Claims

1. Ship comprising a hull (4) with a waterline length (L) and a mechanical propulsion device for generating a maximum speed (v), whereby the hull and the propulsion device are designed such that the Froude number ($v/\sqrt{g*L}$)is larger than 0,5 and possibly larger than 0,6, the hull has a foreship with a bow (3) and an aft ship with a stern (5), in the aft ship the hull has a bottom with V-shaped bottom surfaces (15) that in the immersed part of the hull extend symmetrically upwards with a deadrise angle (17) that is less than 40 degrees and possibly less than 30 degrees and above the water level the hull has substantially vertical sides (10), in the hull are a passenger compartment (7) and a trim tank (30-38) with a trim tank volume **characterized in that** the trim tank volume is such that the weight of a filled trim tank is more than 30 % and might be more than 40 % of the weight of displacement of the hull with an empty trim tank, that the hull is designed such that filling the trim tank with water increases the amidships immersed width or beam of the hull when stationary in the water with at least 10% and possibly more than 15%, and that in the aft ship the bottom surfaces (15) have bilge keels (13,26) located such that the bilge keels are fully immersed when the trim tank is filled with water and the bilge keels are at least in part above the water level when the trim tank is empty.

2. The ship in accordance with claim 1 wherein the bilge keels are retractable.

3. The ship in accordance with claim 1 or 2 wherein when the trim tank is filled with water the bilge keels (13,26) extend to a draught (18) of more than 0,50 m or more than 4 % of the immersed width or beam, whichever is less.

4. The ship in accordance with claim 1, 2 or 3 wherein the bilge keels extend perpendicular to the bottom surfaces with a bilge keel height (16) of more than 0,50 m or more than 4 % of the width or beam at water level, whichever is less.

5. The ship in accordance with claim 1, 2, 3 or 4 wherein in the downwards directed angle between the bilge keel and the bottom surface there is a rounded transition with a radius (14) that might be at least 50 % of the bilge keel height (16) and wherein the bilge keels might be located such that with an empty

trim tank and with a forward moving ship the bottom surfaces and the bilge keels create a downwards directed spray.

6. The ship in accordance with one of the claims 1-5 wherein the bilge keels extend on each side of the hull over a length of more than 30 % of the overall length.

7. The ship in accordance with one of the claims 1-6 wherein the bilge keels extend on each side of the hull over a length of approximately 60 % of the overall length.

8. The ship in accordance with claim 6 or 7, wherein the bilge keels extend from the aft ship, preferably from the stern, towards the foreship.

9. The ship in accordance with one of the previous claims wherein the trim tank might comprise one or more compartments that is/are located amidships above the center of gravity of the hull or amidships at the sides of the ship.

10. The ship in accordance with one of the claims 1-9 wherein the trim tank comprises two compartments and one trim tank compartment is located in the foreship near the bow and one trim tank compartment is located near the stern.

11. The ship in accordance with one of the previous claims wherein the trim tank is located at or near the water level or wherein the trim tank is located above main deck level.

12. The ship in accordance with one of the previous claims wherein the passenger compartment is near the center of gravity of the hull and the passenger compartment might be acoustically isolated and/or might have an air conditioning system.

13. The ship in accordance with claim 12 wherein the passenger compartment comprises passenger seats that have backrests that are reclinable to a substantially horizontal position and wherein there might be such passenger seats for all passengers.

14. The ship in accordance with claim 12 or 13 wherein the passenger compartment includes a visual display and/or a window showing the horizon.

Claims

1. Ship comprising a hull (4) with a waterline length (L) and a mechanical propulsion device for generating a maximum speed (v), whereby the hull and the propulsion device are designed such that the Froude number ($v/\sqrt{g*L}$) is larger than 0,5 and possibly larger than 0,6, the hull has a foreship with a bow (3) and an aft ship with a stern (5), in the aft ship the hull has a bottom with V-shaped bottom surfaces (15) that in the immersed part of the hull extend symmetrically upwards with a deadrise angle (17) that is less than 40 degrees and possibly less than 30 degrees and above the water level the hull has substantially vertical sides (10), in the hull are a passenger compartment (7) and a trim tank (30-38) with a trim tank volume that is such that the weight of a filled trim tank is more than 30 % of the weight of displacement of the hull with an empty trim tank, and that the hull is designed such that filling the trim tank with water increases the amidships immersed width or beam of the hull when stationary in the water with at least 10% and possibly more than 15%, characterized in that in the aft ship the V-shaped bottom surfaces (15) have bilge keels (13,26) located such that the bilge keels are fully immersed when the trim tank is filled with water and the bilge keels are at least in part above the water level when the trim tank is empty.

2. The ship in accordance with claim 1 wherein the weight of the filled trim tank is more than 40 % of the weight of displacement of the hull with the empty trim tank.

3. The ship in accordance with claim 1 or claim 2 wherein the bilge keels are retractable.

4. The ship in accordance with any one of the preceding claims wherein when the trim tank is filled with water the bilge keels (13,26) extend to a draught (18) of more than 0,50 m or more than 4 % of the immersed width or beam, whichever is less.

5. The ship in accordance with any one of the preceding claims wherein the bilge keels extend perpendicular to the bot-

tom surfaces with a bilge keel height (16) of more than 0,50 m or more than 4 % of the width or beam at water level, whichever is less.

6. The ship in accordance with any one of the preceding claims wherein in the downwards directed angle between the bilge keel and the bottom surface there is a rounded transition with a radius (14).

7. The ship in accordance with claim 6 wherein the radius (14) is at least 50 % of the bilge keel height (16).

8. The ship in accordance with claim 7 wherein the bilge keels is located such that with an empty trim tank and with a forward moving ship the bottom surfaces and the bilge keels create a downwards directed spray.

9. The ship in accordance with one of the claims 1-8 wherein the bilge keels extend on each side of the hull over a length of more than 30 % of the overall length.

10. The ship in accordance with one of the claims 1-9 wherein the bilge keels extend on each side of the hull over a length of approximately 60 % of the overall length.

11. The ship in accordance with claim 9 or 10, wherein the bilge keels extend from the aft ship, preferably from the stern, towards the foreship.

12. The ship in accordance with any one of the previous claims wherein the trim tank comprises one or more compartments that is/are located amidships above the center of gravity of the hull or amidships at the sides of the ship.

13. The ship in accordance with any one of the claims 1-12 wherein the trim tank comprises two compartments and one trim tank compartment is located in the foreship near the bow and one trim tank compartment is located near the stern.

14. The ship in accordance with any one of the previous claims wherein the trim tank is located at or near the water level or wherein the trim tank is located above main deck level.

15. The ship in accordance with one of the previous claims wherein the passenger compartment is near the center of gravity of the hull.

16. The ship in accordance with claim 15 wherein the passenger compartment is acoustically isolated.

17. The ship in accordance with claim 15 or claim 16 wherein the passenger compartment has an air conditioning system.

18. The ship in accordance with any one of claims 15 to 17 wherein the passenger compartment comprises passenger seats that have backrests that are reclinable to a substantially horizontal position.

19. The ship in accordance with claim 18 wherein there are passenger seats for all passengers.

20. The ship in accordance with any one of claims 15 to 19 wherein the passenger compartment includes a visual display and/or a window showing the horizon.