CLAIMS

1. A fluid storage facility (71), the storage facility (71) comprising a supporting structure (1) and a sealed and thermally insulating tank, the tank having at least one bottom wall (4) fixed to the supporting structure (1), wherein the bottom wall (4) has a structure with multiple layers superimposed in a direction of thickness, including at least one sealing membrane (5, 7) and at least one thermal insulation barrier (6, 8) arranged between the sealing membrane (5, 7) and the supporting structure (1),

wherein the bottom wall (4) has a sump structure (9) locally interrupting the sealing membrane (5, 7) of the bottom wall (4), the sump structure (9) having a rigid container (10, 11) having a side wall (12), the container (10, 11) being arranged through the thickness of the bottom wall (4), and the sump structure (9) comprising at least one fixing means (15, 32) designed to fix the rigid container (10, 11) to the supporting structure (1) at a fixing point of the side wall (12),

and wherein the at least one fixing means (15, 32) is configured to allow a relative movement of the side wall (12) of the container (10, 11) with respect to the supporting structure (1) in a transverse direction perpendicular to the side wall (12) at the fixing point of the container (10, 11), the relative movement being greater than 1 mm, wherein the facility comprises at least one blocking means (17, 26/28) configured to block the movement of the at least one fixing means in the direction of thickness and in a tangential direction, the tangential direction being tangential to the side wall (12) and orthogonal to the transverse direction and to the direction of thickness.

2. The facility as claimed in claim 1, wherein the side wall (12) has a cylindrical shape with the axis oriented in the direction of thickness.

3. The facility as claimed in claim 1 or 2, wherein the rigid container (10, 11) has a circular cross section, the transverse direction being a radial direction.

~~4. The facility as claimed in one of the preceding claims, wherein the facility comprises at least one blocking means (17, 26/28) configured to block the movement of the at least one fixing means in the direction of thickness and in a tangential direction, the tangential direction being tangential to the side wall (12) and orthogonal to the transverse direction and to the direction of thickness.~~

~~5~~4. The facility as claimed in one of claims 1 through 3~~4~~, wherein the at least one fixing means (15) has a fixing lug (15) projecting from the rigid container in the transverse direction, the fixing lug (15) having an orifice (22), and wherein the facility comprises an anchoring device (24) arranged in the orifice (22) in order to fix the fixing lug (15) to the supporting structure (1) in the direction of thickness.

65. The facility as claimed in claim 45, wherein the facility comprises two stops (28) fixed to the supporting structure (1) and situated on either side of the at least one fixing lug (15) in a tangential direction, the tangential direction being tangential to the side wall (12) and orthogonal to the transverse direction and to the direction of thickness, the stops (28) being configured to block the movement of the fixing lug (15) in the tangential direction.

76. The facility as claimed in claim 45 or claim 56, wherein the orifice (22) has an oblong orifice (22) whose largest dimension is oriented in the transverse direction, so as to allow the transverse movement of the fixing lug (15) and of the side wall (12) with respect to the anchoring device (24) and to the supporting structure (1).

78. The facility as claimed in one of claims 45 through 67, wherein the facility comprises two perforated plates (29), each having a perforation (30), the perforated plates (29) being situated on either side of the at least one fixing lug (15) in the direction of thickness, and the anchoring device (24) passing through the perforation (30) of each perforated plate (29), and wherein the perforated plates (29) are produced from a material whose coefficient of friction is less than 0.2.

89. The storage facility as claimed in claim 78, wherein the anchoring device (24) has a threaded rod (25) and a nut (26), the threaded rod (25) being fixed to the supporting structure (1) and passing through the perforations (30) of the perforated plates (29) and the orifice (22) of the fixing lug (15), the nut (26) being configured to exert a clamping force in the direction of thickness on the perforated plates (29) and the fixing lug (15) with the aid of the supporting structure (1).

910. The facility as claimed in claim 56, or one of claims 67 through 89 taken in its dependence on claim 56, wherein the facility comprises shims (31) arranged between the stops (28) and the fixing lug (15) in the tangential direction, the shims (31) being configured to adjust the distance left free between a stop (28) and a fixing lug (15) in the tangential direction.

101. The facility as claimed in one of claims 1 through 34, wherein the facility has at least one slide (17) fixed to the supporting structure (1) and oriented in the transverse direction, and the at least one fixing means is a fixing lug (15) projecting from the rigid container (10, 11) in the transverse direction, the fixing lug (15) being mounted in the slide (17), and the fixing lug (15) being movable in the slide (17) in the transverse direction in order to obtain said relative movement.

112. The facility as claimed in claim 101, wherein the slide (17) has a first portion (18) projecting from the supporting structure (1) in the direction of thickness, and a second portion (19) connected to the first portion (18) and oriented in a tangential direction orthogonal to the transverse direction, so as to form a slide with an L-shaped cross section.

123. The facility as claimed in claim 101 or claim 112, wherein the facility has two slides (17) situated on either side of the at least one fixing lug (15) in a tangential direction orthogonal to the transverse direction, the slides (17) being configured to block the movement of the fixing lug (15) in the direction of thickness and in the tangential direction.

13.4. The facility as claimed in one of claims 45 through 123, wherein the sump structure (9) comprises at least one reinforcing bracket (16), a first side of the reinforcing bracket (16) being fixed on the fixing lug (15), and a second side of the reinforcing bracket (16), perpendicular to the first side, being fixed to the rigid container (10, 11).

145. The facility as claimed in one of claims 1 through 134, wherein the sump structure (9) comprises a plurality of fixing means (15, 32) distributed regularly on the circumference of the container (10, 11).

~~16. The facility as claimed in one of claims 1 through 3, wherein the at least one fixing means is an elastically deformable fastener (32) having a first end welded to the supporting structure (1) and a second end welded to the sump structure (9).~~

~~17. The facility as claimed in claim 16, wherein the fastener (32) is formed continuously all around the sump structure (9).~~

~~18. The facility as claimed in claim 16 or claim 17, wherein the fastener (32) is openworked with slits (36) arranged periodically all around the sump structure (9).~~

~~19. The facility as claimed in claim 16, wherein the facility comprises a plurality of elastically deformable fasteners (32) distributed regularly all around the sump structure (9).~~

~~20. The facility as claimed in one of claims 16 through 19, wherein the cross section of the fastener (32), in a normal vector plane oriented in a tangential direction orthogonal to the transverse direction, is rectilinear or curved.~~

15~~21~~. A ship (70) for transporting a cold liquid product, the ship having an outer hull (72) and a fluid storage facility as claimed in one of claims 1 through 14~~20~~ arranged in the outer hull (72), wherein the supporting structure (1) is an inner hull of the ship (70).

16~~22~~. A method of loading or offloading a ship (70) as claimed in claim 15~~21~~, wherein a cold liquid product is conveyed through insulated pipes (73, 79, 76, 81) from or to an offshore or onshore storage facility (77) to or from the tank (71) of the ship.

17~~23~~. A transfer system for a cold liquid product, the system comprising a ship (70) as claimed in claim 15~~21~~, insulated pipes (73, 79, 76, 81) arranged so as to connect the tank (71), set up in the hull of the ship, to an offshore or onshore storage facility (77), and a pump for driving a flow of cold liquid product through the insulated pipes from or to the offshore or onshore storage facility to or from the hull of the ship.