Claims

1. A remotely operated underwater vehicle ~~(1)~~ for carrying cleaning devices for cleaning of surfaces submerged in water,

the underwater vehicle ~~(1)~~ having

a roll axis (x), a pitch axis (y) and a yaw axis (z),

all of said axes intersecting the vehicle's centre of gravity (CG);

~~characterized in that~~wherein

the underwater vehicle ~~(1)~~ comprising a first side ~~(5a)~~, a second side ~~(5b)~~, propulsion means ~~(2, 3)~~, at least one pair of trimming means ~~(10a,b; 12a,b)~~, a first buoyancy means ~~(9)~~ attached to the first side ~~(5a)~~ and a second buoyancy means ~~(11)~~ attached to the second side ~~(5b)~~,

wherein the elements of each pair of trimming means are arranged on opposite sides of the centre of gravity (CG) and each said trimming means ~~(10a,b; 12a,b)~~ comprising a movable mass ~~(15)~~ and a displacement region ~~(19)~~ into which the mass can move, whereby the trimming means' individual centre of gravity is automatically shifted due to gravity and inertia when the vehicle is accelerating or changes its orientation in the water, and

wherein the first buoyancy means ~~(9)~~ provides more buoyancy than the second buoyancy means ~~(11)~~ such that the centre of buoyancy is located above the centre of gravity (CG) irrespective of the orientation and attitude of the underwater vehicle ~~(1)~~.

2. The underwater vehicle of claim 1, wherein the trimming means of the first pair ~~(10a,b)~~ are arranged in a plane which is parallel with the vehicle's y-z plane, and a distance away from the centre of gravity (CG); and the trimming means of the- second pair ~~(12a,b)~~ are arranged in the x-y plane and along the x axis.

3. The underwater vehicle of claim 1 or claim 2, wherein first buoyancy means ~~(9)~~ are arranged on a first external side ~~(5a)~~ of the vehicle and second buoyancy means ~~(11)~~ are arranged on a second external side ~~(5b)~~ of the vehicle, on the opposite side of ~~side~~ said first side.

4. The underwater vehicle of any one of claims 1 – 3, wherein each of the trimming means ~~(10a,b; 12a,b)~~ comprise closed and mutually isolated

compartments, each such compartment being partly filled with a substance ~~(15)~~ having a specific gravity greater than one.

5. The underwater vehicle of claim 4, wherein the substance comprises a liquid, such as mercury.

6. The underwater vehicle of claim 4, wherein the substance comprises a powder.

7. The underwater vehicle of any one of claims 2 – 6, wherein the first trimming means ~~(10a,b)~~ comprise tubular elements ~~(10a,b)~~, each element extending substantially the width of the vehicle.

8. The underwater vehicle of claim 7, wherein each first trimming means comprises two slanted regions ~~(17)~~ interconnected by a level central region ~~(16)~~.

9. The underwater vehicle of claim 8, wherein the displacement region ~~(19)~~ is in the slanted region ~~(17)~~.

10. The underwater vehicle of any one of claims 2 – 9, wherein the first trimming means ~~(10a,b)~~ are arranged in region of the second buoyancy means ~~(11)~~.

11. The underwater vehicle of any one of claims 2 – 9, wherein the second trimming means ~~(12a,b)~~ are arranged on opposite sides of the centre of gravity, and concentric with the x axis.

12. The underwater vehicle of any one of claims 1 – 11, wherein the vehicle is a neutrally buoyant ROV.

13. The underwater vehicle of any one of claims 1-12, wherein the first and second buoyancy means ~~(9,11)~~ is configured to make the underwater vehicle ~~(1)~~ neutrally buoyant in water during use.

14. The underwater vehicle of any one of claims 1 – 13, further comprising at least one cleaning device ~~(60)~~ for cleaning surfaces~~d~~ submerged in water, the device comprising a disk member ~~(80)~~ rotatably supported by a spindle ~~(67)~~ and configured for rotation about a rotational axis (r) by drive means ~~(63)~~;

said disk member having a first side ~~(80a)~~ which is facing said surface when the device is in use, and a second side ~~(80b)~~ facing away from the surface, wherein the disk member further comprises

a plurality of nozzles ~~(82)~~ for discharging liquid under pressure against the surface to be cleaned; said nozzles being fluidly connected to a liquid reservoir via a first conduit ~~(81)~~ in the disk member and a second conduit ~~(69)~~ in the spindle ~~(67)~~ and

a plurality of through holes ~~(83)~~, spaced at regular intervals and arranged symmetrically with respect to the rotational axis.

15. The underwater vehicle of ~~any one of~~ claim~~s~~ 14, further comprising a cleaning apparatus ~~(40)~~ having a plurality of devices ~~(60)~~; each cleaning device ~~(60)~~ being connected to a central unit ~~(41)~~ comprising at least one liquid intake opening ~~(45)~~ and a liquid return opening ~~(42)~~; each liquid intake opening ~~(45)~~ being fluidly connected to a respective liquid discharge opening ~~(65)~~; and the liquid return opening being fluidly connected to liquid reservoir.