Claims

1. A mooring buoy for a vessel comprising:

a floating body comprising a first portion and a second portion wherein the first portion is rotatable with respect to the second portion;

at least one anchoring line connected between the second portion and the sea floor;

at least one electric cable mounted on the first portion and connected to a power supply and the at least one electric cable has a free end connectable to an electric circuit of the vessel;

at least one mooring line connectable between the floating body and the vessel;

wherein the first portion comprises a mooring line body portion coupled to the mooring line and an electric cable body portion coupled to the at least one electric cable and the mooring line body portion is rotatable with respect to the electric cable body portion; and

wherein the mooring buoy comprises a cable length adjustment mechanism configured to adjust the length of the at least one electric cable when the first portion rotates with respect to the second portion.

2. A mooring buoy according to claim 1 wherein the cable length adjustment mechanism comprises a rotatable drum configured to spool the at least one electric cable.

3. A mooring buoy according to claim 2 wherein a rotation axis of the rotatable drum is aligned with a rotation axis of the first portion.

4. A mooring buoy according to claims 2 or 3 wherein the cable length adjustment mechanism comprises a motor coupled to the rotatable drum.

5. A mooring buoy according to claim 4 wherein the cable length adjustment mechanism comprises a controller configured to issue control signals to the motor for rotating the drum and retracting or extending the at least one electric cable.

6. A mooring buoy according to any of the preceding claims wherein the cable length adjustment mechanism comprises a tension sensor configured to detect the tension in the at least one electric cable.

7. A mooring buoy according to claim 6 when dependent on claim 5 wherein the controller is configured to issue a control signal to the motor to extend or retract the at least one electric cable in dependence of a detected tension in the at least one electric cable.

8. A mooring buoy according to claim 7 wherein the controller is configured to maintain a tension in the at least one electric cable within a defined tension range.

9. A mooring buoy according to any of the preceding claims wherein a tension in the at least one electric cable is less than a tension in the mooring line when the mooring line and the at least one electric cable are connected to the vessel.

10. A mooring buoy according to any of the preceding claims wherein the mooring line is connected to floating body at a position closer to the water level than a position where the at least one electric cable extends from the first portion to the vessel.

11. A mooring buoy according to any of the preceding claims wherein the mooring line is connected to the first portion.

12. A mooring buoy according to any of the preceding claims wherein the mooring line is slidably mounted to the second portion and arranged to slide around the perimeter of the second portion.

13. A mooring buoy according to any of the preceding claims wherein the mooring buoy comprises a fender arranged to prevent the vessel colliding with the floating body.

14. A mooring buoy according to any of the preceding claims wherein the mooring buoy comprises an electrical slip ring mounted between the first portion and the second portion.

15. A mooring buoy according to any of the preceding claims wherein the mooring buoy comprises an input electric cable electrically connectable to the at least one electric cable.

16. A mooring buoy according claim 15 wherein the mooring buoy comprises at least one junction box connected between the input electric cable and the at least one electric cable.

17. A mooring buoy according to any of the preceding claims wherein the mooring buoy comprises at least one transformer.

18. A mooring buoy according to claim 18 wherein the transformer is configured to supply the voltage at 440V or 690V.

19. A mooring buoy according to any of the preceding claims wherein the mooring buoy comprises a battery electrically connected to the at least one cable wherein the battery is configured to supply electrical power to the at least one cable when the power supply is interrupted.

20. A mooring buoy according to any of the preceding claims wherein the mooring buoy comprises a moonpool arranged to receive an input electric cable electrically connectable to the at least one electric cable.

21 A mooring buoy according to claim 18 wherein the moonpool comprises a cable funnel arranged to receive the input electric cable.

22. A method of mooring a vessel with a mooring buoy according to claim 1, wherein the method comprises:

connecting at least one mooring line between the floating body portion and the vessel;

extending a free end of at least one electric cable from the first portion wherein the at least one electric cable is connected to a power supply;

connecting the free end of the at least one electric cable to an electric circuit of the vessel when the vessel is tethered to the at least one mooring line; and

adjusting with a cable length adjustment mechanism the length of the at least one electric cable when the first portion rotates with respect to the second portion.