

CLAIMS

1. A method for producing a sealed and thermally insulating wall for a fluid storage tank, comprising the steps of:

- attaching a plurality of anchoring elements to a support structure;
- installing modular formwork elements on the support structure, the modular formwork elements having a shape that protrudes relative to the support structure and that defines, with the support structure and the plurality of anchoring parts, mutually adjacent compartments having an open side opposite the support structure, two mutually adjacent compartments being separated in each case by a modular formwork element positioned between them;
- spraying insulating foam into said compartments through the open side so as to form a plurality of insulating sectors made from sprayed insulating foam;
- withdrawing the modular formwork elements;
- arranging compressible insulating junction elements in place of the modular formwork elements, the insulating junction elements being arranged in a stressed position in which they are stressed between said insulating sectors and capable of expanding when said insulating sectors contract, so as to ensure continuity of the thermal insulation; and
- attaching a sealing membrane to said anchoring elements.

2. A method for producing a sealed and thermally insulating wall for a fluid storage tank, comprising the steps of:

- attaching a plurality of anchoring elements to a support structure;
- installing combined elements on the support structure, each combined element comprising a modular formwork element and a compressible insulating junction element, housed under stress within the modular formwork element; the modular formwork elements having a shape that protrudes relative to the support structure and that defines, with the support structure and the plurality of anchoring parts, mutually adjacent compartments having an open side opposite the support structure, two mutually adjacent compartments being separated in each case by a modular formwork element positioned between them;
- spraying insulating foam into said compartments through the open side so as to form a plurality of insulating sectors made from sprayed insulating foam;

- withdrawing the modular formwork elements; the insulating junction elements being left, in a stressed position, between said insulating sectors when the modular formwork elements are withdrawn, the insulating junction elements being, in their stressed position, stressed between said insulating sectors and capable of expanding when said insulating sectors contract, so as to ensure continuity of the thermal insulation; and
- attaching a sealing membrane to said anchoring elements.

3. A method for producing a sealed and thermally insulating wall for a fluid storage tank, comprising the steps of:

- attaching a plurality of anchoring elements to a support structure;
- installing combined elements on the support structure, each combined element comprising a modular formwork element and a compressible insulating junction element, the modular formwork element having two permanent formwork sides between which the insulating junction element is housed under stress, and releasable means for clamping the sides, these means being capable of clamping the two permanent formwork sides against the insulating junction element in a non-released state and of no longer clamping the two permanent formwork sides in a released state; the modular formwork elements having a shape that protrudes relative to the support structure and that defines, with the support structure and the plurality of anchoring parts, mutually adjacent compartments having an open side opposite the support structure, two mutually adjacent compartments being separated in each case by a modular formwork element positioned between them;
- spraying insulating foam into said compartments through the open side so as to form a plurality of insulating sectors made from sprayed insulating foam;
- releasing the means for clamping the sides so as to place the insulating junction elements in a stressed position in which they are stressed between said insulating sectors and capable of expanding when said insulating sectors contract, so as to ensure continuity of the thermal insulation; each insulating junction element, in its stressed position, causing the two permanent formwork sides of the combined element to which it belongs to engage with the insulating sectors between which said two permanent formwork sides are located; and
- attaching a sealing membrane to said anchoring elements.

4. The production method as claimed in any of claims 1 to 3, wherein a modular formwork element has an anti-adhesion coating.

5. The production method as claimed in any of claims 1 to 4, wherein an insulating junction element comprises a profiled element having two resilient flanges which, in a stressed position between the insulating sectors, are stressed toward one another and exert a reactive force tending to separate them from one another.

6. The production method as claimed in claim 5, wherein the profiled element having two resilient flanges is produced from a foam made of a polymer selected from among polyurethane, melamine, polyethylene, polypropylene, polystyrene and silicone.

7. The production method as claimed in any of claims 1 to 4, wherein an insulating junction element comprises a strip made of a compressible material selected from among glass wool, polyester wadding, and foams of polyurethane, melamine, polyethylene, polypropylene or silicone.

8. The production method as claimed in any of claims 1 to 7, comprising a step of trimming the insulating sectors.

9. The production method as claimed in any of claims 1 to 8, wherein an anchoring element is a block fitted with a member for anchoring to the support structure and an element for attaching the sealing membrane, and having at least one thermally insulating layer.

10. The production method as claimed in claim 9, wherein the thermally insulating layer of the block is made of polymer foam having a density of more than 100 kg/m^3 , or of wood.

11. The production method as claimed in claim 9 or 10, comprising a step of attaching anchoring plates between the adjacent anchoring blocks and a step of welding the sealing membrane onto said anchoring plates.

12. The production method as claimed in any of claims 1 to 11, wherein, during the installation of modular formwork elements on the support structure, the modular formwork elements are attached to the support structure and/or to the anchoring elements.

13. A sealed and thermally insulating wall for a cryogenic fluid storage tank, made by a production method as claimed in any of claims 1 to 12, comprising:

- a support structure;
- a plurality of anchoring elements, attached to the support structure;

- a plurality of insulating sectors made of insulating foam, produced by spraying insulating foam against the support structure, the insulating sectors made of sprayed insulating foam adhering directly to the support structure;
- insulating junction elements arranged in a stressed position in which they are stressed between said insulating sectors and capable of expanding when said insulating sectors contract, so as to ensure continuity of the thermal insulation; and
- a sealing membrane attached to said anchoring elements.

14. A liquid storage tank comprising at least one wall as claimed in claim 13.

15. A ship for transporting a refrigerated liquid product, the ship comprising a tank as claimed in claim 14.

16. A method for loading or unloading a ship as claimed in claim 15, wherein a refrigerated liquid product is conveyed through insulated pipes from or to a floating or land-based storage installation to or from the tank of the ship.

17. A transfer system for a refrigerated liquid product, the system comprising a ship as claimed in claim 15, insulated pipes arranged so as to connect the tank installed in the ship's hull to a floating or land-based storage installation, and a pump for propelling a flow of refrigerated liquid product through the insulated pipes from or to the floating or land-based storage installation to or from the ship's tank.