Patent claims:

1. A conveying device (1) having at least one continuous conveyor (3, 3.5, 5), which comprises at least one conveying element (3.1, 3.51, 5.1), for people and/or objects, wherein at least one sensor (10) for recording a surface of the continuous conveyor (3, 3.5, 5) and an electrical circuit (20) for conditioning a sensor signal which maps the surface are provided, wherein operating variables can be generated and/or missing or damaged conveyor elements (3.1, 3.51, 5.1) can be detected from the conditioned sensor signal .

2. The conveying device (1) as claimed in claim 1, wherein the continuous conveyor (3, 3.5, 5) is segmented.

3. The conveying device (1) as claimed in claim 1, wherein the continuous conveyor (3, 3.5, 5) is not segmented.

4. The conveying device as claimed in one of claims 1 to 3, wherein the sensor (10) is an antenna (10.1) which operates in a radiofrequency range and the conveying element (3.1, 3.51, 5.1) can be moved in the near-field of the antenna (10.1).

5. The conveying device as claimed in claim 4, wherein a distance (d) of the antenna (10.1) from the conveying elements (3.1, 3.51, 5.1) is approximately 1.5 mm to 3.5 mm.

6. The conveying device as claimed in one of claims 2 to 5, wherein the antenna (10.1) is a WLAN antenna.

7. The conveying device as claimed in one of claims 1 to 3, wherein the sensor (10) is a WLAN antenna (10.1), the conveying element (3.1, 3.51, 5.1) can be moved in the near-field of the WLAN antenna (10.1), and the WLAN antenna (10.1) is designed for 2.4 GHz.

8. The conveying device as claimed in one of claims 1 to 7, wherein the antenna (10.1) can be pivoted away by projecting parts (5.15) of the conveying elements (3.1, 3.51, 5.1).

9. A method for monitoring a conveying device (1) having at least one continuous conveyor (3, 3.5, 5), which comprises at least one conveying element (3.1, 3.51, 5.1), for people and/or objects, wherein at least one sensor (10) records a surface of the continuous conveyor (3, 3.5, 5), and an electrical circuit (20) conditions a sensor signal which maps the surface, and operating variables can be generated and/or missing or damaged conveying elements (3.1, 3.51, 5.1) can be detected by means of the conditioned sensor signal.

10. The method as claimed in claim 9, wherein the conveying element (3.1, 3.51, 5.1) is moved in the near-field of an antenna (10.1) which operates as a sensor (10) in the radiofrequency range.

11. The method as claimed in either of claims 9 and 10, wherein the electrical circuit (20) supplies a radiofrequency signal (S1) to the antenna (10.1), and the antenna (10.1) reflects a payload signal (S2) to the electrical circuit (20), said payload signal mapping the surface of the continuous conveyor.

12. The method as claimed in claim 11, wherein the electrical circuit (20), from the payload signal (S2), generates signals (S3) for determining operating variables of the continuous conveyor (3, 3.5, 5) and/or generates signals (S3) for identifying dangerous operating states of the continuous conveyor (5).

13. The method as claimed in claim 12, wherein the operating variables are, for example, speed, acceleration and/or deceleration of the continuous conveyor (3, 3.5, 5), and the dangerous operating states are triggered by, for example, missing, damaged and/or projecting conveying elements (3.1, 3.51, 5.1).

Patent Claims

1. Conveyor equipment, comprising:
an endless conveyor, the endless conveyor comprising at least one conveyor element;
at least one non-contact surface detection sensor for the endless conveyor; and
a sensor signal imaging circuit coupled to the at least one surface detection sensor; the non-contact surface detection sensor comprising an antenna tuned to operate in an ultra-high frequency range, the at least one conveyer element being movable in a near field of the antenna, the sensor signal imaging circuit being responsive to changes in the near field of the antenna resulting from the presence of the conveyor element in the near field.

2. The conveyor equipment of claim 1, the at least one conveyor element comprising a segmented handrail.

3. The conveyor equipment of claim 1, the at least one conveyor element comprising a non-segmented handrail.

4. The conveyor equipment of claim 1, a spacing of the antenna from the at least one conveyor element being approximately 1.5 millimeters to 3.5 millimeters.

5. The conveyor equipment of claim 1, the antenna comprising a wireless local area network (WLAN) antenna.

6. The conveyor equipment of claim 5, the antenna being tuned for 2.4 GHz.

7. The conveyor equipment of claim 1, the antenna being pivotably deflectable by one or more protruding parts of the at least one conveyor element.

8. A conveyor equipment monitoring method, comprising:
positioning a non-contact sensor comprising an antenna tuned to operate in an ultra-high frequency range proximate a surface of an endless conveyor, the endless conveyor comprising at least one conveyor element, whereby the surface is within a near field of the antenna ; and
analyzing, using a circuit, changes in the antenna near field generated by the surface of the endless conveyor.

9. The conveyor equipment monitoring method of claim 8, the sensor comprising an antenna operating in an ultra-high-frequency range.

10. The conveyor equipment monitoring method of claim 9, further comprising:

sending an ultra-high-frequency signal from the circuit to the antenna; and

sending a reflected signal from the antenna to the circuit.

11. The conveyor equipment monitoring method of claim **10**, further comprising generating, using the circuit and based on the reflected signal, an indication of an operating magnitude of the endless conveyor.

12. The conveyor equipment monitoring method of claim **11**, the operating magnitude comprising of one or more of speed of the endless conveyor, acceleration of the endless conveyor, and deceleration of the endless conveyor.

13. The conveyor equipment monitoring method of claim **10**, further comprising generating, using the circuit and based on the reflected signal, an indication of a risk-laden operating state of the endless conveyor.

14. The conveyer equipment monitoring method of claim **13**, the risk-laden operational state comprising one or more of a missing conveyor element, a damaged conveyer element, and a protruding conveyor element.