Claims

1. A submersible turbine assembly having:

a support structure; and

a first turbine system, supported by the support structure, the first turbine system having a centre of mass and being pivotally connected to the support structure so that the first turbine system is rotatable, relative to the support structure, about a centre of rotation; wherein

the first turbine system includes a first flowing-water driveable turbine for generating power from water flow, the first turbine having an operational axis, and being designed for optimum power output when local water flow is aligned with the operational axis; wherein

the centre of rotation is spaced away from the centre of mass of the first turbine system in a direction parallel to the operational axis of the turbine; and wherein

the support structure comprises a platform, and the first turbine system is spaced away from the platform by supports around which the first turbine system can rotate about an axis generally parallel to the plane of the platform.

2. The submersible turbine assembly according to claim 1, wherein the first turbine system is rotatable independently of the parts of the support structure to which the first turbine system is directly connected.

3. The submersible turbine assembly according to any preceding claim, wherein the first turbine system includes a second flowing-water driveable turbine for generating power from water flow, the second turbine having an operational axis, and being designed for optimum power output when local water flow is aligned with the operational axis; and wherein the operational axes of the first and second turbines are parallel with one another.

4. The submersible turbine assembly according to claim 3, wherein the first turbine system includes a beam connecting the first turbine and the second turbine.

5. The submersible assembly according to claim 4, wherein the first turbine is mounted on one surface of the beam, and the second turbine is mounted on a second, opposing surface of the beam.

6. The submersible turbine assembly according to claim 4 or 5, wherein the beam comprises a hydrodynamic foil having a drag coefficient which varies with orientation, and wherein the turbines are mounted on the hydrodynamic foil so that their operational axes are aligned with the orientation in which the drag coefficient of the hydrodynamic foil is at a minimum.

7. The submersible turbine assembly according to any preceding claim, wherein each turbine has a fairing to reduce hydrodynamic drag.

8. The submersible turbine assembly according to any preceding claim, wherein each turbine has a fairing having a drag coefficient which varies with orientation, and is lowest in the orientation which is aligned with the operational axis of the turbine.

9. The submersible turbine assembly according to any preceding claim, wherein the first turbine system is supported above the platform.

10. The submersible assembly according to any preceding claim, wherein the first turbine system is arranged to rotate in response to changes of local water flow so that the turbine blades rotate away from the platform.

11. The submersible assembly according to any preceding claim, further comprising an actuator to rotate the first turbine system.

12. The submersible assembly according to any preceding claim, further comprising a brake to resist the rotation of the first turbine system.

13. The submersible turbine assembly according to any preceding claim, further comprising a second turbine system, supported by the support structure, the second turbine system having a centre of mass and being pivotally connected to the support structure so that the second turbine system is rotatable, relative to the support structure, about a centre of rotation; wherein

the second turbine system is of the same design, and is connected to the support structure in the same way, as the first turbine system.

14. The submersible assembly according to any preceding claim, wherein the submersible assembly is positively buoyant in water, and is anchored to a water bed, so that the assembly is held in a state of floating equilibrium.

15. The submersible assembly according to any preceding claim, wherein the submersible assembly is variably buoyant in water.

16. The submersible turbine assembly according to any preceding claim, further comprising:

a centralised onboard control module for providing control signals to the submersible turbine assembly, wherein the control module comprises a watertight dry space containing electronic control systems.

17. The submersible turbine assembly of claim 16, wherein the onboard control module is removably coupled to the assembly.

18. The submersible turbine assembly of any of claims 16 or 17, wherein the onboard control module further contains mechanical actuators for providing mechanical motive power to the submersible turbine assembly.

19. The submersible turbine assembly according to any preceding claim, wherein the submersible turbine assembly is positively buoyant in water, and arranged to be anchored to a water bed, wherein the support structure for supporting the first turbine system comprises a plurality of hollow, watertight trusses.

20. The submersible turbine assembly according to claim 19, wherein the hollow trusses have a variable buoyancy.