CLAIMS

1. A thermally-insulating sealed tank incorporated in a supporting structure, the tank comprising a tank wall (1, 101, 201) fixed onto a supporting wall (3) of the supporting structure,

the tank wall comprising a primary sealed membrane (6) intended to be in contact with a product contained in the tank, a secondary sealed membrane (4) arranged between the primary sealed membrane and the supporting wall, a primary insulating barrier (5) arranged between the primary sealed membrane the secondary sealed membrane and a secondary insulating barrier (2) arranged between the secondary sealed membrane and the supporting wall,

wherein the secondary insulating barrier comprises a plurality of secondary rows (A, B, C) parallel to a first direction, a said secondary row comprising a plurality of juxtaposed parallelepipedal secondary insulating panels (7), the secondary rows being juxtaposed in a second direction at right angles to the first direction according to a repeated pattern,

wherein the secondary sealed membrane comprises a plurality of strakes (21) made of an alloy with low expansion coefficient parallel to the first direction, a strake comprising a flat central portion resting on a top surface of the secondary insulating panels and two raised edges protruding toward the interior of the tank with respect to the central portion, the strakes being juxtaposed in the second direction according to a repeated pattern and welded together tightly at the raised edges, anchoring wings anchored to the secondary insulating panels and parallel to the first direction being arranged between the juxtaposed strakes to hold the secondary sealed membrane on the secondary insulating barrier,

wherein the size of the repeated pattern of the secondary rows (A, B, C) is an integer multiple of the size of a strake (21) in the second direction,

wherein the supporting wall supports secondary retaining members (98, 92) cooperating with the secondary insulating panels (7) to hold the secondary insulating panels on the supporting wall, wherein the primary insulating barrier (5) comprises a plurality of primary rows parallel to the first direction, a said primary row comprising a plurality of juxtaposed parallelepipedal primary insulating panels (22), the primary rows being juxtaposed in

the second direction according to a repeated pattern, the size of the repeated pattern of the primary rows being equal to the size of the repeated pattern of the secondary rows (A, B, C) in the second direction, wherein the primary row is superposed straddling two secondary rows (A, B, C) and

wherein primary retaining members (98, 91, 97) are disposed at the interfaces between the primary rows and cooperate with the primary insulating panels to hold the primary insulating panels on the secondary sealed membrane, wherein the primary retaining members (97) are supported by the secondary insulating panels (7), wherein the primary sealed membrane has first corrugations (56) parallel to the first direction and disposed according to a repeated pattern in the second direction and flat portions situated between the first corrugations and resting on a top surface of the primary insulating panels,

wherein the size of the repeated pattern of the primary rows is an integer multiple of the size of the repeated pattern of the first corrugations,

the primary sealed membrane comprising a plurality of rows of metal sheets parallel to the first direction, a row of metal sheets comprising a plurality of rectangular metal sheets (33) welded together tightly by edge zones (59), the rows of metal sheets being juxtaposed in the second direction and welded together tightly, the size of a row of metal sheets in the second direction being equal to an integer multiple of the size of the repeated pattern of the primary rows,

the rows of metal sheets being offset in the second direction with respect to the primary rows, such that the welded joins between the rows of metal sheets are situated at a distance from the interfaces between the primary rows, wherein a said primary retaining member comprises a plate fixed to a cover plate of the secondary insulating panel under the secondary sealed membrane and a rod attached to said plate and passing tightly through the secondary sealed membrane toward the primary insulating barrier (5).

2. The tank as claimed in claim 1, wherein the primary rows are offset in the second direction by a half of the size of the repeated pattern of the secondary rows with respect to the secondary rows (A, B, C).

3. The tank as claimed in claim 1 or 2, wherein the interfaces between the primary insulating panels within the or each primary row are offset in the first direction with respect to the interfaces between the secondary insulating panels within the two secondary rows on which the primary row is superposed, and wherein the

primary retaining members (97) are supported by the secondary insulating panels (7) at a distance from edges of the secondary insulating panels.

4. The tank as claimed in any one of claims 1 to 3, wherein the secondary retaining members (98, 92) are disposed at the interfaces between the secondary rows.

5. The tank as claimed in any one of claims 1 to 3, wherein the secondary retaining members are disposed at corners of the secondary insulating panels.

6. The tank as claimed in any one of claims 1 to 5, wherein the first corrugations (56) are spaced apart by a first regular spacing (58) in the second direction.

7. The tank as claimed in claim 6, wherein the size of a strake (21) in the second direction is an integer multiple of said first regular spacing (58).

8. The tank as claimed in any one of claims 1 to 7, wherein a said primary row comprises a plurality of parallelepipedal primary insulating panels (22) juxtaposed according to a repeated pattern and a row of metal sheets of the primary sealed membrane comprises a plurality of rectangular metal sheets (33) juxtaposed according to a repeated pattern, the size of the repeated pattern of the rectangular metal sheets being equal to an integer multiple of the size of the repeated pattern of the primary insulating panels in the first direction.

9. The tank as claimed in claim 8, wherein the edges of the rectangular metal sheets (33) are offset in the first direction with respect to the edges of the primary insulating panels (22) parallel to the second direction, such that the welded joins between the rectangular metal sheets are situated at a distance from the edges of the primary insulating panels parallel to the second direction.

10. The tank as claimed in any one of claims 1 to 9, wherein the primary insulating panels (22) and/or the secondary insulating panels (7) have a square form.

11. The tank as claimed in any one of claims 1 to 10, wherein the primary sealed membrane (6) also has second corrugations (55) parallel to the second direction and disposed according to a repeated pattern in the first direction, the flat portions being situated between the first corrugations and between the second corrugations.

12. The tank as claimed in claim 11, wherein the second corrugations (55) parallel to the second direction are spaced apart by a second regular spacing (57) in the first direction.

13. The tank as claimed in claims 6 and 12 taken in combination, wherein the first regular spacing (58) is equal to the second regular spacing (57).

14. The tank as claimed in any one of claims 11 to 13, wherein the first and second corrugations (55, 56) are continuous at the intersections between first and second corrugations.

15. The tank as claimed in any one of claims 11 to 13, wherein the first and second corrugations are discontinuous at the intersections between the first and second corrugations.

16. The tank as claimed in any one of claims 11 to 15, wherein a rectangular metal sheet (33) of the primary sealed membrane has a size in the first direction substantially equal to an integer multiple of the size of the repeated pattern of the second corrugations.

17. The tank as claimed in any one of claims 1 to 16, wherein a said primary insulating panel (22) comprises a bottom plate (23) resting against the primary sealed membrane (6), an intermediate plate (25) disposed between the bottom plate and a cover plate (27), a first layer of insulating polymer foam (24) sandwiched between the bottom plate and the intermediate plate and a second layer of insulating polymer foam (26) sandwiched between the intermediate plate and the cover plate (27).

18. The tank as claimed in any one of claims 1 to 17, wherein the primary sealed membrane (6) is held on the primary insulating barrier by anchoring means, the anchoring means comprising metal anchoring strips (60) fixed onto the primary insulating panels at locations corresponding to outlines of the rectangular

metal sheets (33) and to which edge zones (59) of the rectangular metal sheets can be welded.

19. The tank as claimed in claim 18, wherein a said primary insulating panel comprises relaxation slits (65) hollowed out in a thicknesswise direction of the primary insulating panel and emerging on a cover plate (27) of the primary insulating panel and wherein a metal anchoring strip (60) comprises several aligned segments, fixed onto the cover plate (27) and separated by the relaxation slits (65).

20. The tank as claimed in any one of claims 1 to 19, wherein the primary sealed membrane (6) is held on the primary insulating barrier by anchoring means, the anchoring means comprising metal inserts (61) fixed onto the primary insulating panels (22) at locations corresponding to edge zones of the primary insulating panels at a distance from the outlines of the rectangular metal sheets and to which central zones of the rectangular metal sheets (33) can be welded.

21. The tank as claimed in claim 20, wherein a said primary insulating panel comprises relaxation slits (65) hollowed out in a thicknesswise direction of the primary insulating panel and emerging on a cover plate (27) of the primary insulating panel and wherein the metal inserts (61) are fixed onto the cover plate (27) between the relaxation slits (65).

22. The tank as claimed in any one of claims 1 to 21, wherein the primary insulating barrier comprises a bridging element (64) fixed to the top surfaces of at least two adjacent primary insulating panels (22) to avoid a separation of the two primary insulating panels (22).

23. The tank as claimed in claim 22, wherein said primary insulating panels (22) having facings (63) on edges of the top surface to receive said bridging element (64).

24. A ship (70) for transporting a fluid, the ship comprising a double hull (72) and a tank (71) as claimed in any one of claims 1 to 23 disposed in the double hull (72).

25. A transfer system for a fluid, the system comprising a ship (70) as claimed in claim 24, insulated pipelines (73, 79, 76, 81) arranged so as to link the tank (71) installed in the hull of the ship to a floating or onshore storage installation (77)

and a pump for driving a fluid through the insulated pipelines from or to the floating or onshore storage installation to or from the tank of the ship.

26. A method for loading or offloading a ship (70), wherein a fluid is conveyed through insulated pipelines (73, 79, 76, 81) from or to a floating or onshore storage installation (77) to or from the tank (71) of the ship as claimed in claim 24.