

Claims

1. Energy storage system suitable for retrofitting into a power supply system where the power supply system comprises at least two segregated power system sections, each constituting a redundancy group, each comprising an AC switch board and at least one of a power generator adapted to generate an electrical power to the switch board and/or power consumer drawing power from said switch board, wherein the energy storage system is configured to be coupled to the AC switch board in each of the at least two redundancy groups, the unit constituting a common and autonomous energy storage system, the energy storage system including an energy management system adapted to distribute additional power between the energy storage system and redundancy groups, and/or between the redundancy groups through the energy storage system, thus providing an additional segregated power source.
2. Energy storage system according to claim 1, wherein the energy storage system includes an energy storage system distribution board with converters for actively controlling the power distribution between the redundancy groups in the system.
3. Energy storage system according to claim 2, wherein the energy storage system distribution board is configured to be connected to each redundancy group for sampling information about the energy generation and consumption of each redundancy group, so as to control the power distribution between them.
4. Energy storage system according to claim 1, wherein said energy storage system switch board includes protection units between the connected segregated power system sections and the energy storage system.
5. Energy storage system according to claim 1, wherein the switch boards of the redundancy groups can be connected through busties.

6. Energy storage system, according to claim 1 including an AC auxiliary switchboard 15 suitable for connecting to auxiliary equipment such as pumps, thus facilitating powering of the auxiliary equipment from any one of the power generators and/or energy storage.
- 5 7. Power allocation system for retrofitting into a power supply system including at least two segregated power system sections thus constituting two redundancy groups, each redundancy group defining a segregated section comprising at least one of a power generator and a power consumer being connected through aa AC switch board,
10 wherein the power allocation system includes at least one energy storage and an energy management unit connected to the energy storage system including an energy storage system distribution board, the energy management system being coupled to each of the segregated power system sections switch boards through an AC
15 connection and adapted to at detected power fluctuations in said redundancy group supply power to or from said battery through the energy storage system distribution board.
8. Power allocation system according to claim 7, wherein said energy storage system distribution board includes protection units between
20 the connected segregated power system sections.
9. Power allocation system according to claim 7 comprising input for receiving information from each segregated section through a chosen communication system, including information related to power consumption and generation in each segregated section, said energy
25 management unit calculating the required distribution of power in said sections.
10. Power allocation system according to claim 7, being adapted to be connected over an existing bustie between the redundancy groups.
- 30 11. Method for allocating power to a segregated power supply system

5 sections for vessels including at least two segregated power system section thus constituting at least two redundancy groups comprising at least one of a power generator and a power consumer being connected through an AC switch board, the system also comprising a power allocating system including a energy storage system and being connected to each redundancy group switch boards though an AC connection

10 including the steps of monitoring the power availability in of each redundancy groups and at a detected power fluctuation in a group allocating power to or from said segregated power system section.

12. Method according to claim 9, wherein the power allocation also involves load sharing by controlling a power flow between generators over the ESS switchboard.
13. Method according to claim 9, wherein power is supplied to said
15 segregated power sections based on predetermined information about the consumers and generators in the section.