CLAIMS

Claim 1 : A harvester, comprising;

at least one inertial body;

at least one beam;

a support to said at least one beam; and

a transducer means,

wherein

said at least one beam configures the inertial body into a pendulum structure being suspended from said support so that the beam is allowed to deform according to the kinetic state changes of the inertial body, the inertial body rotating about a center axis of the at least one beam,

said at least one beam is configured to interact with at least one transducer means that is configured to produce change in the electrical state of said transducer means responsively to the kinetic state of the inertial body and/or to the deformed state of the beam, and

the harvester coverts energy from mechanical domain to electrical domain.

Claim 2 : The harvester of claim 1, wherein said harvester comprises a torsion pendulum structure with said at least one beam for torsion deformation.

Claim 3 : The harvester of claim 2, wherein said harvester comprises two beams configured to form a torsion axis through their intermediate inertial body, with each beam suspended to the support at its own opposite side.

Claim 4 : The harvester of claim 1, wherein in said harvester the inertial body has at least three dimensions of which a length dimension in a pendulum plane of movement is aligned perpendicular to a rotary axis in the pendulum plane of the movement.

Claim 5 : The harvester of claim 1, wherein at least one of the beams is configured to operate as a bending spring and/or as a torsion spring in the pendulum structure.

Claim 6 : The harvester of claim 1, wherein a length dimension of the inertial body is longer than a length dimension of the at least one beam.

Claim 7 : The harvester of claim 1, wherein a length dimension of said at least one beam is shorter than a length dimension of the inertial body.

Claim 8 : The harvester of claim 1, wherein the support comprises a leading configuration to lead electricity through a layer of the support.

Claim 9 : The harvester of claim 8, wherein said leading configuration to lead electricity through a layer of the support comprises a galvanic lead through the support and/or a capacitor of the galvanic lead, and at least one electrode is connected to the transducer.

Claim 10 : The harvester of claim 1, wherein the harvester further comprises at least one of the following:

a module housing;

an attachment means to translatory means;

at least one overload stopper;

a contact electrode for galvanic contact;

an electrical component, a receiver and/or a transmitter circuit;

an energy storage for produced electricity; and

a transducer part further comprising a magnet, a coil, and/or a piezoelectric layer.

Claim 11 : The harvester of claim 1, wherein said transducer means comprises a piezoelectric element configured electrically responsive for bending of at least one of said beams.

Claim 12 : The harvester of claim 11, wherein the piezoelectric element comprises a piezoelectric layer on at least one surface of at least one of said beams.

Claim 13 : The harvester of claim 1, wherein at least one of said beams is lengthwise aligned in a radial direction for mounting into a tire.

Claim 14 : The harvester of claim 1, wherein an end of the said at least one beam connected to the inertial body is

farther from a center of rotation of a tire than an end of said at least one beam connected to the support.

Claim 15 : The harvester of claim 1, wherein the transducer means comprises at least one coil and at least one permanent magnet adapted for electromagnetic induction to occur when the distance and/or the angle between the magnet and the coil changes according to the inertial body movement in respect to the support.

Claim 16 : The harvester of claim 15, wherein the transducer means comprises at least one coil in the inertial body and the support has at least one permanent magnet.

Claim 17 : The harvester of claim 15, wherein the transducer means comprises at least one coil at the support and the inertial body has at least one permanent magnet.

Claim 18 : A harvester matrix, comprising at least one harvester of claim 1.

Claim 19 : A harvester matrix system, comprising at least one harvester matrix of claim 18.

Claim 20 : A harvester module, comprising at least one harvester according to claim 1.

Claim 21 : The harvester module of claim 20, comprising an attachment structure to the inner liner of a translatory means.

Claim 22 : The harvester module of claim 21, wherein said translatory means comprises a tire, wheel, conveyor belt or a foot-ware.

Claim 23 : A tire, comprising at least one harvester of claim 1.

Claim 24 : The tire of claim 23, further comprising:

a connecting means to connect a harvester-connected transmitter to a metallic part of the tire as an antenna.

Claim 25 : A foot-ware, comprising the harvester module of claim 20.

Claim 26 : The harvester of claim 1, wherein the at least one inertial body has even mass distribution.

Claim 27 : The harvester of claim 1, wherein the at least one inertial body has length-wise taken more mass located at the ends than at the middle.

Claim 28 : The harvester of claim 1, wherein the harvester further comprises a circuit configured to form a transceiver that is operable in accordance with an impulse radio-standard.

Claim 29 : The harvester of claim 1, further comprising at least one overload stopper comprising a pair of magnets adapted for a stopping function through magnetic repulsion for avoidance of direct contact of the magnetic surfaces of the stopper.

Claim 30 : The harvester of claim 1, further comprising at least one overload stopper on the inertial body.

Claim 31 : The harvester of claim 6, wherein the length dimension of the inertial body is at least 1.5 times the length dimension of the at least one beam, the length dimension of the at least one beam measured between a suspension point to the support and to the inertial body.

Claim 32 : The harvester of claim 7, wherein the length dimension of the at least one beam is at most 0.66 times the length dimension of the inertial body, the length dimension of said at least one beam measured between a suspension point to the support and to the inertial body.

Claim 33 : A tire, comprising a connecting means to connect a harvester-connected transmitter to a metallic part of the tire as an antenna, wherein the harvester-connected transmitter comprises the harvester of claim 1.

Claims:

1. A harvester, comprising;

at least one inertial body;

at least one beam;

a support to said at least one beam; and

a transducer means,

wherein

said at least one beam has a center axis in a length dimension of the beam, and configures the inertial body into a pendulum structure being suspended from said support so that the beam is allowed to deform according to the kinetic state changes of the inertial body,

said at least one beam is configured to interact with at least one transducer means that is configured to produce change in the electrical state of said transducer means responsively to the kinetic state of the inertial body and/or to the deformed state of the beam,

the harvester coverts energy from mechanical domain to electrical domain,

the inertial body has at least three dimensions of which a length dimension of the inertial body in a pendulum plane of movement is aligned perpendicular to the center axis in the pendulum plane of the movement, and

the length dimension of the inertial body is longer than the length dimension of the beam.

2. The harvester of claim 1, wherein said harvester comprises a torsion pendulum structure with said at least one beam for torsion deformation.

3. The harvester of claim 2, wherein said harvester comprises two beams, the center axes of the two beams configured to form a torsion axis of the torsion pendulum through their intermediate inertial body, each beam being suspended to the support at its own opposite side.

4. The harvester of claim 1, wherein at least one of the beams is configured to operate as a bending spring and/or as a torsion spring in the pendulum structure.

5. The harvester of claim 1, wherein the length dimension of said at least one beam is shorter than the length dimension of the inertial body.

6. The harvester of claim 1, wherein the support comprises a leading configuration to lead electricity through a layer of the support.

7. The harvester of claim 6, wherein said leading configuration to lead electricity through a layer of the support comprises a galvanic lead through the support and/or a capacitor of the galvanic lead, and at least one electrode is connected to the transducer.

8. The harvester of claim 1, wherein the harvester further comprises at least one of the following:

a module housing;

an attachment means to translatory means;

at least one overload stopper;

a contact electrode for galvanic contact;

an electrical component, a receiver and/or a transmitter circuit;

an energy storage for produced electricity; and

a transducer part further comprising a magnet, a coil, and/or a piezoelectric layer.

9. The harvester of claim 1, wherein said transducer means comprises a piezoelectric element configured electrically responsive for bending of at least one of said beams.

10. The harvester of claim 9, wherein the piezoelectric element comprises a piezoelectric layer on at least one surface of at least one of said beams.

11. The harvester of claim 1, wherein at least one of said beams is lengthwise aligned in a radial direction for mounting into a tire.

12. The harvester of claim 1, wherein an end of the said at least one beam connected to the inertial body is farther from a center of rotation of a tire than an end of said at least one beam connected to the support.

13. The harvester of claim 1, wherein the transducer means comprises at least one coil and at least one permanent magnet adapted for electromagnetic induction to occur when the distance and/or the angle between the magnet and the coil changes according to the inertial body movement in respect to the support.

14. The harvester of claim 13, wherein the transducer means comprises at least one coil in the inertial body and the support has at least one permanent magnet.

15. The harvester of claim 13, wherein the transducer means comprises at least one coil at the support and the inertial body has at least one permanent magnet.

16. A harvester matrix, comprising at least one harvester of claim 1.

17. A harvester matrix system, comprising at least one harvester matrix of claim 16.

18. A harvester module, comprising at least one harvester according to claim 1.

19. The harvester module of claim 18, comprising an attachment structure to the inner liner of a translatory means.

20. The harvester module of claim 19, wherein said translatory means comprises a tire, wheel, conveyor belt or a foot-ware.

21. A tire, comprising at least one harvester of claim 1.

22. The tire of claim 21, further comprising:

a connecting means to connect a harvester-connected transmitter to a metallic part of the tire as an antenna.

23. A foot-ware, comprising the harvester module of claim 18.

24. The harvester of claim 1, wherein the at least one inertial body has even mass distribution.

25. The harvester of claim 1, wherein the at least one inertial body has length-wise taken more mass located at the ends than at the middle.

26. The harvester of claim 1, wherein the harvester further comprises a circuit configured to form a transceiver that is operable in accordance with an impulse radio-standard.

27. The harvester of claim 1, further comprising at least one overload stopper comprising a pair of magnets adapted for a stopping function through magnetic repulsion for avoidance of direct contact of the magnetic surfaces of the stopper.

28. The harvester of claim 1, further comprising at least one overload stopper on the inertial body.

29. The harvester of claim 1, wherein the length dimension of the inertial body is at least 1.5 times the length dimension of the at least one beam, the length dimension of the at least one beam measured between a suspension point to the support and to the inertial body.

30. The harvester of claim 5, wherein the length dimension of the at least one beam is at most 0.66 times the length dimension of the inertial body, the length dimension of said at least one beam measured between a suspension point to the support and to the inertial body.

31. A tire, comprising a connecting means to connect a harvester-connected transmitter to a metallic part of the tire as an antenna, wherein the harvester-connected transmitter comprises the harvester of claim 1.