Claims

1. A reconfigurable mobile docking apparatus comprising:

a platform having at least a longitudinal side and a transverse side, and arranged to receive an asset;

a plurality of supporting legs movably coupled to the platform and configurable to be lowered to the bottom of a body of water to anchor and/or support the apparatus, wherein the platform is operable cooperatively with the lowered supporting legs to be adaptively raised or lowered with reference to a water-level; and

a reconfigurable modular tank system which includes a plurality of high buoyancy ballast tanks which are removably supported by the platform and relocatable at least between a first and a second position, wherein in the first position, asset transfer to or from the platform is permitted through the longitudinal side, wherein in the second position, asset transfer to or from the platform is permitted through the transverse side, and wherein the longitudinal side is provided with at least one an indent region which extends partially along a length and a width of the platform and extends through a height of the platform, wherein the indent region is configured to accommodate one or more tanks.

2. The apparatus of claim 1, wherein the reconfigurable modular tank system further includes a plurality of skidding tracks arranged on the platform, wherein the tracks are configured to movably support the tanks at least during relocation of the tanks within the platform.

3. The apparatus of any one of claims 1 to 2, wherein the reconfigurable modular tank system is configured to allow at least some of the tanks relocate from the longitudinal side to the transverse side such that a first region occupied by the at least some of the tanks prior to relocation is converted into a first unoccupied region after relocation to permit asset transfer therethrough.

4. The apparatus of any one of claims 1 to 2, wherein the reconfigurable modular tank system is configured to allow at least some of the tanks relocate from the transverse side to the longitudinal side such that a second region occupied by the at least some of the tanks prior to relocation is converted into a second unoccupied region after relocation to permit asset transfer therethrough.

5. The apparatus of any one of claims 1 to 2, wherein the reconfigurable modular tank system is configured to allow at least some of the tanks relocate from a port or starboard side of the platform to a bow or stern side of the platform, or vice versa.

6. The apparatus of any one of claims 1 to 5, wherein the reconfigurable modular tank system is configured to allow any of the tanks offload into the body of water, and

wherein the any of the tanks offloaded into the body of water are configured to provide a floating structure selected from the group consisting of:

a barge configured to provide work space or storage space separate from the platform, and

a bridge configured to provide a landing passage from the platform to a destination body which is separated from the platform by the body of water.

7. The apparatus of any one of claims 2 to 6, wherein the reconfigurable modular tank system further includes a driving unit configured to move the at least some of the tanks on the tracks.

8. The apparatus of any one of claims 1 to 6, wherein the asset is a floating asset selected from the group consisting of a semi-submersible, a jack-up rig, a lift-boat and a marine vessel, or a non-floating asset selected from the group consisting of a caisson, a concrete structure, a concrete gravity base, a process module, and a Liquefied Natural Gas (LNG) tank.

9. A method of operating a mobile docking apparatus which comprises a platform having at least a longitudinal side and a transverse side, and arranged to receive an asset; a plurality of supporting legs movably coupled to the platform and configurable to be lowered to the bottom of a body of water to anchor and/or support the apparatus, wherein the platform is operable cooperatively with the lowered supporting legs to be adaptively raised or lowered with reference to a water-level; and a reconfigurable modular tank system comprising a plurality of high buoyancy ballast tanks, the method comprising:

removably arranging the tanks to be supported by the platform, including:

accommodating one or more tanks in an indent region provided at the longitudinal side, wherein the indent region extends partially along a length and a width of the platform and extends through a height of the platform; and

mechanically coupling the one or more tanks to the platform; and

relocating at least some of the tanks between a first and a second position, wherein in the first position, asset transfer to or from the platform is permitted through the longitudinal side, and wherein in the second position, asset transfer to or from the platform is permitted through the transverse side.

10. The method of claim 9, wherein relocating at least some of the tanks between a first and a second position further includes:

using skidding tracks which are arranged on the platform, supporting and moving the at least some of the tanks to be relocated within the platform.

11. The method of any one of claims 9 to 10, wherein relocating at least some of the tanks between a first and a second position further includes:

offloading the at least some of the tanks into the body of water; and

while the platform is submerged, transferring the at least some of the tanks onto the platform by moving the at least some of the tanks through the body of water, arranging the at least some of the tanks in the body of water and over the submerged platform, and elevating the platform until the platform comes into supporting contact with the at least some of the tanks.

12. The method of any one of claims 9 to 11, wherein relocating at least some of the tanks between a first and a second position further includes:

relocating the at least some of the tanks from the longitudinal side to the transverse side of the platform to convert a first region occupied by the at least some of the tanks prior to relocation into a first unoccupied region after relocation.

13. The method of claim 12, further comprising:

transferring the asset through the first unoccupied region along the longitudinal side of the platform.

14. The method of any of claims 9 to 11, wherein relocating at least some of the tanks between a first and a second position further includes:

relocating the at least some of the tanks from the transverse side to the longitudinal side of the platform to convert a second region occupied by the at least some of the tanks prior to relocation into a second unoccupied region after relocation.

15. The method of claim 14, further comprising:

transferring the asset through the second unoccupied region along the transverse side of the platform.

16. The method of any one of claims 9 to 11, wherein relocating at least some of the tanks between a first and a second position further includes:

relocating at least some of the tanks from a port or starboard side of the platform to a bow or stern of the platform, or vice versa.

17. The method of any one of claims 9 to 14, further comprising:

offloading any of the tanks into a body of water in which the apparatus is arranged; and

arranging the any of the tanks in the body of water to provide a floating structure selected from the group consisting of:

a barge configured to provide work space or storage space separate from the platform, and

a bridge configured to provide a landing passage from the platform to a destination body which is separated from the platform by the body of water..

18. The method of claim 17, further comprising:

after offloading the any of the tanks into the body of water, elevating the platform relative to the supporting legs.

19. The method of any one of claims 9 to 18, wherein the asset is a floating asset selected from the group consisting of a semi-submersible, a jack-up rig, a lift-boat and a marine vessel, or a non-floating asset selected from the group consisting of a caisson, a concrete structure, a concrete gravity base, a process module and a Liquefied Natural Gas (LNG) tank.