CLAIMS

1. A DC-power system (1) for powering a vessel, comprising:

a main DC bus (3),

a power generating unit arranged (P1, P2, P3, P4) to feed the main DC bus (3),

an disconnectorisolator switch (7) arranged between the main DC bus (3) and the power generating unit (P1, P2, P3, P4) for isolating the power generating unit (P1, P2, P3, P4) from the main DC bus (3) in case of a main DC bus fault, wherein when a fault has occurred in the DC power system (1), the power generating unit can limit its output voltage and current to a level that permits the disconnector to operate within its rating, and

a drive unit (D1, D2) arranged to be fed by the main DC bus (3), wherein the drive unit (D1, D2) comprises a drive unit bus system (DB), converter units (I1, I2, I3) connected to the drive unit bus system (DB), and fuses (F) arranged between the drive unit bus system (DB) and the converter units (I1, I2, I3) for protecting the converter units (I1, I2, I3) in case of a drive unit fault.

2. The DC-power system (1) as claimed in claim 1, wherein the drive unit (D1, D2) comprises a first type of input unit (17) arranged between the main DC bus (3) and the drive unit bus system (DB), and wherein the first type of input unit (17) comprises an disconnectorisolator switch for disconnecting the drive unit (D1, D2) from the main DC bus (3) in case of a drive unit fault.

23. The DC-power system (1) as claimed in claim 12, wherein the first type of input unit (17) comprises a current blocking device (11) arranged to block currents in a direction from the drive unit bus system (DB) to the main DC bus (3) and to allow current to flow from the main DC bus (3) to the drive unit (D1, D2).

34. The DC-power system (1) as claimed in any of the preceding claims, comprising an energy storage unit (E) arranged to feed the main DC bus (3), wherein the energy storage unit (E) comprises an energy storage unit bus system (EB), power provision units (B, C), and fuses (F) arranged between the energy storage unit bus system (EB) and the power provision units (B, C) for protection of the power provision units (B, C) in case of an energy storage unit fault.

45. The DC-power system (1) as claimed in claim 34, wherein the energy storage unit (E) comprises a second type of input unit (9) arranged between the energy storage unit bus system (EB) and the main DC bus (3), wherein the second type of input unit (9) comprises ~~an~~ disconnector~~isolator switch~~ for disconnecting the energy storage unit (E) from the main DC bus (3) in case of an energy storage unit fault.

56. The DC-power system (1) as claimed in claim 45, wherein the second type of input unit (9) comprises a current blocking device (11) arranged to block currents in a direction from the energy storage unit bus system (EB) to the main

DC bus (3) and to allow current to flow from the main DC bus (3) to the energy storage unit (E), and a semiconductor switching unit (13) for selectively allowing current to bypass the current blocking device (11) and flow to the main DC bus (3).

67. The DC-power system (1) as claimed in claim 56, wherein the current blocking device (11) and the semiconductor switching unit (13) are connected in anti-parallel.

78. The DC-power system (1) as claimed in any of the preceding claims, wherein the power generating unit (P1, P2, P3, P4) comprises a generator (G1, G2, G3, G4) and a rectifier (R1, R2, R3, R4), wherein the rectifier (R1, R2, R3, R4) includes a plurality of fuses (F) arranged to protect the rectifier (R1, R2, R3, R4) in case of a rectifier fault.

89. The DC-power system (1) as claimed in claim 78, wherein the plurality of fuses (F) included in the rectifier (R1, R2, R3, R4) are dimensioned such that they do not blow when subjected to fault currents as a result of faults downstream of the rectifier (R1, R2, R3, R4).

~~10. The DC-power system (1) as claimed in any of the preceding claims, wherein energy sources can limit their output voltage and currents to a level that would permit isolator switches to operate within their ratings, wherein the~~

~~isolator switches (7) can disconnect power generating units (P1-P4) from the main DC bus (3).~~

9~~11~~. The DC-power system (1) as claimed in any of the preceding claims, wherein each converter unit (I1, I2, I3) has terminals connected to the drive unit bus (DB), wherein each terminal of a converter unit (I1, I2, I3) is connected to a fuse (F).

10~~12~~. The DC-power system (1) as claimed in any of claims 2~~3~~-9~~11~~, wherein the current blocking device (11) is a diode.

11~~13~~. The DC-power system (1) as claimed in any of claims 2~~3~~-10~~12~~, wherein the first input unit comprises a semiconductor switching unit connected in anti-parallel with the current blocking device for selectively allowing current to bypass the current blocking device and flow to the main DC bus.

~~14. A method of handling a fault in a DC-power system (1) comprising a main DC bus (3), power generating units arranged (P1, P2, P3, P4) to feed the main DC bus (3), a disconnector (7) arranged between the main DC bus (3) and each power generating unit (P1, P2, P3, P4) for isolating the power generating unit (P1, P2, P3, P4) from the main DC bus (3), and a drive unit (D1, D2) arranged to be fed by the main DC bus (3), wherein the drive unit (D1, D2) comprises a drive unit bus system (DB), converter units (I1, I2, I3) connected to the drive unit bus system (DB), and fuses (F) arranged between the drive unit~~

~~bus system (DB) and the converter units (I1, I2, I3) for protecting the converter units (I1, I2, I3) in case of a drive unit fault, wherein the drive unit (D1, D2) comprises a first type of input unit (17) arranged between the main DC bus (3) and the drive unit bus system (DB), and wherein the first type of input unit (17) comprises a disconnector for disconnecting the drive unit (D1, D2) from the main DC bus (3) in case of a drive unit fault, wherein the method comprises:~~

~~limiting, in the situation when a fault has occurred in the DC power system (1), the voltage output and currents of energy sources, to a level that permits disconnectors (7) to operate within their ratings, wherein the disconnectors (7) can disconnect power generating units from the main DC bus (3).~~

~~15. The method as claimed in claim 14, wherein the power generating units comprise generators and rectifiers, wherein the limiting involves controlling the rectifiers such that their output voltage and currents are limited to a level that permits isolator switches to operate within their ratings.~~