Title of the invention: CORNER STRUCTURE FOR A SEALED AND THERMALLY INSULATING TANK AND TANK COMPRISING SUCH A CORNER STRUCTURE

Technical field

The invention relates to the field of sealed and thermally insulating tanks, with membranes. In particular, the invention relates to the field of sealed and thermally insulating tanks for the storage and/or transport of liquefied gas at low temperature, such as tanks for the transport of Liquefied Petroleum Gas (also known as LPG) with a temperature of, for example, between -50°C and 0°C, or for the transport of Liquefied Natural Gas (LNG) at around -162°C, at atmospheric pressure. These tanks may be installed onshore or on a floating structure. In the case of a floating structure, the tank may be intended for the transport of liquefied gas or to receive liquefied gas serving as fuel for the propulsion of the floating structure.

Prior art

A sealed and thermally insulating tank comprising a secondary sealed membrane produced by bonding sealed composite coverings is known, for example from FR-A-2822815.

Summary

An idea forming the basis of the invention is to facilitate the assembly of a bonded sealed membrane, in particular in corner areas of a sealed and thermally insulating tank.

According to an embodiment, the invention provides a corner structure intended for the production of a sealed and thermally insulating tank in a supporting structure, the corner structure comprising:

- a first panel made of thermally insulating material and a second panel made of thermally insulating material each having a flat inner face intended to be turned towards the interior of the sealed and thermally insulating tank and an outer face intended to be turned towards the supporting structure; the flat inner face of the first panel being inclined relative to the flat inner face of the second panel by an angle corresponding to a corner area of the sealed and thermally insulating tank to be

produced, the flat inner face of the first panel and the flat inner face of the second panel forming a dihedron having an edge which extends in a longitudinal direction of the corner structure;

- a flexible sealed sheet, notably sealed against liquids and against gases, arranged straddling the flat inner face of the first panel and the flat inner face of the second panel.

In the corner structure, the flat inner face of the first panel includes a first connection area and the flat inner face of the second panel includes a second connection area, the first connection area and the second connection area being at a distance from said edge, the first connection area being provided with an adhesion means attaching the flexible sealed sheet sealingly, notably such that it is sealed against liquids and against gases, to the inner face of the first panel, and the second connection area being provided with an adhesion means attaching the flexible sealed sheet to the inner face of the second panel, and,

the corner structure includes a reception space intended to receive a drip protection slip at a first longitudinal end of the corner structure, the reception space being located, notably in a thickness direction of the corner structure, between the flexible sealed sheet, the flat inner face of the first panel and the flat inner face of the second panel, the reception space being located straddling the edge between the first connection area and the second connection area.

Such a corner structure thus includes a reception space that can house a drip protection slip adapted to form a barrier adapted to prevent excess adhesive from dripping in the region of the edge of the corner structure and hardening there.

According to an embodiment, the invention also provides a sealed and thermally insulating tank intended to be integrated in a supporting structure, the sealed and thermally insulating tank comprising a first corner structure and a second corner structure, the first and second corner structures being installed along an edge of the supporting structure in such a way as to delimit an assembly trough between the first and the second corner structures, the first and second corner structures each comprising:

- a first panel made of thermally insulating material and a second panel made of thermally insulating material each having a flat inner face intended to be turned

towards the interior of the sealed and thermally insulating tank and an outer face intended to be turned towards the supporting structure; the flat inner face of the first panel being inclined relative to the flat inner face of the second panel by an angle corresponding to a corner area of the sealed and thermally insulating tank to be produced, the flat inner face of the first panel and the flat inner face of the second panel forming a dihedron having an edge which extends in a longitudinal direction of the corner structure;

- a flexible sealed sheet arranged straddling the flat inner face of the first panel and the flat inner face of the second panel;

wherein the flat inner face of the first panel includes a first connection area and the flat inner face of the second panel includes a second connection area, the first connection area and the second connection area being at a distance from said edge, the first connection area being provided with an adhesion means attaching the flexible sealed sheet sealingly to the flat inner face of the first panel, and the second connection area being provided with an adhesion means attaching the flexible sealed sheet to the flat inner face of the second panel,

and wherein the sealed and thermally insulating tank includes a sealed protection device located at the assembly trough and being located at least partially between the first connection area and the second connection area, the sealed protection device being configured to prevent a fluid arranged on the flexible sealed sheet between the first connection area and the second connection area from dripping into the assembly trough.

According to some embodiments, such a tank may include one or more of the following features.

According to an embodiment, the sealed protection device includes a first strip arranged at a first longitudinal end of the first corner structure which is proximal with respect to the assembly trough and attached to the flexible sealed sheet of the first corner structure in such a way as to protrude in a thickness direction, and a second strip arranged at a first longitudinal end of the second corner structure which is proximal with respect to the assembly trough and attached to the flexible sealed sheet of the second corner structure in such a way as to protrude in a thickness direction.

According to an embodiment, the first strip and the second strip are attached straddling the edge, between the first connection area and the second connection area.

According to an embodiment, the sealed protection device is arranged in line with the assembly trough.

According to an embodiment, the sealed protection device extends in the extension of the flexible sealed sheet of one of the first and second corner structures.

According to an embodiment, the sealed protection device is a protruding portion of the flexible sealed sheet of the second corner structure extending above the assembly trough.

According to an embodiment, the protruding portion protrudes from the second corner structure in the longitudinal direction.

According to an embodiment, one end of the protruding portion is attached by overlapping on the flexible sealed sheet of the first corner structure.

According to an embodiment, the protruding portion is arranged above the assembly trough, straddling the edge, between the first connection area and the second connection area of the first and second corner structures.

According to an embodiment, the flexible sealed sheet of the second corner structure includes a main body, located above the first and second panels of the second corner structure, and the protruding portion, the protruding portion and the main body having equal transverse dimensions.

According to an embodiment, the sealed protection device is a flexible sealed strip attached, for example bonded, on the one hand to the flexible sealed sheet of the first corner structure and on the other hand to the flexible sealed sheet of the second corner structure, the flexible sealed strip being arranged above the assembly trough, straddling the edge, between the first connection area and the second connection area of the first and second corner structures.

According to an embodiment, the reception space is a first reception space and the corner structure includes a second reception space intended to receive a drip protection slip at a second longitudinal end of the corner structure opposite the first

longitudinal end, the second reception space being located between on the one hand the flexible sealed sheet, and on the other hand the flat inner face of the first panel and the flat inner face of the second panel covered by the flexible sealed sheet, the second reception space being located straddling the edge between the first connection area and the second connection area.

Advantageously, such a second reception space makes it possible to offer a housing to an end portion of a drip protection slip of a neighbouring corner structure, in such a way as to ensure optimal retention of the drip protection slip between the two corner structures, and thus prevent as far as possible any excess adhesive from dripping into the gap between the neighbouring corner structures.

According to an embodiment, the sealed protection device includes at least one drip protection slip, the drip protection slip being arranged at least partially in said reception space or one of the reception spaces.

Advantageously, providing the drip protection slip at the time of supply, for example before the flexible sealed sheet is put in place, makes it possible to prevent the flexible sealed sheet from being pressed against the two thermally insulating panels in the region of the reception space and making the subsequent insertion of a drip protection slip more difficult when the sealed and thermally insulating tank is assembled.

According to an embodiment, the drip protection slip is a first drip protection slip and the sealed protection device includes a second drip protection slip arranged at least partially in the second reception space.

Advantageously, such a second drip protection slip may be removed at the time of production of the tank wall with the corner structure against the supporting structure in such a way as to free up the second reception space. The second drip protection slip makes it possible to prevent the flexible sealed sheet from being pressed against the two thermally insulating panels in the region of the second reception space. Providing the second drip protection slip during the production of a corner structure and until the production of the tank wall therefore makes it possible to ensure that the volume of the second reception space is available to receive the

end of a drip protection slip arranged straddling two corner structures during the production of the tank wall, as will be described below.

According to an embodiment, the or each drip protection slip is made of a flexible polymer material, preferably vinyl.

Advantageously, this material is readily available, inexpensive, and semi-rigid, while having sufficient flexibility to be fitted in the respective reception spaces and offering good resistance to the stresses exerted between the adjacent corner structures.

According to an embodiment, the or each drip protection slip has a degree of freedom in translation in the corresponding reception space (in other words in the first or the second reception space), along the edge of the dihedron of the corner structure.

Advantageously, this degree of freedom in translation makes it possible to slide the drip protection slip between two positions: one in which the drip protection slip is hidden under the flexible sealed sheet in the corresponding reception space, and another in which the drip protection slip is partially or fully extracted from the corresponding reception space. It is thus possible to house a second end portion of the drip protection slip in a corresponding reception space, which is opposite, in a neighbouring corner structure, or to completely remove the drip protection slip from the reception space.

According to an embodiment, the drip protection slip includes a first end portion arranged in said reception space, an intermediate portion intended to extend across an assembly trough between the corner structure and another corner structure, and a second end portion intended to be arranged in a reception space of the other corner structure. According to an embodiment, the intermediate portion and the second end portion constitute an emerging portion protruding from the first longitudinal end of the corner structure.

According to an embodiment, the, or each, drip protection slip includes at least one means for assisting positioning delimiting the intermediate portion of the drip protection slip. According to some embodiments, the at least one means for assisting positioning may be visual and/or tactile, preferably a mark that is visually contrasting

and/or coloured with respect to the end portions of the drip protection slip, for example coloured parallel lines, and/or a mark in relief and/or a recessed mark.

Advantageously, such a means for assisting positioning makes it possible to ensure that the operator who assembles the tank correctly positions each drip protection slip without compromising the integrity of the seal between neighbouring corner structures.

According to an embodiment, the adhesion means of the first connection area and/or of the second connection area takes the form of a strip of adhesive.

According to an embodiment, a wooden wedge is interposed in line with the edge of the dihedron between, on the one hand, the flexible sealed sheet and, on the other hand, the flat inner face of the first panel and the flat inner face of the second panel, said reception space being located between the flexible sealed sheet and the wooden wedge.

Advantageously, such a wedge makes it possible to limit the radius of curvature of the flexible sealed sheet during the production of the corner panel.

According to an embodiment, each of the first panel and of the second panel includes a composite covering, the composite covering being sealed against liquids and against gases and forming the flat inner face of the first panel and of the second panel.

Advantageously, such a composite covering makes it possible to guarantee sealing of the tank in the region of the flat inner face of each panel.

According to an embodiment, the first panel, respectively the second panel, further includes a block of polymer foam and a rigid plate, the rigid plate being arranged between the block of polymer foam and the composite covering.

According to an embodiment of the corner structure suitable for producing the tank wall in a trihedral area of the supporting structure, the dihedron formed by the flat inner face of the first panel and the flat inner face of the second panel is a first dihedron and the longitudinal direction is a first longitudinal direction, the corner structure further comprising a third panel made of thermally insulating material, the third panel having a flat inner face intended to be turned towards the interior of the

sealed and thermally insulating tank and an outer face intended to be turned towards the supporting structure, the flat inner face of the third panel interrupting the edge of the first dihedron at an end of the edge of the first dihedron opposite the first longitudinal end, the flat inner face of the third panel forming with the flat inner face of the first panel a second dihedron having an edge which extends in a second longitudinal direction secant to the first longitudinal direction.

In this case, the flexible sealed sheet is also arranged straddling the flat inner face of the third panel, the flat inner face of the third panel comprising a third connection area at a distance from the edge of the second dihedron, the third connection area being provided with an adhesion means further attaching the flexible sealed sheet sealingly, notably such that it is sealed against liquids and against gases, to the flat inner face of the third panel. In this case, the reception space may be a first reception space and the corner structure may include a second reception space intended to receive a drip protection slip at an end of the corner structure in the second longitudinal direction, the second reception space being located between on the one hand the flexible sealed sheet, and on the other hand the inner face of the first panel and the inner face of the third panel covered by the flexible sealed sheet, the second reception space being located straddling the edge of the second dihedron between the first connection area and the third connection area.

In the same way, the flat inner face of the third panel may form with the flat inner face of the second panel a third dihedron having an edge which extends in a third longitudinal direction secant to the first longitudinal direction and to the second longitudinal direction. The corner structure may include a third reception space intended to receive a drip protection slip at an end of the corner structure ending the edge of the third dihedron, the third reception space being located between on the one hand the flexible sealed sheet, and on the other hand the inner face of the second panel and the inner face of the third panel covered by the flexible sealed sheet, the third reception space being located straddling the edge of the third dihedron between the second connection area and the third connection area.

The invention also provides a sealed and thermally insulating tank intended to be integrated in a supporting structure, the sealed and thermally insulating tank comprising a first corner structure and a second corner structure as mentioned above,

the first and second corner structures being installed along an edge of the supporting structure in such a way as to delimit an assembly trough between the first and second corner structures, a reception space of the first corner structure being arranged facing a reception space of the second corner structure, a drip protection slip having a first end portion engaged in the reception space of the first corner structure and a second end portion engaged in the reception space of the second corner structure, said drip protection slip having an intermediate portion extending across the assembly trough.

According to an embodiment, in the sealed and thermally insulating tank, a flexible sealed junction sheet is bonded straddling the flexible sealed sheet of the first corner structure and the flexible sealed sheet of the second corner structure in such a way as to cover the assembly trough and the intermediate portion of the drip protection slip.

Advantageously, such a flexible sealed junction sheet makes it possible to ensure good sealing between the two corner structures, at the assembly trough.

Such a tank may form part of an onshore storage facility, for example for storing LNG, or may be installed in a floating structure, coastal or deep-water, in particular a liquefied gas carrier, a floating storage and regasification unit (FSRU), a remote floating production and storage unit (FPSO), and the like. Such a tank may also be used as a fuel tank in any type of carrier.

According to an embodiment, a carrier for the transport of a cold liquid product includes a double hull and a sealed and thermally insulating tank as mentioned above arranged in the double hull.

According to an embodiment, the invention also provides a system for transferring a cold liquid product, the system comprising the carrier as mentioned above, insulated pipelines arranged so as to connect the sealed and thermally insulating tank of the carrier to a floating or onshore storage facility, and a pump for pumping a flow of cold liquid product through the insulated pipelines from or to the floating or onshore storage facility, to or from the sealed and thermally insulating tank of the carrier.

According to an embodiment, the invention also provides a method for loading or unloading a carrier, wherein a cold liquid product is conveyed through

insulated pipelines from or to a floating or onshore storage facility, to or from the sealed and thermally insulating tank of the abovementioned carrier.

Brief description of the figures

The invention will be better understood, and other aims, details, features and advantages thereof will appear more clearly in the course of the following description of several particular embodiments of the invention, provided solely by way of non-limiting illustration, with reference to the attached drawings.

- Figure 1 is a partial perspective sectional view of a sealed and thermally insulating tank showing a corner area of the tank;
- Figure 2 is a partial perspective view showing a corner structure according to a first embodiment that can be used in the tank of Figure 1;
- Figure 3 is an exploded sectional view of the corner structure of Figure 2;
- Figure 4 shows a drip protection slip of the sealed protection device according to a first variant included in the corner structure of Figure 3;
- Figure 5 is a perspective view of the corner area of the sealed and thermally insulating tank of Figure 1 during its production, showing an assembly trough between two neighbouring corner structures, and the drip protection slip arranged straddling the two corner structures across the assembly trough;
- Figure 6 is a perspective view similar to Figure 5, showing the corner area of the tank in a subsequent step of its production, in which said flexible sealed junction sheet is arranged straddling the two neighbouring corner structures, and covers the assembly trough and the drip protection slip;
- Figure 7 is a partial sectional view of the corner area of the tank along the bisector plane B-B of Figure 6;

- Figure 8 is an exploded view similar to Figure 3, showing a corner structure according to a second embodiment;
- Figure 9 is a perspective view similar to Figure 5 showing the use of the corner structure according to the second embodiment in a corner area of the tank;
- Figure 10 is a perspective view showing a corner structure according to a third embodiment;
- Figure 11 is a perspective view of the corner area of the sealed and thermally insulating tank of Figure 1 during its production, showing an assembly trough between two neighbouring corner structures, comprising the sealed protection device produced according to a second variant;
- Figure 12 is a perspective view of a corner structure during its production, facing an assembly trough, comprising the sealed protection device produced according to a third variant;
- Figure 13 is a perspective view of the corner area of the sealed and thermally insulating tank of Figure 1 during its production, showing an assembly trough between two neighbouring corner structures, comprising the sealed protection device produced according to a fourth variant;
- Figure 14 is a perspective view of the corner area of the sealed and thermally insulating tank of Figure 1 during its production, showing an assembly trough between two neighbouring corner structures, comprising the sealed protection device produced according to a fifth variant and,
- Figure 15 schematically depicts, with part cut away, a liquefied gas carrier comprising a carrier tank and a terminal for loading/unloading this tank.

Detailed description of embodiments

Figure 1 depicts a portion of a sealed and thermally insulating tank 1 in a corner area in the vicinity of an edge 301 between two flat walls of the supporting structure 3. This tank 1 is a membrane tank for storing liquefied gas. The tank 1 has a tank wall 2 resting against a polyhedral supporting structure 3. More specifically, the tank 1 is integrated in the supporting structure 3. The tank wall 2 has a multilayer structure which includes, from the exterior towards the interior, a secondary layer 4 and a primary layer 7.

In the present description, the terms “interior” and “exterior” are to be understood as describing a relative position with respect to an interior, respectively an exterior of the tank 1.

The secondary layer 4 includes a secondary thermally insulating barrier 5, comprising modular insulating elements, and a secondary sealed membrane 6, which includes various elements assembled by bonding, notably in this case composite coverings 33 and two flexible sealed sheets 34 and 35. The secondary sealed membrane 6 is arranged against the secondary thermally insulating barrier 5 and is sealed against liquids and against gases.

The primary layer 7 includes a primary thermally insulating barrier 8, comprising modular insulating elements, and a primary sealed membrane 9, see Figures 1 and 5. The primary sealed membrane 9 is intended to be in contact with the liquefied gas contained in the tank 1.

The primary thermally insulating barrier 8 is in this case arranged against the secondary sealed membrane 6.

In practice, the secondary thermally insulating barrier 5, the secondary sealed membrane 6, and the primary thermally insulating barrier 8 may be produced in the form of a plurality of flat structures 100, prefabricated, which are juxtaposed on the supporting walls, and a plurality of corner structures 10, prefabricated, which are juxtaposed along the edges. The overall geometry of these prefabricated structures is described for example in the publication FR-A-2691520.

The primary sealed membrane 9 covers the primary thermally insulating barrier 8 and defines an internal space 20 intended to receive the liquefied gas. By way of example, it may be a corrugated metal membrane made of stainless steel, notably described in the publications WO-A-2010040922 or FR-A-2861060.

The liquefied gas intended to be stored in the tank 1 may notably be a liquefied natural gas (LNG), in other words a gas mixture predominantly comprising methane and one or more other hydrocarbons. The liquefied gas may also be ethane or a liquefied petroleum gas (LPG), that is to say a mixture of hydrocarbons resulting from the refining of petroleum essentially comprising propane and butane.

With reference to figures 2, 3 and 5, corner structures 10 according to a first embodiment, which are prefabricated, and can be used along the edge 301, will now be described more specifically.

Figure 2 partially depicts the elements of such a corner structure 10 during its production, before a flexible sealed sheet 34 and a primary corner arrangement 39 are put in place. Figure 3 depicts the corner structure 10 in an exploded view to facilitate comprehension of the stack of these elements. In Figure 3, an arrow C, oriented from the exterior towards the interior, indicates the thickness direction of the tank wall 2.

The corner structure 10 includes a first panel 11 and a second panel 12. Each panel 11 and 12 includes, stacked from the exterior towards the interior: a rigid plate 25, a block of polymer foam 26, a rigid plate 27 and a composite covering 33.

The composite covering 33 of each of the panels 11 and 12 forms a flat inner face 13, intended to be turned towards the interior of the tank 1, and the rigid plate 25 forms an outer face 14, intended to be turned towards the supporting structure 3.

The flat inner face 13 of the first panel 11 is inclined relative to the flat inner face 13 of the second panel 12 by an angle A, in this case equal to 90°, corresponding to a corner area of the sealed and thermally insulating tank 1 to be produced. The flat inner face 13 of the first panel 11 and the flat inner face 13 of the second panel 12 thus form a dihedron. The dihedron has an edge 15 where the planes of the flat inner faces 13 of the panels 11 and 12 meet. The edge 15 therefore extends in a longitudinal direction X of the corner structure 10. The corner structure 10 includes a first

longitudinal end 22 and a second longitudinal end 23, opposite one another in the longitudinal direction X. The edge 15 then extends between the second longitudinal end 23 and the first longitudinal end 22.

The corner structure 10 also includes a filling made of glass wool 32, a wooden wedge 24, optional, a flexible sealed sheet 34.

For each panel 11 and 12, the rigid plate 25, the block of polymer foam 26 and the rigid plate 27 of the secondary thermally insulating barrier 5 are stacked in this order from the exterior towards the interior. The rigid plates 25 and 27 are preferably plywood plates. They impart a degree of rigidity, and hence good mechanical strength to the thermally insulating barrier 5.

A composite covering 33 forms part of the secondary sealed membrane 6 and constitutes the flat inner face 13 of each of the first and second panels 11 and 12, respectively, as can be seen in Figures 3 and 5. The composite coverings 33 are sealed against liquids and against gases. They make it possible to guarantee sealing of the tank on the flat inner face of each panel. Each composite covering 33 is arranged on the rigid plate 27 of the corresponding panel 11 or 12. The composite covering 33 may be produced from a stratified composite material comprising a layer of aluminium between two layers of glass fibres and resin.

The glass wool filling 32, visible in Figures 2 and 3, fills an assembly gap 36 between the panels 11 and 12 of the corner structure 10. Note that the glass wool filling 32 is made of a fibrous material and that its shape depends on the elements which surround it. In the example illustrated in Figures 2 and 3, the glass wool filling 32 is for example in contact with the blocks of polymer foam 26 and the rigid plates 27, and thus adapts to their respective shapes. The glass wool filling 32 makes it possible to complete the secondary thermally insulating barrier 5 at the assembly gap 36, while allowing a degree of freedom in terms of contraction and expansion of the panels 11 and 12 relative to one another.

As can be seen in Figures 3 and 5, the flexible sealed sheet 34, which is sealed against liquids and against gases, is arranged straddling the flat inner face 13 of the first panel 11 and the flat inner face 13 of the second panel 12. The flexible sealed sheet 34 may be made of a stratified composite material comprising a layer of

aluminium between two layers of glass fibres. The flexible sealed sheet 34 ensures the continuity of the secondary sealed membrane 6 in line with the edge 15.

To this end, the flat inner face 13 of the first panel 11 includes a first connection area 16. The first connection area 16 is provided with an adhesion means 29 attaching the flexible sealed sheet 34 such that it is sealed against liquids and against gases, to the inner face 13 of the first panel 11.

Likewise, the flat inner face 13 of the second panel 12 includes a second connection area 17. The second connection area 17 is provided with an adhesion means 29 attaching the flexible sealed sheet 34 such that it is sealed against liquids and against gases, to the inner face 13 of the second panel 12.

The first connection area 16 and the second connection area 17 are each located at a distance from the edge 15 and from the rims of the panels 11 and 12 that face one another.

Preferably, without this being limiting, the first connection area 16 and the second connection area 17 are arranged symmetrically on either side of the edge 15.

In the first connection area 16 and/or the second connection area 17, the adhesion means 29 in this case takes the form of a strip of adhesive. Preferably, the adhesion means 29 of the first and second connection areas 16 and 17 are each a strip of adhesive.

Two intermediate areas 30, visible in Figure 2, extend between the edge 15 and the connection areas 16 and 17 respectively. The intermediate areas 30 of the composite coverings 33 do not have adhesion means.

The corner structure 10 preferably includes a wooden wedge 24, although this is not limiting. The wooden wedge 24 is interposed in line with the edge 15 of the dihedron between the flexible sealed sheet 34 and the composite coverings 33 of the first panel 11 and of the second panel 12.

Thus, the flexible sealed sheet 34 (Figure 3) has a non-bonded portion, in line with the intermediate areas 30, which can contract freely in the event of temperature fluctuations. This non-bonded portion delimits reception spaces 18 and 19 in the vicinity of the edge 15, which are accessible from the two longitudinal ends

22 and 23 of the corner structure 10 and which make it possible to retain a sealed protection device according to a first variant, i.e. produced in the form of a drip protection slip 31 between the flexible sealed sheet 34 and the composite coverings 33, and/or between the flexible sealed sheet 34 and the wooden wedge 24, at one of the or at both longitudinal ends 22 and 23 of the corner structure 10 (Figures 2 and 5). In Figure 2, the corner structure 10 is shown with a drip protection slip 31 placed at each of its two longitudinal ends 22 and 23.

The drip protection slip 31 of the first variant of the sealed protection device is now described below with reference to Figure 4.

The drip protection slip 31 includes a first end portion 310 starting from an end 316, a second end portion 313 starting from an end 317, and an intermediate portion 312 between the end portions 310 and 313. The drip protection slip 31 further includes at least one means for assisting positioning for identifying the intermediate portion 312. This means for assisting positioning in this case takes the form of the two lines 314 which delimit the intermediate portion 312, in other words the portion of the drip protection slip 31 which must serve to span an assembly trough, as will be described below.

The means for assisting positioning may take other forms that have not been shown, for example a coloured strip or coloured lines or a hatched area.

The first end portion 310 and the second end portion 313 may measure for example 50 mm +/- 20 mm in length in the longitudinal direction X1 of the drip protection slip 31. The dimension of the intermediate portion 312 corresponds to the width of an assembly trough, which may be fixed in a standardized manner, in the planes of assembly of the tank, for example 30 mm. The width of the drip protection slip 31 must allow sufficient coverage of the corner area of the assembly trough on either side of the edge. It measures approximately 100 mm for example.

The drip protection slip 31 is preferably made of a polymer material, preferably, and without this being limiting, a non-stick and/or transparent polymer material, and more preferably still vinyl. Its thickness must ensure sufficient rigidity to span the assembly trough. It may measure a few tenths of a millimetre, for example 0.4 mm.

The drip protection slip 31 may be used in the production of the tank wall 2, as described with reference to Figures 5 to 7. Thus, the drip protection slip 31 may be assembled to the corner structure 10 during the production of the tank wall 2 in the supporting structure 3. However, to facilitate maintenance and limit the operations to be carried out in the supporting structure 3, it may be useful to pre-assemble a drip protection slip 31 to the corner structure 10 and to handle the corner structure 10 already equipped with the drip protection slip 31, or with two drip protection slips 31.

To this end, one end portion of the drip protection slip 31 is inserted in the corner structure 10 under the flexible sealed sheet 34, for example as far as the line 314, in such a way as to leave sticking out an emerging portion made up of the intermediate portion 312 and the other end portion.

As shown in Figure 2, the drip protection slip or slips 31 may be already in place in the corner structure 10 during the production thereof, notably before the flexible sealed sheet 34 is put in place and bonded. Thus, starting from the intermediate stage of production shown in Figure 2, the flexible sealed sheet 34 is then put in place and bonded, covering the drip protection slip or slips 31 already put in place. Alternatively, the drip protection slip 31 may be inserted in the corner structure 10 under the flexible sealed sheet 34 after the latter is put in place and bonded. In both cases, since the intermediate area 30 does not include any adhesive, the or each drip protection slip 31 is not attached or bonded to the corner structure 10 and therefore has a degree of freedom in translation along the edge 15 in the reception spaces 18 and 19. In other words, after production of the corner structure 10, each drip protection slip 31 may be moved so as to insert it to a greater or lesser depth in the reception space 18 or 19, remove it therefrom or put in back in.

Lastly, as shown in Figures 3 and 5, the corner structure 10 includes primary corner arrangements 39 mounted on top of the flexible sealed sheet 34 so as to form elements of the primary thermally insulating barrier 8 and of the primary sealed membrane 9 in the corner area of the tank. More details on the primary corner arrangements 39 may be found for example in the publications WO-A-2020260440 and WO-A-2021058826.

With reference to Figures 5 to 7, the production of the tank wall 2 with the aid of the corner structure 10 will now be described.

In the corner area of the tank 1, the tank wall 2 is started by putting in place several corner structures 10 juxtaposed along the edge 301 in the supporting structure 3.

In the example shown, a first corner structure 10 and a second corner structure 10 are installed along the edge 301 (visible in Figure 1) of the supporting structure 3. These two corner structures 10 are arranged one beside the other and delimit between them an assembly trough 136. The assembly trough 136 is a gap provided so as to have a tolerance for assembly between the two corner structures 10, for example with a width of 30 mm.

To ensure the continuity of the secondary insulation barrier 5, an insulating filling 132, for example made of glass wool, is arranged in the assembly trough 136. The insulating filling 132 is visible in the cross section of Figure 7 but omitted from Figures 5 and 6 for the sake of legibility. The insulating filling 132 is preferably made of compressible material in order to fill the assembly trough 136 completely. In the assembly trough 136, the insulating filling 132 is for example in contact with the rigid plates 25, the blocks of polymer foam 26 and the rigid plates 27, of the panels 11 and 12 of the two neighbouring corner structures 10. The insulating filling 132 makes it possible to complete the secondary thermally insulating barrier 5 in the assembly trough 136, while allowing a degree of freedom in terms of contraction and expansion of the neighbouring corner structures 10.

Moreover, after the first corner structure 10 and the second corner structure 10 are placed one beside the other, the first reception space 18 of the first corner structure 10 is located facing a corresponding second reception space 19 of the second corner structure 10. The drip protection slip 31, described above, is then mounted between the two corner structures 10. More specifically, the first end portion 310 of the drip protection slip 31 is engaged in the first reception space 18, while the second end portion 313 is engaged in the second reception space 19. Furthermore, the intermediate portion 312 of the slip 31 extends across the assembly trough 136, above the insulating filling 132.

Next, as shown in Figure 6, a sealed junction sheet 35 is bonded straddling the two adjacent corner structures so as to complete the secondary sealed membrane 6. More specifically, the inner surface of the panels 11 and 12 of the two corner structures 10 is coated with a layer of adhesive 129 (Figure 7) over the entire end portion of the two corner structures 10, in other words at the longitudinal end 22 of the first corner structure 10 and at the longitudinal end 23 of the second corner structure 10 between the primary corner arrangements 39, in order to receive the flexible sealed junction sheet 35. The sealed junction sheet 35 is thus bonded on the composite coverings 33 and on the flexible sealed sheet 34 of each of the two corner structures 10 in such a way as to cover the assembly trough 136. In the vicinity of the edge, the sealed junction sheet 35 also covers the intermediate portion 312 of the drip protection slip 31, as can be seen in Figure 7.

As can be seen in Figure 7, with the drip protection slip 31 lying across the assembly trough 136, it thus forms a retention barrier preventing dripping of the layer of adhesive 129 used to attach the sealed junction sheet 35. The drip protection slip 31 thus prevents this adhesive from flowing into the assembly trough 136. The capacity for contraction and expansion of the components of the tank 1 at the edge 15, notably of the flexible sealed sheet 34 and of the insulating filling 132, is therefore not hindered by the presence of adhesive.

Conversely, in the absence of the drip protection slip 31, the adhesive 129 could drip and flow into the space between the composite covering 33 and the flexible sealed sheet 34 and harden therein. If adhesive were to thus get in behind the flexible sealed sheet 34, this would locally hinder, or even eliminate, the capacity of the flexible sealed sheet 34 to deform by contraction and expansion in the non-bonded portion, which would increase the fatigue and risk of tearing thereof. This risk of dripping of the adhesive is particularly high in the vicinity of the corner structures used to form the corner between the vertical walls and the bottom wall of the tank since in this area gravity promotes the flow of adhesive into the assembly trough.

Such dripping of the adhesive could, after hardening, also join together, rigidly and irreversibly, other components of the tank wall, such as the insulating filling 132 with the ends of the rigid plates 27, or the two corner structures 10 to one another.

It will be appreciated that the drip protection slip 31 makes it possible to guarantee the capacities of the components of the tank, in particular the flexible sealed sheet 34, to contract and expand in the junction area between neighbouring corner structures.

Thus, in the assembled state of Figures 6 and 7, corresponding to the completion of the secondary sealed membrane 6, the drip protection slip 31 stays permanently in the first reception space 18 of the first corner structure 10, in the first reception space 19 of the second corner structure 10, and straddling the two adjacent corner structures 10.

The assembly of the sealed and thermally insulating tank 1 in the corner area may include the following steps:

- installation of a first corner structure 10 and a second corner structure 10 on a supporting structure 3, next to one another, such that a first reception space 18 of the first corner structure 10 is arranged facing a corresponding reception space 19 of the second corner structure 10;
- optionally, insertion of an end 316 of the drip protection slip 31 into the reception space 18 of the first corner structure 10, if the drip protection slip 31 was not preassembled to the corner structure 10;
- insertion of an end 317 of the drip protection slip 31 into the reception space 19 of the second corner structure 10;
- bonding of the flexible sealed sheet 35 between the panels 11 and 12, in such a way as to cover the assembly trough 136 and the drip protection slip 31.

By virtue of the presence of the drip protection slip 31, the adhesive applied on the panels 11 and 12 during the bonding of the flexible sealed sheet 35 is prevented from getting into the gaps between the various components at the corner between the panels 11 and 12.

The end 316 of the drip protection slip 31 may have been placed in the first reception space 18 of the first corner structure 10 prior to the installation of the two corner structures 10 on the supporting structure, for example during the production of the first corner structure 10 (pre-assembly).

Preferably, to facilitate the assembly of a row of corner structures 10, a drip protection slip 31 is preassembled to each corner structure 10, for example in the first reception space 18, prior to the installation against the supporting structure 3. Thus, the installation of the corner structures 10 in the form of a row simultaneously positions the drip protection slips 31 in the vicinity of each assembly trough, and all that remains is to slide each drip protection slip 31 slightly, as far as the adjacent corner structure 10, to complete the installation of the drip protection slips 31.

Alternatively, rather than pre-assembling a drip protection slip 31 to each corner structure 10, it is possible to pre-assemble two drip protection slips 31 to one corner structure 10 out of every two. The effect on the time taken for assembly of the row of corner structures is substantially the same.

A second embodiment of the corner structure 10 will now be described with reference to Figures 8 and 9, designed for a corner area between two supporting walls forming an angle of 135°. Elements that are identical or similar to those in the first embodiment have the same reference numeral as in the first embodiment and will only be described again in so far as they differ from the first embodiment.

In the second embodiment of the corner structure 10, the angle A between the panels 11 and 12 is equal to 135°. Unlike the first embodiment, in this case the corner structure 10 according to the second embodiment has no wooden wedge, without this being limiting. The drip protection slip 31 is assembled and used in the same way as in the first embodiment.

The same arrangement may be adapted to different corner areas of the supporting structure having different angle values. For example, the angle between the panels of the corner structure may be equal to 108.4° or have yet other values.

At the end of the edge 301, the supporting structure 3 of polyhedral shape may include a trihedral area, not shown, in which the two supporting walls and the edge 301 are interrupted by a third supporting wall which is perpendicular or oblique thereto. In other words, the trihedral area is an area where several edges of the supporting structure 3 meet. A trihedral area is for example depicted in the publication WO-A-2019086790.

In a third embodiment, shown in Figure 10, the corner structure 110 is adapted to produce the tank wall 2 in the trihedral area. Elements that are identical or similar to those in the first embodiment have the same reference numeral as in the first embodiment and will only be described again in so far as they differ from the first embodiment.

To this end, the corner structure 110 includes a third panel 112, comprising a stack of layers similar to the panels 11 and 12 already described.

In addition to the edge 15 where the planes of the flat inner faces 13 of the panels 11 and 12 meet, the corner structure 110 has in this case a second edge 151 where the planes of the flat inner faces 13 of the panels 11 and 112 meet, and a third edge 152 where the planes of the flat inner faces 13 of the panels 12 and 112 meet. The edges 15, 151 and 152 meet at a meeting point 150. Each of the edges 15, 151 and 152 also extends as far as a respective end 22, 221 and 222 of the corner structure 110. Respective longitudinal directions X, Y and Z are defined by each edge 15, 151 and 152. Just as the pair of panels 11 and 12 of the corner structure 10 or 110 forms a dihedron, the flat inner faces 13 of each pair of panels 11 and 112, and 12 and 112 also form two other dihedrons. A flexible sealed sheet, not shown in Figure 10 for the sake of legibility, is bonded on strips of adhesive 29 provided on each of the panels 11, 12 and 112, at a distance from the edges 15, 151 and 152. A reception space is thus respectively provided under the flexible sealed sheet at each of the edges 15, 151 and 152, accessible from the end of each of the edges 15, 151 and 152 so as to be able to receive a drip protection slip 31 in each case. Three drip protection slips 31 are shown in Figure 10 for illustrative purposes, without this being limiting.

The corner structure 110 of trihedral type may be arranged, in the tank 1, adjacent to several corner structures 10 of dihedral type arranged respectively along each of the edges which meet in the trihedral area. The reception spaces of the corner structure 110 are then arranged facing the corresponding reception spaces 18 or 19 of the neighbouring corner structures 10.

The other variant embodiments of the sealed protection device will be described below with reference to Figures 11 to 14. To be specific, instead of the drip

protection slip 31 arranged in a reception space under the flexible sealed sheet of the first variant, the sealed protection device may be formed according to several variants in order to prevent the adhesive 129 arranged on the flexible sealed sheet 34 between the first connection area 16 and the second connection area 17 from dripping into the assembly trough 136.

Figure 11 thus shows a second variant of the sealed protection device. In this second variant, the sealed protection device is produced in the form of a protruding portion 200 of the flexible sealed sheet 34 of the second corner structure 10 extending above the assembly trough 136. The protruding portion 200 thus protrudes in the longitudinal direction X of the second corner structure 10 and is located in the extension of the flexible sealed sheets 34. As can be seen in this figure, one end of the protruding portion 200 is thus adhered by overlapping on the flexible sealed sheet 34 of the first corner structure 10 in such a way as to cover the assembly trough 136. In another variant that has not been shown, the protruding portion 200 could belong to the flexible sealed sheet 34 of the first corner structure 10

Thus, in this second variant, the flexible sealed sheet 34 of the second corner structure 10 includes a main body 201, located above the first and second panels 11, 12 of the second corner structure 10, and the protruding portion 200. The protruding portion 200 and the main body 201 have in this second variant equal transverse dimensions, in other words the protruding portion 200 extends the whole of the main body 201 at the assembly trough 136.

Figure 12 shows a third variant of the sealed protection device. In this third variant, similar to the second variant, the sealed protection device is also produced in the form of a protruding portion 200 of the flexible sealed sheet 34 extending above the assembly trough 136. However, in this variant, the protruding portion 200 is present on the flexible sealed sheet 34 of the first corner structure 10 as well as of the second corner structure 10. Moreover, it is located in an extension of the intermediate area 30 such that the protruding portion 200 is located straddling the edge 15, between the first connection area 16 and the second connection area 17.

As can be seen in Figure 12, and unlike in the second variant, the protruding portion 200 no longer straddles the other corner structure 10 but in this case only partially covers the assembly trough 136. For example, the protruding portion 200 has

a dimension in the longitudinal direction X of the order of 10 mm whereas the assembly trough has a dimension of the order of 30 mm.

Figure 13 shows a fourth variant of the sealed protection device. In this variant, the sealed protection device is an additional part, in this case a flexible sealed strip 202 arranged in the extension of the flexible sealed sheets 34 of the first and second corner structures 10. The flexible sealed strip 202 is bonded, for example spot-bonded, on the one hand to the first corner structure 10 and on the other hand to the second corner structure 10.

The flexible sealed strip 202 is thus arranged above the assembly trough 136, straddling the edge 15, in the intermediate areas 30, in other words between the first connection area 16 and the second connection area 17 of the first and second corner structures 10. The flexible sealed strip 202 thus covers the area of the assembly trough 136 where dripping of adhesive is a problem.

Lastly, Figure 14 shows a fifth variant of the sealed protection device. In this variant, the sealed protection device includes a first strip 203 arranged at a first longitudinal end of the first corner structure 10 which is proximal with respect to the assembly trough, and bonded on the flexible sealed sheet 34 of the first corner structure 10 in such a way as to protrude in a thickness direction. The sealed protection device also includes, likewise, a second strip 204 arranged at a first longitudinal end of the second corner structure 10 which is proximal with respect to the assembly trough 136, and bonded on the flexible sealed sheet 34 of the second corner structure 10 in such a way as to protrude in a thickness direction.

As shown in figure 14, the first strip 203 and the second strip 204 are thus bonded facing one another on either side of the assembly trough 136 in such a way as to form a retention barrier for the adhesive 129 in the intermediate areas 30. To be specific, the first strip 203 and the second strip 204 are bonded straddling the edge 15, between the first connection area 16 and the second connection area 17.

The technique described above for producing a tank wall may be used in various types of tanks, for example to create a secondary layer of an LNG tank in an onshore facility or a floating structure such as a liquefied gas carrier or the like. The

assembly of the primary layer is already known and may be carried out according to the known techniques.

With reference to Figure 15, a view of a liquefied gas carrier 70 with part cut away shows a sealed and thermally insulating tank 71 of generally prismatic shape mounted in the double hull 72 of the carrier 70. The wall of the tank 71 comprises a primary sealed membrane intended to be in contact with the LNG contained in the tank, a secondary sealed membrane arranged between the primary sealed membrane and the double hull 72 of the carrier 70, and two thermally insulating barriers arranged respectively between the primary sealed membrane and the secondary sealed membrane and between the secondary sealed membrane and the double hull 72.

In a manner known per se, loading/unloading pipelines 73 arranged on the upper deck of the carrier may be connected, by means of appropriate connectors, to a maritime or port terminal for transferring a cargo of LNG from or to the tank 71.

Figure 15 shows an example of a maritime terminal comprising a loading and unloading station 75, an underwater pipe 76 and an onshore facility 77. The loading and unloading station 75 is a fixed offshore facility comprising a movable arm 74 and a tower 78 which supports the movable arm 74. The movable arm 74 carries a bundle of insulated flexible pipes 79 which may be connected to the loading/unloading pipelines 73. The orientable movable arm 74 may be adjusted to suit all sizes of liquefied gas carrier. A connecting pipe (not shown) extends inside the tower 78. The loading and unloading station 75 allows loading and unloading of the liquefied gas carrier 70 from or to the onshore facility 77. This facility comprises tanks 80 for storing liquefied gas and connection pipes 81 connected by the underwater pipe 76 to the loading or unloading station 75. The underwater pipe 76 allows the transfer of the liquefied gas between the loading or unloading station 75 and the onshore facility 77 over a long distance, for example 5 km, which makes it possible to keep the liquefied gas carrier 70 at a long distance from the shore during loading and unloading operations.

To generate the pressure necessary to transfer the liquefied gas, use is made of pumps on board the carrier 70 and/or pumps fitted to the onshore facility 77 and/or pumps fitted to the loading and unloading station 75.

Although the invention has been described in connection with several particular embodiments, it is obvious that it is in no way limited thereto and that it includes all technical equivalents of the means described as well as combinations thereof, if these fall within the scope of the invention.

The use of the verb “comprise” or “include” and conjugated forms thereof does not rule out the presence of other elements or other steps in addition to those stated in a claim.

In the claims, any reference sign in parentheses should not be interpreted as a limitation of the claim.

CLAIMS

1. Sealed and thermally insulating tank (1) intended to be integrated in a supporting structure (3), the sealed and thermally insulating tank (1) comprising a first corner structure (10, 110) and a second corner structure (10, 110), the first and second corner structures (10, 110) being installed along an edge (301) of the supporting structure (3) in such a way as to delimit an assembly trough (136) between the first and the second corner structures (10, 110), the first and second corner structures (10, 110) each comprising:

- a first panel (11) made of thermally insulating material and a second panel (12) made of thermally insulating material each having a flat inner face (13) intended to be turned towards the interior of the sealed and thermally insulating tank (1) and an outer face (14) intended to be turned towards the supporting structure (3); the flat inner face (13) of the first panel (11) being inclined relative to the flat inner face (13) of the second panel (12) by an angle (A) corresponding to a corner area of the sealed and thermally insulating tank (1) to be produced, the flat inner face (13) of the first panel and the flat inner face (13) of the second panel forming a dihedron having an edge (15) which extends in a longitudinal direction (X) of the corner structure (10, 110);

- a flexible sealed sheet (34) arranged straddling the flat inner face (13) of the first panel and the flat inner face of the second panel;

wherein the flat inner face (13) of the first panel includes a first connection area (16) and the flat inner face (13) of the second panel includes a second connection area (17), the first connection area (16) and the second connection area (17) being at a distance from said edge (15), the first connection area (16) being provided with an adhesion means (29) attaching the flexible sealed sheet (34) sealingly to the flat inner face (13) of the first panel, and the second connection area (17) being provided with an adhesion means (29) attaching the flexible sealed sheet (34) to the flat inner face (13) of the second panel,

and wherein the sealed and thermally insulating tank (1) includes a sealed protection device located at the assembly trough (136) and being located at least partially between the first connection area (16) and the second connection area (17), the sealed protection device being configured to prevent a fluid arranged on the flexible

sealed sheet (34) between the first connection area (16) and the second connection area (17) from dripping into the assembly trough (136).

2. Sealed and thermally insulating tank (1) according to Claim 1, wherein the sealed protection device includes a first strip arranged at a first longitudinal end of the first corner structure (10, 110) which is proximal with respect to the assembly trough (136) and attached to the flexible sealed sheet (34) of the first corner structure (10, 110) in such a way as to protrude in a thickness direction, and a second strip arranged at a first longitudinal end of the second corner structure (10, 110) which is proximal with respect to the assembly trough (136) and attached to the flexible sealed sheet (34) of the second corner structure (10, 110) in such a way as to protrude in a thickness direction.

3. Sealed and thermally insulating tank (1) according to Claim 1, wherein the sealed protection device is arranged in line with the assembly trough (136).

4. Sealed and thermally insulating tank (1) according to Claim 3, wherein the sealed protection device extends in the extension of the flexible sealed sheet (34) of one of the first and second corner structures (10, 110).

5. Sealed and thermally insulating tank (1) according to Claim 3, wherein the first and second corner structures (10, 110) each include a reception space (18) intended to receive a drip protection slip (31) at a first longitudinal end (22) of the corner structure (10, 110), the reception space (18) being located between, on the one hand, the flexible sealed sheet (34) and, on the other hand, the inner face (13) of the first panel and the inner face (13) of the second panel covered by the flexible sealed sheet (34), the reception space (18) being located straddling the edge (15) between the first connection area and the second connection area (17),

wherein the sealed protection device includes a drip protection slip (31) arranged at least partially in said reception space (18), and

wherein the drip protection slip (31) has a degree of freedom in translation in the reception space (18), along the edge (15) of the dihedron of said corner structure (10, 110).

6. Sealed and thermally insulating tank (1) according to Claim 5, wherein the drip protection slip (31) is made of a flexible polymer material, preferably vinyl.

7. Sealed and thermally insulating tank (1) according to Claim 5 or Claim 6, wherein the drip protection slip (31) has a degree of freedom in translation in the reception space (18, 19), along the edge (15) of the dihedron of said corner structure.

8. Sealed and thermally insulating tank (1) according to one of Claims 5 to 7, wherein the reception space (18) is a first reception space, and said corner structure (10, 110) includes a second reception space (19) intended to receive a drip protection slip (31) at a second longitudinal end (23) of said corner structure (10, 110) opposite the first longitudinal end (22), the second reception space being located between, on the one hand, the flexible sealed sheet (34) and, on the other hand, the flat inner face (13) of the first panel and the flat inner face (13) of the second panel covered by the flexible sealed sheet (34), the second reception space being located straddling the edge (15) between the first connection area (16) and the second connection area (17).

9. Sealed and thermally insulating tank (1) according to one of Claims 5 to 8, wherein the adhesion means (29) of the first connection area (16) and/or of the second connection area (17) takes the form of a strip of adhesive (29).

10. Sealed and thermally insulating tank (1) according to one of Claims 5 to 9, wherein a wooden wedge (24) is interposed in line with the edge (15) of the dihedron between, on the one hand, the flexible sealed sheet (34) and, on the other hand, the flat inner face (13) of the first panel and the flat inner face (13) of the second panel, the reception space (18) being located between the flexible sealed sheet (34) and the wooden wedge.

11. Sealed and thermally insulating tank (1) according to one of Claims 5 to 7, wherein the dihedron formed by the flat inner face (13) of the first panel (11) and the flat inner face (13) of the second panel (12) is a first dihedron and the longitudinal direction is a first longitudinal direction (X), the corner structure further comprising a third panel (112) made of thermally insulating material, the third panel having a flat inner face (13) intended to be turned towards the interior of the sealed and thermally insulating tank (1) and an outer face (14) intended to be turned towards the supporting structure (3); the flat inner face (13) of the third panel (112) interrupting the edge (15) of the first dihedron at an end of the edge (15) of the first dihedron opposite the first

longitudinal end (22), the flat inner face (13) of the third panel (112) forming with the flat inner face (13) of the first panel (11) a second dihedron having an edge (151) which extends in a second longitudinal direction (Y) secant to the first longitudinal direction,

wherein the flexible sealed sheet (34) is also arranged straddling the flat inner face (13) of the third panel, the flat inner face (13) of the third panel comprising a third connection area (16) at a distance from the edge (151) of the second dihedron, the third connection area being provided with an adhesion means (29) further attaching the flexible sealed sheet (34) sealingly to the flat inner face (13) of the third panel,

wherein the reception space (18) is a first reception space, the corner structure (110) comprising a second reception space intended to receive a drip protection slip (31) at an end (221) of the corner structure (110) in the second longitudinal direction, the second reception space (18) being located between, on the one hand, the flexible sealed sheet (34) and, on the other hand, the inner face (13) of the first panel and the inner face (13) of the third panel (112) covered by the flexible sealed sheet (34), the second reception space (18) being located straddling the edge (151) of the second dihedron between the first connection area and the third connection area.

12. Sealed and thermally insulating tank (1) according to one of Claims 5 to 11, wherein a reception space (18) of the first corner structure (10, 110) is arranged facing a reception space (19) of the second corner structure (10, 110), the drip protection slip (31) having a first end portion (310) engaged in the reception space (18) of the first corner structure (10, 110) and a second end portion (313) engaged in the reception space (19) of the second corner structure (10, 110), said drip protection slip (31) having an intermediate portion (312) extending across the assembly trough (136).

13. Sealed and thermally insulating tank (1) according to one of Claims 5 to 12, wherein the drip protection slip (31) includes a means for assisting positioning (314) delimiting the intermediate portion (312) of the drip protection slip (31).

14. Sealed and thermally insulating tank (1) according to one of Claims 1 to 13, wherein a sealed junction sheet (35) is bonded straddling the flexible sealed sheet (34) of the first corner structure (10, 110) and the flexible sealed sheet (34) of the second corner structure (10, 110) in such a way as to cover the assembly trough (136).

15. Carrier (70) for the transport of a cold liquid product, the carrier comprising a double hull (72) and a sealed and thermally insulating tank (71) according to one of Claims 1 to 14 arranged in the double hull.

16. System for transferring a cold liquid product, the system comprising a carrier (70) according to Claim 15, insulated pipelines (73, 79, 76, 81) arranged so as to connect the sealed and thermally insulating tank (71) of the carrier to a floating or onshore storage facility (77) and a pump for pumping a flow of cold liquid product through the insulated pipelines from or to the floating or onshore storage facility, to or from the tank of the carrier.

17. Method for loading or unloading a carrier (70), wherein a cold liquid product is conveyed through insulated pipelines (73, 79, 76, 81) from or to a floating or onshore storage facility (77), to or from the sealed and thermally insulating tank (71) of the carrier (70) according to Claim 15.