Claims

1. A transport refrigeration system comprising:

a first sensor operable as required for operation of the transport refrigeration system;

a second sensor operable as a backup for the first sensor;

a third sensor operable as not required for operation of the transport refrigeration system;

a first power supply operably connected to the first sensor and configured to operate the first sensor;

a second power supply operably connected to the second sensor and configured to operate the second sensor;

a third power supply operably connected to the third sensor and configured to operate the third sensor; and

a controller operably connected to at least the first power supply as well as the first sensor and the second power supply as well as the second sensor, the controller configured to monitor at least the first power supply and the second power supply, if a fault is detected in the first power supply, operate the transport refrigeration system from the second sensor.

2. The transport refrigeration system of claim 1, wherein the first sensor is at least one of a discharge pressure sensor, a flash tank pressure sensor, and an evaporator pressure sensor.

3. The transport refrigeration system of claim 1, wherein the second sensor is at least one of a condenser pressure sensor, a mid-stage pressure sensor, and a compressor suction port pressure sensor.

4. The transport refrigeration system of claim 1, further including at least one of a fourth sensor and a fifth sensor, the at least one of the fourth and the fifth sensor operably connected to the first power supply.

5. The transport refrigeration system of claim 4, wherein at least one of the fourth sensor and the fifth sensor is at least one of a discharge pressure sensor, a flash tank pressure sensor, and an evaporator pressure sensor.

6. The transport refrigeration system of claim 1, further including at least one of a sixth sensor and a seventh sensor, the at least one of the sixth sensor and the seventh sensor operably connected to the second power supply.

7. The transport refrigeration system of claim 6, wherein at least one of the sixth sensor and the seventh sensor is at least one of a condenser pressure sensor, a mid-stage pressure sensor, and an compressor suction port pressure sensor.

8. The transport refrigeration system of claim 1, further comprising, if a fault is detected in the second power supply, operate the transport refrigeration system from the first sensor.

9. The transport refrigeration system of claim 1, wherein the third power supply is independent of the first power supply and the second power supply.

10. The transport refrigeration system of claim 1, wherein the first power supply is independent of the second power supply.

11. A method of fault tolerant power distribution for a transport refrigeration system, the method comprising:

operating a first sensor as required for operation of the transport refrigeration system;

operating a second sensor operable as a backup for the first sensor;

operating a third sensor as not required for operation of the transport refrigeration system;

operating the first sensor from a first power supply operably connected to the first sensor;

operating a second sensor from a second power supply operably connected to the second sensor;

operating the third sensor from a third power supply operably connected to the third sensor; and

monitoring at least the first power supply and the second power supply, the first power supply as well as the first sensor and the second power supply as well as the second sensor operably connected to a controller, if a fault is detected in the first power supply, operate the transport refrigeration system from the second sensor.

12. The method of fault tolerant power distribution of claim 11, wherein the first sensor is at least one of a discharge pressure sensor, a flash tank pressure sensor, and an evaporator pressure sensor.

13. The method of fault tolerant power distribution of claim 11, wherein the second sensor is at least one of a condenser pressure sensor, a mid-stage pressure sensor, and an compressor suction port pressure sensor.

14. The method of fault tolerant power distribution of claim 11, further comprising operably connecting at least one of a fourth sensor and a fifth sensor to the first power supply.

15. The method of fault tolerant power distribution of claim 14, wherein at least one of the fourth sensor and the fifth sensor is at least one of a discharge pressure sensor, a flash tank pressure sensor, and an evaporator pressure sensor.

16. The method of fault tolerant power distribution of claim 11, further comprising at least one of a sixth sensor and a seventh sensor, the at least one of the sixth sensor and the seventh sensor operably connected to the second power supply.

17. The method of fault tolerant power distribution of claim 16, wherein at least one of the sixth sensor and the seventh sensor is at least one of a condenser pressure sensor, a mid-stage pressure sensor, and an compressor suction pressure sensor.

18. The method of fault tolerant power distribution of claim 11, further comprising if a fault is detected in the second power supply, operate the transport refrigeration system from the first sensor.

19. The method of fault tolerant power distribution of claim 11, wherein the third power supply is independent of the first power supply and the second power supply.

20. The method of fault tolerant power distribution of claim 11, further comprising wherein the first power supply is independent of the second power supply.