

CLAIMS

1. A sealed and thermally insulated tank intended for the storage of a fluid, said tank having a plurality of walls exhibiting a multilayer structure successively having, in the direction of the thickness from the outside to the inside of the tank, a secondary thermally insulating barrier retained against a load-bearing structure, a secondary sealing membrane borne by the secondary thermally insulating barrier, a primary thermally insulating barrier bearing against the secondary sealing membrane and a primary sealing membrane borne by the primary thermally insulating barrier and designed to be in contact with the fluid contained in the tank;

a first of the walls having a secondary thermally insulating barrier comprising:

- a first insulating panel arranged along the intersection between the load-bearing structure of said first wall and the load-bearing structure of an adjacent second wall; and

- a second insulating panel juxtaposed with the first insulating panel along one edge of said first insulating panel opposing the second wall;

the first and the second insulating panels each having an internal face opposing the load-bearing structure provided with a small metal plate;

the first wall having a secondary sealing membrane comprising:

- a first metal sheet having at least two perpendicular corrugations and having a first and a second edge which are opposed to one another and which are parallel to the intersection between the load-bearing structure of said first wall and the load-bearing structure of an adjacent second wall, the first edge being closer to the second wall than the second edge; the first edge of the first metal sheet being, on the one hand, welded to the small metal plate of the first insulating panel to retain the first metal sheet against the first insulating panel and, on the other hand, welded to a first flange of a metal angle plate which has a second flange welded to the

metal sheet of the secondary sealing membrane of the second wall; and

- a second metal sheet having at least two perpendicular corrugations, one of said corrugations being arranged in the extension of one of the corrugations of the first metal sheet, the second metal sheet having a first and a second edge which are opposed to one another parallel to the intersection between the load-bearing structure of said first wall and the load-bearing structure of an adjacent second wall, the first edge being closer to the second wall than the second edge and which are respectively oriented toward the second wall and in the direction away from the second wall; the second edge of the second metal sheet being welded to the small metal plate of the second insulating panel;

the second edge of the first metal sheet and the first edge of the second metal sheet being welded together, one edge from the second edge of the first metal sheet and the first edge of the second metal sheet being a joggled edge permitting the first and the second metal sheets to be lap welded to one another.

2. The tank as claimed in claim 1, wherein the joggled edge has a width greater than 4 centimeters.

3. The tank as claimed in claim 1 or 2, wherein the secondary sealing membrane of the first wall also has, in a planar area extending from the second edge of the second metal sheet toward a third wall opposing the second wall, a plurality of standard metal sheets which each have at least two perpendicular corrugations, one thereof being parallel to the intersection, the corrugations parallel to the intersection of the plurality of standard metal sheets being separated from one another by a standard inter-corrugation distance and wherein a corrugation of the first metal sheet which is parallel to the intersection is separated from a corrugation of the second metal sheet which is parallel to the intersection by an inter-corrugation distance which is different from the standard inter-corrugation distance.

4. The tank as claimed in any one of claims 1 to 3, wherein the second edge of the first metal sheet and the first edge of the second

metal sheet are welded to one another perpendicular to an interstice separating the first and second insulating panels.

5. The tank as claimed in claim 4, wherein the first insulating panel is combined with the second insulating panel by means of a plurality of coupling elements, each coupling element being, on the one hand, fixed to an edge of the internal face of the first insulating panel and, on the other hand, fixed to an opposing edge of the internal face of the second insulating panel so as to oppose a mutual separation of the first and second insulating panels.

6. The tank as claimed in claim 5, wherein the coupling elements are coupling plates which each have an external face bearing against the internal face of the first and the second insulating panels and an external face, at least one of the coupling plates having an internal face provided with a small metal plate, the second edge of the first metal sheet and the first edge of the second metal sheet being welded to said small metal plate.

7. The tank as claimed in any one of claims 1 to 6, wherein the first metal sheet has a plurality of corrugations extending in a direction which is secant to the second wall and a single corrugation extending along an axis parallel to the intersection between the first and second walls.

8. The tank as claimed in any one of claims 1 to 7, wherein the second metal sheet has a plurality of corrugations extending in a direction which is secant to the second wall and a single corrugation or two corrugations each extending along an axis parallel to the intersection between the first and second walls.

9. The tank as claimed in any one of claims 1 to 8, wherein the metal angle plate has a corrugation extending from one end to the other end of said metal angle plate, along the first and the second flanges, so as to permit a deformation of the metal angle plate in a direction parallel to the intersection between the first and second walls, said corrugation extending in the extension of one of the corrugations of the first metal sheet which extends in a direction which is secant to the second wall.

10. The tank as claimed in any one of claims 1 to 9, wherein the or each metal angle plate is also welded to the metal sheet of the first insulating panel.

11. The tank as claimed in any one of claims 1 to 10, wherein the corrugations of the first and the second metal sheets protrude to the outside of the tank in the direction of the load-bearing structure, the internal face of the first and second insulating panels having perpendicular grooves respectively receiving the corrugations of the first and second metal sheets.

12. The tank as claimed in claim 11, wherein the first insulating panel has, in each interval between two grooves which are secant to the second wall, a small metal plate, the first edge of the first metal sheet and the first flange of the metal angle plate or one of the metal angle plates being welded thereto.

13. The tank as claimed in any one of claims 1 to 10, wherein the corrugations of the first and the second metal sheets protrude toward the inside of the tank, the primary thermally insulating barrier comprising insulating panels, each having an external face having perpendicular grooves receiving the corrugations of the first and the second metal sheets of the secondary sealing membrane.

14. The tank as claimed in any one of claims 1 to 13, wherein the secondary thermally insulating barrier of the first wall also has in a planar area, extending from one edge of the second insulating panel opposing the second wall toward a third wall opposing the second wall, a plurality of juxtaposed standard insulating panels, each having a rectangular parallelepipedal shape and an internal face opposing the load-bearing wall which is provided with a small metal plate and wherein the secondary sealing membrane of the first wall also has, in a planar area extending from the second edge of the second metal sheet toward the third wall, a plurality of standard metal sheets which each have at least two perpendicular corrugations and which are welded to one another and are each arranged across a plurality of said standard insulating panels and welded to the small metal plates of said standard insulating panels, one of said standard metal sheets bordering the second metal sheet having an edge oriented toward the second wall which is, on the one hand, welded to the small metal plate of the second insulating panel and, on the other hand, welded to the second edge of the second metal sheet.

15. The tank as claimed in claim 14, wherein the standard insulating panels have identical dimensions and wherein the second insulating panel has a dimension in a direction extending from an edge oriented facing the second wall toward an edge opposing the second wall which is different from the corresponding dimension of the standard insulating panels.

16. The tank as claimed in any one of claims 1 to 15, wherein the primary thermally insulating barrier of the first panel has a first insulating block which is fixed to the first insulating panel of the secondary thermally insulating barrier by means of a fixing member and wherein the first metal sheet has an orifice for the passage of the fixing member and is welded on the periphery of said orifice to the fixing member.

17. The tank as claimed in claim 16, wherein the first insulating block is fixed to the first insulating panel by means of a threaded pin passing through an orifice formed in said first insulating block, said threaded pin cooperating with a threaded bore formed in a cap nut, said cap nut traversing the orifice formed in the first metal sheet and having a threaded portion cooperating with a threaded bore formed in a small anchoring plate fixed to the first insulating panel, the cap nut also having a flange which presses the first metal sheet against the first insulating panel and which is welded to the first small metal plate on the periphery of said orifice.

18. The tank as claimed in any one of claims 1 to 17, wherein the first insulating panel forms with a first insulating panel of the second wall a preassembled angled structure forming a corner of the tank at the intersection between the first and second walls.

19. A marine vessel for the transport of a fluid, the marine vessel having a double hull and a tank as claimed in any one of claims 1 to 18 arranged in the double hull.

20. A method for the supply or discharge to or from a marine vessel as claimed in claim 18, wherein a fluid is conducted via insulated pipelines from or to a floating or land-based storage installation to or from the tank of the marine vessel.

21. A system for transferring a fluid, the system having a marine vessel as claimed in claim 19, insulated pipelines being arranged so as to connect the tank installed in the hull of the marine vessel to a floating or land-based storage installation and a pump for conducting a fluid through the insulated pipelines from or to the floating or land-based storage installation to or from the tank of the marine vessel.