CLAIMS

1. A power cable for subsea applications, comprising
a tension member (1), placed in the centre of said power cable;
a first insulation layer (3), the tension member (1) being embedded in the first insulation layer (3); and
an outer protective sheath (9);
wherein said power cable further comprises one or more first aluminum conductors (4), embedded within the first insulation layer (3), said first insulation layer (3) comprising one of: (i) non-cross-linked, solid ethylene; (ii) non-cross-linked, solid polyethylene; and (iii) non-cross-linked, solid ethylene propene rubber.

2. A power cable according to claim 1, comprising a first semi-conductive outer screen (2) positioned between the tension member (1) and the insulation layer (3) and a second semi-conductive outer screen (5) surrounding the insulation layer (3).

3. A power cable according to claim 2, comprising a second insulation layer (3'), surrounded by a third semi-conducting outer screen (5'), said second insulation layer (3') surrounding the second semi-conducting outer screen (5), wherein one or more second aluminum conductors (4') are embedded within the second insulation layer (3').

4. A power cable according to claim 1 - 3, comprising a circular cross-section, the power cable further comprising two or more first aluminum conductors (4), configured in a circumferentially equidistant manner.

5. A power cable according to claim 4 when dependent on claim 3, comprising two or more of the second aluminum conductors, configured in a circumferentially equidistant manner, such that the mid-point of each one of the first aluminum conductor (4) lies on a straight line passing through the mid-point of the power cable and through the mid-point of exactly one of the second aluminum conductor (4').

6. A power cable according to claim 1, wherein the tension member (1) comprises a wire-bundle and wherein the first aluminum conductors (4) comprise one or more rings of aluminum wires.

7. A power cable according to claim 6, further comprising a second semi-conductive outer screen (5) surrounding the first insulation layer (3), a second insulation layer (3'), surrounding the second semi-conducting outer screen (5), and a third semi-conducting outer screen (5'), surrounding said second insulation layer (3').

8. A power cable according to claim 7, wherein the second insulation layer (3') comprises a non-crosslinked, solid polymer, preferably ethylene, polyethylene or ethylene propene rubber.

9. A multi-core power cable, comprising one or more power cables (10) according to any one of claims 6 - 8, said one or more power cables (10), one or more weight elements (11) and at least one functional element (12) being embedded in an extruded insulation layer (13).

10. A power cable according to any one of the previous claims, further comprising a first metallic screen (6) and/or a second metallic screen (7), wrapped by a semi-conductive tape wrapping (8) and positioned immediately inside the outer protective sheath (9).

11. A power cable according to claim 10, wherein the first and/or second metallic screens (6, 7) comprise copper, preferably annealed copper, or lead.

12. A power cable according to any one of the previous claims, further comprising a lead jacket, surrounding the outer protective sheath (9).

13. A process for producing a power cable according to any one of the preceding claims, comprising the step of extruding a first polymeric insulation layer (3) onto the tension member (1) and the one or more first aluminum conductors (4) in one single step.

14. A process for producing a power cable according to claim 13 when dependent on claim 3, wherein a second insulation layer (3') is extruded onto the first insulation layer (3) and one or more second aluminum conductors (4').

15. A process for producing a power cable according to claim 14, wherein the second insulation layer (3') is co-extruded with the first insulation layer (3).

16. A process for producing a power cable according to claim 14, wherein the first insulation layer (3) and the second insulation layer (3') are extruded sequentially.

17. Use of a power cable according any one of the preceding claims in medium-voltage, of up to 1 kV, to high-voltage, of above 1kV, subsea applications, such as an offshore windmill cable infrastructure or driving of subsea pumps.