

may experience a peak demand that exceeds the power available from their assigned motion-powered machines; in such a situation, the power supplied to them may be supplemented with power provided by motion-powered machines that provide power to other data modules.

**[0086]** Also, the power converters **516** may provide the power in various forms as needed on the ship. For example, as noted above, the power may be provided at various voltages and frequencies of AC power. Also, the power coming in from cables **514**, such as AC power at one or more frequencies associate with generators on water-powered machines, may simply be broken down to DC power at one or more voltages for powering the data centers and other components on the ship.

**[0087]** A number of embodiments have been described. Nevertheless, it will be understood that various modifications may be made. For example, although much of the discussion here has centered around wave-powered machines, other power mechanisms, such as wind power (e.g., from sea-based wind generator farms) and river current power may also be used. Also, although several applications of the systems and methods have been described, it should be recognized that numerous other applications are contemplated. Accordingly, other embodiments are within the scope of the following claims.

What is claimed is:

1. A system, comprising:
  - a computer data center proximate to a body of water comprising a plurality of computing units;
  - a sea-based electrical generator in electrical connection with the plurality of computing units; and
  - one or more sea-water cooling units for providing cooling to the plurality of computing units.
2. The system of claim 1, wherein the computing units are mounted in a plurality of crane-removable modules.
3. The system of claim 1, wherein the sea-based electrical generator comprises a wave-powered generator system.
4. The system of claim 3, wherein the sea-based electrical generator comprises a plurality of motion-powered machines arranged in a grid and wired together.
5. The system of claim 4, wherein the wave-powered electrical generator system comprises one or more Pelamis machines.
6. The system of claim 1, wherein the sea-based electrical generator comprises a tide-powered generator system.
7. The system of claim 1, wherein the cooling units comprise a plurality of sea-powered pumps and one or more seawater-to-freshwater heat exchangers.
8. The system of claim 1, wherein the sea-water cooling units comprise one or more water-to-water heat exchangers.

9. The system of claim 1, further comprising one or more rectifiers for producing direct current supply power from power supplied by the electrical generator.

10. The system of claim 9, wherein the rectifiers provide power directly to components in the plurality of computing units without further DC-to-AC conversion of the power.

11. The system of claim 10, further comprising a plurality of step-down transformers to convert the direct current power to a voltage usable by the components in the plurality of computing units.

12. The system of claim 1, wherein the sea-based electrical generator comprises one or more wind turbines.

13. The system of claim 12, wherein the one or more wind turbines provide pumping power for the sea-water cooling units.

14. The system of claim 1, further comprising a supplemental chiller cooling system on a platform with the data center to provide additional cooling when the one or more sea-water cooling units is insufficient.

15. The system of claim 1, wherein the computer data center comprises a floating-platform mounted data center.

16. A method of maintaining a computer data center, comprising:

- generating electrical power using the wave, tidal, or current motion of water adjacent a data center;
- providing the generated electrical power to the data center; and
- circulating the water adjacent the data center through a heat exchanger to produce cooling for the data center equipment.

17. The system of claim 16, wherein the electrical power is generated by the force of a floating device against moving waves.

18. The system of claim 16, wherein the on-board or on-shore data center equipment comprises a large plurality of computer boards mounted in rack arrays.

19. A system, comprising:

- a water or wind-powered electrical generation system;
- one or more rectifiers to convert AC power from the electrical generation system to DC power; and
- an electrical interface connected to a data center to provide the converted DC power to the data center without further DC-to-AC conversion.

20. A system for maintaining a computer data center, comprising

- a data center located on or near an ocean or ocean extension;
- a cooling system for providing cooling to the data center using seawater; and
- a means for providing electrical power for use by the data center.

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