47105PC01

Amended Claims:

1. An ocean wave power plant provided for by respective interconnected functional units comprising a support structure (1a, 1b) terminated in a lower end with a fastening bracket (9c) to be anchored in a single point to a mass (9e) when deployed in the sea, a submergible uplift floating body (2) providing buoyancy for the ocean wave power plant when deployed in the sea, wherein the uplift floating body (2) is attached to the support structure (1a, 1b), an electric power generating subsystem (A), a termination of the support structure (1a,1b) in an upper end of the support structure, a transmission member (4, 4a, 18) is attached in one end to a floating body (3) and in another end to the power generating subsystem (A) transferring wave motion from the floating body (3) to the power generating subsystem (A), **characterized in that**

the support structure (1a, 1b), the floating body (3), the uplift floating body (2), the fastening bracket (9c), the power generating subsystem (A), the mass (9e), at least a part of the transmission member (4, 4a, 18) is arranged functionally interconnected along a common axis, wherein each respective functional unit is arranged as weight symmetrically as possible around the common axis, wherein the support structure (1a, 1b) is guided through a through hole in the floating body (3) and is fastened to the uplift floating body (2), wherein a motion constraining device or motion constraining arrangement (100) is arranged in the centre of the through hole, wherein the transmission member (4, 4a, 18) that is arranged along the common axis is connected to a centre point of the motion constraining device (100), thereby transferring motions up and down of the floating body (3) to the electric power generating subsystem (A), wherein the floating body (3) comprises a body manufactured from a light weight material, wherein at least a first cavity (33) is filled with air, wherein at least a second cavity (36) can be filled with water through at least two respective openings (3f, 3h) located on a bottom side (34) of the floating body (3) when the floating body is deployed in water, one-way vents (31, 32) are arranged with openings on a top surface of the floating body (3) providing channels from the at least second cavity (36) providing airing when water is filled in the at least second cavity (36), wherein the one-way vents (31, 32) are arranged with a reduced size of the openings thereby providing a less airing providing a dampening of slamming effects, wherein the power generating subsystem (A) is arranged inside the uplift floating body (2).

ration: 21.05.2012 15:17:51 - 21.05.2012 15:25:46. This page 4 of 1 012 15:19:49
Received at the EPO on May 21, 2012 15:25:46. Page 4 of 13

2. The ocean power plant according to claim1, wherein, when the transmission member (4, 4a) is a flexible transmission member, the power generating subsystem (A) comprises a bidirectional to unidirectional conversion mechanism driving a shaft (7a) of an electric generator (7), wherein the shaft (7a) comprises a first pulley (5a) wound with the transmission member (4a) being guided and coming from the support structure (1a) and being engaged to the pulley (5a) on a front side of the pulley (5a) , the pulley (5a) comprises a first freewheel device (51) connected to the shaft (7a), the transmission member is further guided out from the pulley (5a) from a back side of the pulley (5a) towards and wound around a pulley (6a) supported by a supporting arm (12) providing tension of the transmission member (4, 4a), the transmission member (4) is further guided towards a second pulley (5b) comprising a second freewheel device (52) connected to the shaft (7a), the transmission member (4) is being engaged to the pulley (5b) on a back side of the pulley (5b) before the transmission member (4) is guided out of the pulley (5b) from a front side of the pulley (5b), wherein the transmission member (4) is further guided towards the floating body (3) along the axis of the ocean wave power plant.

3. The ocean wave power plant according to claim 1, wherein when the transmission member (18) comprises a rack and pinion gear, the power generating subsystem (A) comprises a bidirectional to unidirectional conversion mechanism driving a shaft (7a) of an electric generator (7), wherein the rack and pinion gear comprises two above each other located gears (17a, 17b) being simultaneously engaged by the rack (18), wherein gear (17a) is connected via a shaft (19a) to a first freewheel device (51) engaging a gear (17c) on shaft (19c) wherein the gear (17c) is engaging a gear (17d) on shaft (19d) being in one end connected to the shaft (7a) of the electric power generator (7) and in another end being connected to freewheel device (52) on a shaft (19b), wherein the freewheel device (52) is connected via shaft (19b) to the gear (17b) being engaged by the rack (18), the freewheel device (51) and the freewheel device (52) is made to be engaged one at a time respectively when the rack (18) moves upwards and when the rack (18) moves downwards.

4. The ocean wave power plant according to claim 1, wherein the flexible transmission member (4, 4a, 18) is made out of different materials like a rope, a wire, a chain, a rack or is made out of different interconnected material sections, wherein a respective material section can be from materials like a rope, a wire, a chain, or a rack.

Duration: 21.05.2012 15:17:51 - 21.05.2012 15:25:46. This page 5 of 1: 012 15:20:30
Received at the EPO on May 21, 2012 15:25:46. Page 5 of 13

5. The ocean wave power plant according to claim 1, wherein a bidirectional motion up and down of a transmission member (4, 4a, 18) is converted to a unidirectional motion of an output shaft (19g), wherein the bidirectional motion up and down of the transmission member (4, 4a, 18) is transferred via an input gear (17e) being connected to a shaft (19e), wherein the shaft (19e) comprises a first freewheel device (51) and a second freewheel device (52), a gear (17f) is connected to outer housing of the freewheel device (51), a gear (17g) is connected to outer housing of the freewheel device (52), the gear (17g) is connected to a gear (17h) connected to the output shaft (19g), a gear (17k) is connected to another end of the output shaft (19g), the gear (17k) is further connected to a gear (17j) which is also connected to the gear (17f), the freewheel device (51) and the freewheel device (52) is made to be engaged one at a time respectively when the input gear (17e) is respectively turning around in one defined direction, or in an opposite direction.

6. The ocean wave power plant according to claim 1, wherein the uplift floating body (2) is arranged with an extended watertight encapsulation from a top side of the uplift floating body (2), wherein the encapsulation at least partly encapsulate the support structure (1a, 1b) and the transmission member (4, 4a, 18), wherein the encapsulation is arranged to pass through the through hole of the floating body (3).

7. The ocean wave power plant according to claim 1, wherein when the transmission member is a rack (18) the motion constraining device (100) is made out of one single ball joint (301).

8. The ocean wave power plant according to claim 1, wherein the anchoring mass (9e) is provided for as a self-lifting anchor device (90) comprising a cavity 94 partly filled with gravel (95) located on the bottom of the cavity (94), wherein a top surface of the self-lifting anchor (90) is provided with a recess comprising a fastening bracket, wherein the fastening bracket is located close to the gravel (95) in the bottom of the recess, a first hose (93a) is connected to a first valve (92a), a second hose (93b) is connected to a second valve (92b), and both the first hose (93b) and the second hose (93b) is connected to openings of a surface of the self-lifting anchor (90), at least one third valve (97) is arranged in fluid communication

ıration: 21.05.2012 15:17:51 - 21.05.2012 15:25:46. This page 6 of 1: 012 15:21:08
Received at the EPO on May 21, 2012 15:25:46. Page 6 of 13

9. The ocean wave power plant according to claim 1, wherein the support structure (1a, 1b) is arranged with dampers (13a, 13b) in a top position of the support structure (1a, 1b).

10. The ocean wave power plant according to claim 1, wherein a damper (16c) is arranged on a top surface of the uplift floating body (2).

11. The ocean wave power plant according to claim 1, wherein the floating body (3) is provided for as an elongated shaped body.

12. The ocean wave power plant according to claim 1, wherein the floating body (3) is provided for as a round shaped body.

13. The ocean wave power plant according to claim 1, wherein a flywheel (25), provided with a mass of the flywheel calculated to provide synchronization of a natural frequency of the ocean wave power plant with a dominant ocean wave frequency on a particular location for deployment of the ocean wave power plant, is attached to a rotating shaft in operational contact with the power generating subsystem (A).

14. The ocean wave power plant according to claim 13, wherein the flywheel (25) is arranged as a plurality of sliced material elements which can be added or removed from the rotating shaft the flywheel (25) is attached to, thereby enabling adjustments of the inert effect provided for by the flywheel (25).

15. The ocean wave power plant according to claim 14, wherein the adjustments of the inert effect is provided for by adjusting a water level in the at least second cavity (36) of the floating body (3).

16. The ocean wave power plant according to claim 1, wherein the at least two respective openings (3h, 3f) are arranged closer to the through hole (35) than to the outer edges of the floating body (3).

17. The ocean wave power plant according to claim 1, wherein the floating body (3) comprises a plurality of the first cavity (33) and respectively corresponding second cavity (36), wherein the bottom surface of the plurality of second cavities (36) are open, wherein on way vents (31,32) located on top of each respective plurality of the first cavity (33), providing channels from each respective second cavity (36), which is

ration 21.05.2012 15:17:51 - 21.05.2012 15:25:46. This page 7 of 1: 012 15:21:41
Received at the EPO on May 21, 2012 15:25:46. Page 7 of 13

providing airing when water is filled in an operational connected second cavity (36), are arranged with a reduced size of the openings thereby providing a less airing providing a dampening of slamming effects.

18. A power producing farm comprising at least two ocean wave power plants according to any claim 1 to 17, wherein each of the respective at least two ocean power plants comprises at last two differently shaped floating bodies (3).

19. A method for deployment of an ocean power plant, wherein the method comprises:

attaching a self-lifting anchor (90) according to claim 9 to an ocean power plant according to claim 1,

filling compressed air in the cavity (94) of the self-lifting anchor (90) via the vent (92a) and/or the vent (92b), thereby the self-lifting anchor (90) will float on the water,

towing the ocean power plant together with the self-lifting anchor (90) to a location the ocean power plant is supposed to be located on,

sinking the self-lifting anchor (90) by opening vent (92a) and/or vent (92b) and then filling water inside the cavity (94) via the vent (97) while the compressed air in the cavity (94) is aired out through the vent (92a) and/or the vent (92b).

20. The method according to claim 19, wherein a deployed ocean wave power plant is lifted again from the deployed location by opening the vent (92a) and/or the vent (92b) and then blowing compressed air into the vent (92a) and/or vent (92b) and then empty the trapped water in the cavity (94) via the vent (97).

21. The method according to claim 20, wherein the step of lifting the deployed ocean wave power plant further comprises igniting explosives being arranged underneath the self-lifting anchor (90).

uration: 21.05.2012 15:17:51 - 21.05.2012 15:25:46. This page 8 of 1 012 15:22:15
Received at the EPO on May 21, 2012 15:25:46. Page 8 of 13

Claims

1. An ocean wave power plant provided for by respective interconnected functional units comprising a support structure (1a, 1b) terminated in a lower end with a fastening bracket (9c) to be anchored in a single point to a mass (9e) when deployed in the sea, a submergible uplift floating body (2) providing buoyancy for the ocean wave power plant when deployed in the sea, wherein the uplift floating body (2) is attached to the support structure (1a, 1b), an electric power generating subsystem (A), a termination of the support structure (1a, 1b) in an upper end of the support structure, a floating body (3), a transmission member (4, 4a, 18) which is attached in one end to the floating body (3) and in another end to the electric power generating subsystem (A) transferring wave motion from the floating body (3) to the electric power generating subsystem (A), wherein
the support structure (1a, 1b), the floating body (3), the uplift floating body (2), the fastening bracket (9c), the electric power generating subsystem (A), the mass (9e), at least a part of the transmission member (4, 4a, 18) is arranged functionally interconnected along a common axis, wherein each respective functional unit is arranged as weight symmetrically as possible around the common axis, wherein the support structure (1a, 1b) is guided through a through hole in the floating body (3) and is fastened to the uplift floating body (2), wherein a motion constraining device or motion constraining arrangement (100) is arranged in the centre of the through hole, wherein the transmission member (4, 4a, 18) that is arranged along the common axis is connected to a centre point of the motion constraining device or motion constraining arrangement (100), thereby transferring motions up and down of the floating body (3) to the electric power generating subsystem (A), wherein the floating body (3) comprises a body manufactured from a light weight material, **characterized in that** the floating body (3) comprises at least a first cavity (33) filled with air, wherein at least a second cavity (36) can be filled with water through at least two respective openings (3f, 3h) located on a bottom side (34) of the floating body (3) when the floating body is deployed in water, one-way vents (31, 32) are arranged with openings on a top surface of the floating body (3) providing channels from the at least second cavity (36) providing airing when water is filled in the at least second cavity (36), wherein the one-way vents (31, 32) are arranged with a reduced size of the openings thereby providing a less airing providing a dampening of slamming effects, wherein the electric power generating subsystem (A) is arranged inside the uplift floating body (2).

2. The ocean power plant according to claim 1, wherein, when the transmission member (4, 4a) is a flexible transmission member, the power generating subsystem (A) comprises a bidirectional to unidirectional conversion mechanism driving a shaft (7a) of an electric generator (7), wherein the shaft (7a) comprises a first pulley (5a) wound with the transmission member (4a) being guided and coming from the support structure (1a) and being engaged to the pulley (5a) on a front side of the pulley (5a), the pulley (5a) comprises a first freewheel device (51) connected to the shaft (7a), the transmission member is further guided out from the pulley (5a) from a back side of the pulley (5a) towards and wound around a pulley (6a) supported by a supporting arm (12) providing tension of the transmission member (4, 4a), the transmission member (4) is further guided towards a second pulley (5b) comprising a second freewheel device (52) connected to the shaft (7a), the transmission member (4) is being engaged to the pulley (5b) on a back side of the pulley (5b) before the transmission member (4) is guided out of the pulley (5b) from a front side of the pulley (5b), wherein the transmission member (4) is further guided towards the floating body (3) along the axis of the ocean wave power plant.

3. The ocean wave power plant according to claim 1, wherein when the transmission member (18) comprises a rack and pinion gear, the power generating subsystem (A) comprises a bidirectional to unidirectional conversion mechanism driving a shaft (7a) of an electric generator (7), wherein the rack and pinion gear comprises two above each other located gears (17a, 17b) being simultaneously engaged by the rack (18), wherein gear (17a) is connected via a shaft (19a) to a first freewheel device (51) engaging a gear (17c) on shaft (19c) wherein the gear (17c) is engaging a gear (17d) on shaft (19d) being in one end connected to the shaft (7a) of the electric power generator (7) and in another end being connected to freewheel device (52) on a shaft (19b), wherein the freewheel device (52) is connected via shaft (19b) to the gear (17b) being engaged by the rack (18), the freewheel device (51) and the freewheel device (52) is made to be engaged one at a time respectively when the rack (18) moves upwards and when the rack (18) moves downwards.

4. The ocean wave power plant according to claim 1, wherein the flexible transmission member (4, 4a, 18) is made out of different materials like a rope, a wire, a chain, a rack, or is made out of different interconnected material sections, wherein a respective material section can be from materials like a rope, a wire, a chain, or a rack.

5. The ocean wave power plant according to claim 1, wherein a bidirectional motion up and down of a transmission member (4, 4a, 18) is converted to a unidirectional motion of an output shaft (19g), wherein the bidirectional motion up and down of the transmission member (4, 4a, 18) is transferred via an input gear (17e) being connected to a shaft (19e), wherein the shaft (19e) comprises a first freewheel device (51) and a second freewheel device (52), a gear (17f) is connected to outer housing of the freewheel device (51), a gear (17g) is connected to outer housing of the freewheel device (52), the gear (17g) is connected to a gear (17h) connected to the output shaft (19g), a gear (17k) is connected to another end of the output shaft (19g), the gear (17k) is further connected to a gear (17j) which is also connected to the gear (17f), the freewheel device (51) and the freewheel device (52) is made to be engaged one at a time respectively when the input gear (17e) is respectively turning around in one defined direction, or in an opposite direction.

6. The ocean wave power plant according to claim 1, wherein the uplift floating body (2) is arranged with an extended watertight encapsulation from a top side of the uplift floating body (2), wherein the encapsulation at least partly encapsulate the support structure (1a, 1b) and the transmission member (4, 4a, 18), wherein the encapsulation is arranged to pass through the through hole of the floating body (3).

7. The ocean wave power plant according to claim 1, wherein when the transmission member is a rack (18) the motion constraining device (100) is made out of one single ball joint (301).

8. The ocean wave power plant according to claim 1, wherein the anchoring mass (9e) is provided for as a self-lifting anchor device (90) comprising a cavity 94 partly filled with gravel (95) located on the bottom of the cavity (94), wherein a top surface of the self-lifting anchor (90) is provided with a recess comprising a fastening bracket, wherein the fastening bracket is located close to the gravel (95) in the bottom of the recess, a first hose (93a) is connected to a first valve (92a), a second hose (93b) is connected to a second valve (92b), and both the first hose (93b) and the second hose (93b) is connected to openings of a surface of the self-lifting anchor (90), at least one third valve (97) is arranged in fluid communication

9. The ocean wave power plant according to claim 1, wherein the support structure (1a, 1b) is arranged with dampers (13a, 13b) in a top position of the support structure (1a, 1b).

10. The ocean wave power plant according to claim 1, wherein a damper (16c) is arranged on a top surface of the uplift floating body (2).

11. The ocean wave power plant according to claim 1, wherein the floating body (3) is provided for as an elongated shaped body.

12. The ocean wave power plant according to claim 1, wherein the floating body (3) is provided for as a round shaped body.

13. The ocean wave power plant according to claim 1, wherein a flywheel (25), provided with a mass of the flywheel calculated to provide synchronization of a natural frequency of the ocean wave power plant with a dominant ocean wave frequency on a particular location for deployment of the ocean wave power plant, is attached to a rotating shaft in operational contact with the power generating subsystem (A).

14. The ocean wave power plant according to claim 13, wherein the flywheel (25) is arranged as a plurality of sliced material elements which can be added or removed from the rotating shaft the flywheel (25) is attached to, thereby enabling adjustments of the inert effect provided for by the flywheel (25).

15. The ocean wave power plant according to claim 14, wherein the adjustments of the inert effect is provided for by adjusting a water level in the at least second cavity (36) of the floating body (3).

16. The ocean wave power plant according to claim 1, wherein the at least two respective openings (3h, 3f) are arranged closer to the through hole (35) than to the outer edges of the floating body (3).

17. The ocean wave power plant according to claim 1, wherein the floating body (3) comprises a plurality of the first cavity (33) and respectively corresponding second cavity (36), wherein the bottom surface of the plurality of second cavities (36) are open, wherein on way vents (31,32) located on top of each respective plurality of the first cavity (33), providing channels from each respective second cavity (36), which is providing airing when water is filled in an operational connected second cavity (36), are arranged with a reduced size of the openings thereby providing a less airing providing a dampening of slamming effects.

18. A power producing farm comprising at least two ocean wave power plants according to any claim 1 to 17, wherein each of the respective at least two ocean power plants comprises at last two differently shaped floating bodies (3).

19. A method for deployment of an ocean power plant, wherein the method comprises:

    attaching a self-lifting anchor (90) according to claim 8 to an ocean power plant according to claim 1,
    filling compressed air in the cavity (94) of the self-lifting anchor (90) via the vent (92a) and/or the vent (92b), thereby the self-lifting anchor (90) will float on the water,
    towing the ocean power plant together with the self-lifting anchor (90) to a location the ocean power plant is supposed to be located on,
    sinking the self-lifting anchor (90) by opening vent (92a) and/or vent (92b) and then filling water inside the cavity (94) via the vent (97) while the compressed air in the cavity (94) is aired out through the vent (92a) and/or the vent (92b).

20. The method according to claim 19, wherein a deployed ocean wave power plant is lifted again from the deployed location by opening the vent (92a) and/or the vent (92b) and then blowing compressed air into the vent (92a) and/or vent (92b) and then empty the trapped water in the cavity (94) via the vent (97).

21. The method according to claim 20, wherein the step of lifting the deployed ocean wave power plant further comprises igniting explosives being arranged underneath the self-lifting anchor (90).