

CLAIMS

1. Sensor assembly for equipment for aiding the traceability of agri-food products, comprising:

a casing (21) having a first face (21a) and a second
5 face (21b) opposite to one another, the first face (21a) being configured to be coupled to a planar structure (2b);

a weighing device (22), arranged so as to respond to a load on the second face (21b) of the casing (21);

an inclinometer (26), rigidly attached to the casing
10 (21);

an accelerometer (25), rigidly attached to the casing (21) and configured to supply an acceleration signal (SA) indicative of accelerations along an axis perpendicular to the first face (21a) of the casing (21);

15 a processing unit (30) configured to determine a measured weight (W) bearing on the weighing device (22) based on load signals (SW) supplied by the weighing device (22), on an inclination signal (SI) supplied by the inclinometer (26) and on the acceleration signal (SA)
20 supplied by the accelerometer (25).

2. The sensor assembly according to claim 1, wherein the weighing device (22) comprises at least a weight sensor (23), a base plate (37a) and a load plate (37b; 37'; 37''), wherein each weight sensor (23) is arranged between the
25 base plate (37a) and the load plate (37b; 37'; 37'') so as

to respond to loads on the second face 21b of the casing 21.

3. The sensor assembly according to claim 2, wherein the second face (21b) of the casing (21) is at least in part defined by the at least one load plate (37b; 37'; 37").

4. The sensor assembly according to any one of the foregoing claims, comprising, outside the casing (21), at least one of a temperature sensor (27), coupled to the processing unit (30) to supply temperature signals (ST), a humidity sensor (28), coupled to the processing unit (30) to supply humidity signals (SH), and a pH-meter (29), coupled to the processing unit (30) to supply pH measures (SpH).

5. The sensor assembly according to claim 4, comprising a flexible rod (38), fixed to the casing (21) and extending from the first face (21a) of the casing (21), wherein the at least one of the temperature sensor (27), the humidity sensor (28) and the pH-meter (29) is arranged on the rod (38).

6. The sensor assembly according to any one of the foregoing claims, comprising an identifier tag reader (32), configured for radiofrequency reading identifier tags (2a) and coupled to the processing unit (30).

7. The sensor assembly according to claim 6, wherein

the identifier tag reader (32) is an RFID or NFC reader.

8. The sensor assembly according to claim 7 or 8, comprising a memory module (31), wherein the processing unit (30) is configured to read an identifier tag (2a) of a container (2) for equipment for aiding the traceability of agri-food products arranged in the range of action of the identifier tag reader (32), and to associate the identifier tag (2a) with an identifier code stored in the memory module (31).

10 9. The sensor assembly according to claim 8, wherein the processing unit (30) is configured to receive information relating to geometrical features of the container (2) from the identifier tag (2a) through the identifier tag reader (32).

15 10. The sensor assembly according to any one of the foregoing claims, comprising a battery (34) and a battery-charger device (35) configured to recharge the battery (34).

11. The sensor assembly according to claim 10, wherein 20 the battery-charger device (35) is of an inductive type.

12. The sensor assembly according to claim 11 dependent on claim 10, comprising a coil (40), wherein the identifier tag reader (32) and the battery-charger device (35) are both coupled to the coil (40).

25 13. The sensor assembly according to claim 10, wherein

the battery-charger device (35) comprises an energy harvesting device (39).

14. The sensor assembly according to any one of the foregoing claims, comprising a communication module (33)
5 configured for connection to an access point of a data network, wherein the processing unit (30) is configured to communicate with external devices through the communication module (33).

15. The sensor assembly according to claim 12, wherein
10 the communication module (33) comprises a BLE modem.

16. The sensor assembly according to any one of the foregoing claims, wherein the processing unit (30) is configured to determine the measured weight (W) based on current values of the load signals (SW) and the inclination
15 signal (SI), and based on a first calculation mode when the acceleration signal (SA) supplied by the accelerometer (25) lies within a control amplitude band (B), and to determine the measured weight (W) based on values of the load signals (SW) and the inclination signal (SI), and based on a second
20 calculation mode.

17. The sensor assembly according to claim 16, wherein the processing unit (30) is configured to determine the measured weight (W) based on the second calculation mode from values of the acceleration signal (SA) and the
25 inclination signal (SI), at least in part temporally not

corresponding to a cut-off interval (IINT) defined by a time interval in which the acceleration signal (SA) exceeds the control amplitude band (B).

18. The sensor assembly according to any one of the
5 foregoing claims, wherein the processing unit (30) is configured to store time series of the load signals (SW), the acceleration signal (SA) and the inclination signal (SI), and to associate timestamps with the load signals (SW), the measured weight (W), the acceleration signal (SA)
10 and the inclination signal (SI).

19. The sensor assembly according to any one of the foregoing claims, wherein the processing unit (30) is configured to activate and deactivate a low-consumption stand-by mode based on the acceleration signal (SA)
15 supplied by the accelerometer.

20. The sensor assembly according to any one of the foregoing claims, comprising reversible attach members (36) configured to removably attach the casing (21) to a planar structure (2b).

21. Equipment for aiding the traceability of agri-food products comprising a container (2; 50) and a sensor assembly (20; 100) according to any one of the foregoing claims arranged inside the container (2) and removably attached to a bottom wall (2b; 50a) of the container (2;
25 50).