Claims

1. A floating structure for installing in a water body, the floating structure comprising:

a hull;

a plurality of dampers disposed on lateral sides or corners of the hull for absorbing physical impacts on the hull;

a plurality of piles configured to be erected in the water body around a periphery of the hull, each of the plurality of piles comprises:

a first end;

a guiding plate disposed near the first end, the guiding plate includes one or more guiding surfaces for coupling to at least one damper from the plurality of dampers respectively;

a second end configured to be embedded in a floor of the water body; and

one or more auxiliary piles connected near the second end of the pile by truss structures and configured to be partially embedded in the floor of the water body;

wherein the hull is configured to couple to the plurality of piles by slidably coupling the plurality of dampers to corresponding guiding surfaces of the guiding plate on the plurality of piles, whereby the hull is confined within a space defined by the plurality of piles and the hull is able to translate substantially vertically in the water body by sliding along longitudinal axes of the plurality of piles.

2. The floating structure of claim 1, wherein each of the plurality of piles comprises two auxiliary piles connected near the second end of the pile to form a tripod structure.

3. The floating structure of claim 1, further comprising a plurality of low-friction pads, wherein each of the plurality of low-friction pads is disposed between the damper and the gliding surface.

4. The floating structure of claim 1, wherein the hull is of a catamaran form.

5. The floating structure of claim 1, wherein the hull comprises a plurality of cut outs for receiving each of the plurality of piles respectively.

6. The floating structure of claim 5, wherein each of the plurality of cut outs comprises a V-shaped groove with two adjacent faces, and wherein one of the plurality of dampers is disposed on each of the adjacent faces.

7. The floating structure of claim 6, wherein the hull is substantially rectangular in cross-section with the V-shaped groove at each corner of the hull.

8. Use of the floating structure of any one of the preceding claims in berthing one or more vessels.

9. A water-based hub comprising a plurality of the floating structure of any one of claims 1 to 7, and at least one interconnecting structure, wherein each of the plurality of the floating structures is linked to an adjacent floating structure by the at least one interconnecting structure.

10. The water-based hub of claim 9, wherein the interconnecting structure is a bridge.

11. Use of the water-based hub of claim 9 or 10 as a nearshore logistics anchorage hub, whereby one or more vessels may moor to the water-based hub to unload or replenish supplies.