CLAIMS

1. An electric power generation system of a ship comprising one or more generators (1, 2, 3, 4) for producing electrical energy, each generator (1, 2, 3, 4) being driven with a corresponding prime mover, wherein

the generators are multiphase AC generators adapted to generate multiphase voltage and

the phase outputs of the generators are connectable to a common multiphase bus (5) for distributing the electrical energy generated by the AC generators, the generated multiphase voltage having a frequency, wherein

the system further comprises means adapted to provide an adjustable frequency reference for the generated multiphase voltage and the frequency of the generated voltage is adapted to follow the adjustable frequency reference, **characterized in that**,

the electric power generation system comprises means adapted to optimize a property relating to the prime movers by adjusting the adjustable frequency reference of the multiphase voltage, wherein the means adapted to optimize a property relating to the prime movers comprise

a readable database indicating the optimized property as a function of rotational speed of the prime movers and loading level of the prime movers, and

means adapted to read the database on the basis of a known loading level of the prime movers and adapted to output a rotational speed optimizing the property relating to the prime movers.

2. An electric power generation system according to claim 1, wherein the means adapted to optimize a property relating to the prime movers comprise means adapted to receive values of the optimized property during the use of the prime movers, and

means adapted to store the received values of the optimized property together with respective loading level and rotational speed in a readable database.

3. An electric power generation system according to claim 1 or 2, wherein the means adapted to optimize the property relating to prime movers are incorporated in an upper level control system, such as power management system.

4. An electric power generation system according to any one of the previous claims 1 to 3, wherein the means adapted to optimize the property relating to prime movers comprise further an lower limit value for the frequency reference of the generated multiphase voltage, which is preferably 60% of the nominal frequency of the one or more generators.

5. An electric power generation system according to any one of the previous claims, wherein the one or more AC generators (1, 2, 3, 4) are three-phase generators.

6. An electric power generation system according to any one of the previous claims, wherein a converter device is connected to the common multiphase bus for producing a voltage having a fixed frequency.

7. An electric power generation system according to any one of the previous claims, wherein the means adapted to optimize the property relating to the prime movers are operated after the load level of the generators has been in a substantially constant level for a set period of time.

8. An electric power generation system according to any one of the previous claims 1 to 7, wherein the property relating to the prime movers is fuel consumption of the prime movers.

9. An electric power generation system according to any one of the previous claims 1 to 7, wherein the property relating to the prime movers is emission level of the prime movers.

10. An electric power generation system according to any one of the previous claims 1 to 7, wherein the property relating to the prime movers is noise level of the prime movers.

11. An electric power generation system according to claim 1, wherein the frequency reference of the multiphase voltage is adjusted to a fixed value.

12. A method in an electric power generation system of a ship comprising one or more generators (1, 2, 3, 4) for producing electrical energy, each generator (1, 2, 3, 4) being driven with a corresponding prime mover, wherein the method comprises

generating multiphase voltage with multiphase AC generators,

providing an adjustable frequency reference for the generated multiphase voltage,

connecting the phase outputs of the generators to a common multiphase bus (5) for distributing the electrical energy generated by the AC generators, the generated multiphase voltage having a frequency which follows the adjustable frequency reference,

characterized in that, the method further comprises

adjusting the adjustable frequency reference of the multiphase voltage to optimize a property relating to the prime movers,

providing a readable database indicating the optimized property as a function of rotational speed of the prime movers and loading level of the prime movers, and

reading the database on the basis of a known loading level of the prime movers and outputting a rotational speed optimizing the property relating to the prime movers.