arranged at each of multiple floors (10), preferably each of the shaft doors (8) having an associated active door drive (28) for opening and closing the shaft door (8) and/or active door lock (30), which can be enabled/disabled by the elevator control unit (12),

wherein the elevator (1) is configured to executing the method according to one of claims 1 to 11.

13. The elevator of claim 12,
wherein elevator control unit (12) or at least a part of it is configured to fulfil SIL3 requirements.

14. Computer program product comprising one of
- computer readable instructions which, when performed by a processor in an elevator (1) according to one of claims 12 to 13, instructs the elevator (1) to one of executing and controlling the method according to one of the claims 1 to 12, and
- computer readable instructions which, when performed by a processor in a data communication device (32), instructs the data communication device (32) to transmit a maintenance-request for triggering an elevator (1) according to one of claims 12 or 13 to executing the method according to one of claims 1 to 13.

15. Computer readable medium comprising a computer program product according to claim 14 stored thereon.