Patent Claims

1. An elevator system (10) having
- a car (1),
- a counterweight (2) balancing out the car (1) and
- a supporting and/or driving means (3) from which the car (1) and the counterweight (2) are suspended,
characterized in that
a sound receiver (8) is coupled to the elevator system (10) and is designed to capture solid-borne sound which is generated at the counterweight (2), and in that an evaluation circuit (9) is connected to the sound receiver (8) and evaluates the captured solid-borne sound.

2. The elevator system (10) as claimed in patent claim 1, characterized in that the supporting and/or driving means (3) forms, between one of its first ends (3.2) and a first deflection pulley (5.2), a loop in which the counterweight (3) is suspended by means of a bearing (4.1), wherein the sound receiver (8) monitors the bearing (4.1).

3. The elevator system (10) as claimed in patent claim 1, characterized in that
the counterweight (2) is guided by means of at least one guide element, in particular a guide shoe or a guide pulley, on a guide plane, in particular a guide rail or a guide cable, wherein the sound receiver (8) monitors the guide element.

4. The elevator system (10) as claimed in patent claim 1, characterized in that
the sound receiver (8) is coupled to a first end (3.2) of the supporting and/or driving means (3).

5. The elevator system (10) as claimed in patent claim 1, characterized in that the sound receiver (8) is coupled to a guide plane of the counterweight (2).

6. A method for operating an elevator system (10) having

- a car (1),

- a counterweight (2) balancing out the car (1) and

- a supporting and/or driving means (3) from which the car (1) and the counterweight (2) are suspended,

characterized in that

solid-borne sound, which is generated at the counterweight (2), is captured by a sound receiver (8), which is coupled to the elevator system (10), and in that the solid-borne sound is evaluated by an evaluation circuit (8), which is connected to the sound receiver (8).

7. The method as claimed in patent claim 6, characterized in that the captured solid-borne sound is compared with an operating value by the evaluation circuit (9), and in that when an operational fault is detected, a change-in-state alarm is triggered by the evaluation circuit (9).

8. The method as claimed in one of patent claims 6 or 7, characterized in that

the captured solid-borne sound is compared with a permissible operating value by the evaluation circuit (9), and in that when there is a deviation from the permissible operating value, a change-in-state alarm is triggered by the evaluation circuit (9).

9. The method as claimed in one of patent claims 6 or 7, characterized in that

the captured solid-borne sound is compared with a non-permissible operating value by the evaluation circuit (9), and in that when the non-permissible operating value is reached, a change-in-state alarm is triggered by the evaluation circuit (9).

10. The method as claimed in one of patent claims 7 to 9, characterized in that

the captured solid-borne sound which is caused by a damaged bearing (4.1), from which the counterweight (2) is suspended on the supporting and/or driving means (3), is compared with an operating value by the evaluation circuit (9).

11. The method as claimed in one of patent claims 7 to 9, characterized in that
the captured solid-borne sound which is caused by a damaged guide element which guides the counterweight (2) on a guide plane is compared with an operating value by the evaluation circuit (9).

12. The method as claimed in one of patent claims 7 to 11, characterized in that
in the case of a change-in-state alarm the elevator system (10) is made available for maintenance work.

13. The method as claimed in one of patent claims 7 to 12, characterized in that
in the case of a change-in-state alarm the elevator system (10) is deactivated.

Patent Claims

1. An elevator system (10) having

- a car (1),
- a counterweight (2) balancing out the car (1) and
- a supporting and/or driving means (3) from which the car (1) and the counterweight (2) are suspended,

characterized in that

a sound receiver (8)) is coupled to a first end (3.2) of the supporting and/or driving means (3) and the elevator system (10) and is designed to capture solid-borne sound which is generated at the counterweight (2), and in that an evaluation circuit (9) is connected to the sound receiver (8) and evaluates the captured solid-borne sound.

2. The elevator system (10) as claimed in patent claim 1, characterized in that the supporting and/or driving means (3) forms, between one of its first ends (3.2) and a first deflection pulley (5.2), a loop in which the counterweight (3) is suspended by means of a bearing (4.1), wherein the sound receiver (8) monitors the bearing (4.1).

3. The elevator system (10) as claimed in patent claim 1, characterized in that

the counterweight (2) is guided by means of at least one guide element, in particular a guide shoe or a guide pulley, on a guide plane, in particular a guide rail or a guide cable, wherein the sound receiver (8) monitors the guide element.

4. A method for operating an elevator system (10) having

- a car (1),
- a counterweight (2) balancing out the car (1) and
- a supporting and/or driving means (3) from which the car (1) and the counterweight (2) are suspended,

characterized in that

solid-borne sound, which is generated at the counterweight (2), is captured by a

sound receiver (8), which is coupled to the elevator system (10), and in that the solid-borne sound is evaluated by an evaluation circuit (8), which is connected to the sound receiver (8).

5. The method as claimed in patent claim 4, characterized in that the captured solid-borne sound is compared with an operating value by the evaluation circuit (9), and in that when an operational fault is detected, a change-in-state alarm is triggered by the evaluation circuit (9).

6. The method as claimed in one of patent claims 4 or 5, characterized in that
the captured solid-borne sound is compared with a permissible operating value by the evaluation circuit (9), and in that when there is a deviation from the permissible operating value, a change-in-state alarm is triggered by the evaluation circuit (9).

7. The method as claimed in one of patent claims 4 or 5, characterized in that
the captured solid-borne sound is compared with a non-permissible operating value by the evaluation circuit (9), and in that when the non-permissible operating value is reached, a change-in-state alarm is triggered by the evaluation circuit (9).

8. The method as claimed in one of patent claims 5 to 7, characterized in that
the captured solid-borne sound which is caused by a damaged bearing (4.1), from which the counterweight (2) is suspended on the supporting and/or driving means (3), is compared with an operating value by the evaluation circuit (9).

9. The method as claimed in one of patent claims 5 to 7, characterized in that
the captured solid-borne sound which is caused by a damaged guide element which guides the counterweight (2) on a guide plane is compared with an operating value by the evaluation circuit (9).

10. The method as claimed in one of patent claims 5 to 9, characterized in that
in the case of a change-in-state alarm the elevator system (10) is made available for maintenance work.

11. The method as claimed in one of patent claims 5 to 10, characterized in that
in the case of a change-in-state alarm the elevator system (10) is deactivated.