[CLAIMS]

[Claim 1]

A liquefied gas storage tank that stores cryogenic substances, comprising a primary barrier, a primary insulation wall, a secondary barrier, and a secondary insulation wall,

wherein, in a state in which unit elements, each of which is formed by stacking the secondary insulation wall, the secondary barrier, and a fixed insulation wall that is a part of the primary insulation wall, are disposed adjacent to each other, the primary insulation wall includes a connection insulation wall provided in a spatial portion between the adjacent fixed insulation walls,

a first slit formed between the fixed insulation wall and the connection insulation wall when the connection insulation wall is inserted and installed between the adjacent fixed insulation walls,

a plurality of second slits formed in a longitudinal direction and a width direction of the fixed insulation wall, and

a first insulating filler material filling the first slit.

[Claim 2]

The liquefied gas storage tank of claim 1, wherein the first insulating filler material is formed to fully fill the first slit,

formed to fill the first slit from an inlet of the first slit to a predetermined depth so that a space is formed in a lower portion of the first slit, or

formed to fill an inside of the first slit in multiple layers so that a plurality of spaces are formed inside the first slit.

[Claim 3]

~~The liquefied gas storage tank of claim 2, wherein, when the first insulating filler material is formed to fill the inside of the first slit in multiple layers so that the plurality of spaces are formed inside the first slit, the first insulating filler material includes:~~

~~a first upper insulating filler material formed in an upper portion of the first slit;~~

~~a first middle insulating filler material spaced a predetermined interval from the first upper insulating filler material and formed in a middle of the first slit; and~~

~~a first lower insulating filler material spaced a predetermined interval from the first middle insulating filler material and formed in a lower portion of the first slit,~~

~~each of the first upper insulating filler material, the first middle insulating filler material, and the first lower insulating filler material is formed of the same insulating material or different insulating materials, and~~

~~the insulating material includes glass wool, super lite, a soft foam material, or an aerogel blanket.~~

~~[Claim 4]~~

~~The liquefied gas storage tank of claim 1, wherein the first insulating filler material fills the first slit in an insertion method using a jig after the connection insulation wall is inserted and installed between the adjacent fixed insulation walls,~~ ~~or~~

~~fills the first slit by inserting and installing the connection insulation wall between the adjacent fixed insulation walls in a state of being bonded to both side surfaces of the connection insulation wall facing a side surface of the fixed insulation wall using an adhesive member.~~

~~[Claim 5]~~

~~The liquefied gas storage tank of claim 1, wherein the second slit is filled with a second insulating filler material therein when formed to a depth similar to a thickness of the fixed insulation wall, and~~

~~the second insulating filler material is formed to fill the second slit from an inlet of the second slit to a predetermined depth so that a space is formed in a lower portion of the second slit, or~~

~~formed to fill an inside of the second slit in multiple layers so that a plurality of spaces are formed inside the second slit.~~

~~[Claim 6]~~

~~The liquefied gas storage tank of claim 5, wherein, when the second insulating filler material is formed to fill the inside of the second slit in multiple layers so that the plurality of spaces are formed inside the second slit,~~

~~the second insulating filler material includes a second upper insulating filler material formed in an upper portion of the second slit,~~

~~a second middle insulating filler material spaced a predetermined interval from the second upper insulating filler material and formed in a middle of the second slit, and~~

~~a second lower insulating filler material spaced a predetermined interval from the second middle insulating filler material and formed in a lower portion of the second slit,~~

~~each of the second upper insulating filler material, the second middle insulating filler material, and the second lower insulating filler material is formed of the same insulating material or different insulating materials, and~~

~~the insulating material includes glass wool, super lite, a soft foam material, or an aerogel blanket.~~

[Claim 7]

The liquefied gas storage tank of claim 1, comprising one or more third slits formed in a longitudinal direction of the connection insulation wall and positioned collinearly with the second slit formed in the longitudinal direction when the connection insulation wall is inserted and installed between the fixed insulation walls,

wherein the second slit and the third slit are formed to a depth corresponding to about half of thicknesses of the fixed insulation wall and the connection insulation wall and are not filled with an insulating filler material therein,

the first insulating filler material is formed to be at least longer than a depth of each of the second slit and the third slit, and

a heat convection path through the first slit, the second slit, and the third slit is intermittently formed.

[Claim 8]

The liquefied gas storage tank of claim 1, wherein the primary insulation wall and the secondary insulation wall have the same or similar thickness.

[Claim 9]

A liquefied gas storage tank that stores cryogenic substances, comprising a primary barrier, a primary insulation wall, a secondary barrier, and a secondary insulation wall,

wherein, in a state in which unit elements, each of which is formed by stacking the secondary insulation wall, the secondary barrier, and a fixed insulation wall that is a part of the primary insulation wall, are disposed adjacent to each other, the primary insulation wall includes a connection insulation wall provided in a spatial portion between the adjacent fixed insulation walls,

first steps formed on front, rear, left, and right side surfaces of the connection insulation wall,

second steps formed on front, rear, left, and right side surfaces of the fixed insulation wall,

first slits formed by the first steps and the second steps between the connection insulation wall and the fixed insulation wall when the connection insulation wall is inserted and installed between the adjacent fixed insulation walls, and

a first insulating filler material filling the first slits.

[Claim 10]

The liquefied gas storage tank of claim 9, wherein the first step is formed so that front-rear and left-right widths of an upper portion of the connection insulation wall is smaller than front-rear and left-right widths of a lower portion of the connection insulation wall,

the second step is formed so that front-rear and left-right widths of an upper portion of the fixed insulation wall is smaller than front-rear and left-right widths of a lower portion of the fixed insulation wall, and

the first insulating filler material fills the first slit, which is a space provided between the upper portion of the connection insulation wall and the upper portion of the fixed insulation wall by installing the lower portion of the connection insulation wall to be adjacent to the lower portion of the fixed insulation wall.

[Claim 11]

The liquefied gas storage tank of claim 10, comprising:

a plurality of second slits formed in a longitudinal direction and a width direction of the fixed insulation wall; and

one or more third slits formed in a longitudinal direction of the connection insulation wall and positioned collinearly with the second slit formed in the longitudinal direction when the connection insulation wall is inserted and installed between the fixed insulation walls,

wherein the second slit and the third slit are formed to a depth corresponding to about half of thicknesses of the fixed insulation wall and the connection insulation wall and are not filled with an insulating filler material therein,

the first slit filled with the first insulating filler material is formed to be at least longer than a depth of each of the second slit and the third slit, and

a heat convection path through the first slit, the second slit, and the third slit is intermittently formed.

[Claim 12]

The liquefied gas storage tank of claim 9, wherein the primary insulation wall and the secondary insulation wall have the same or similar thickness.

[CLAIMS]

[Claim 1]

A liquefied gas storage tank that stores cryogenic substances, comprising a primary barrier, a primary insulation wall, a secondary barrier, and a secondary insulation wall,

wherein, in a state in which unit elements, each of which is formed by stacking the secondary insulation wall, the secondary barrier, and a fixed insulation wall that is a part of the primary insulation wall, are disposed adjacent to each other, the primary insulation wall includes a connection insulation wall provided in a spatial portion between the adjacent fixed insulation walls,

a first slit formed between the fixed insulation wall and the connection insulation wall when the connection insulation wall is inserted and installed between the adjacent fixed insulation walls,

a plurality of second slits formed in a longitudinal direction and a width direction of the fixed insulation wall., and

a first insulating filler material filling the first slit, wherein the first insulating filler material is

formed to fill the first slit in multiple layers so that a plurality of spaces are formed inside the first slit, and reduces low-temperature load of the secondary barrier by preventing a convection phenomenon caused through the first slit and an amount of heat transferred into the secondary barrier.

[Claim 2]

The liquefied gas storage tank of claim 1, wherein, the first insulating filler material includes:

a first upper insulating filler material formed in an upper portion of the first slit;

a first middle insulating filler material spaced a predetermined interval from the first upper insulating filler material and formed in a middle of the first slit; and

a first lower insulating filler material spaced a predetermined interval from the first middle insulating filler material and formed in a lower portion of the first slit,

each of the first upper insulating filler material, the first middle insulating filler material, and the first lower insulating filler material is formed of the same insulating material or different insulating materials, and

the insulating material includes glass wool, super lite, a soft foam material, or an aerogel blanket.

[Claim 3]

The liquefied gas storage tank of claim 1, wherein the first insulating filler material fills the first slit in an insertion method using a jig after the connection insulation wall is inserted and installed between the adjacent fixed insulation walls, or

fills the first slit in a bonding method using an adhesive member bonded to both side surfaces of the connection insulation wall facing a side surface of the fixed insulation wall before the connection insulation wall is inserted and installed between the adjacent fixed insulation walls.

[Claim 4]

The liquefied gas storage tank of claim 1, wherein the second slit is filled with a second insulating filler material therein when formed to a depth less than a total thickness of the fixed insulation wall and greater than an intermediate thickness of the fixed insulation wall, and

the second insulating filler material is formed to fill the second slit from an inlet of the second slit to a predetermined depth so that a space is formed in a lower portion of the second slit, or

formed to fill the second slit in multiple layers so that a plurality of spaces are formed inside the second slit.

[Claim 5]

The liquefied gas storage tank of claim 4, wherein, when the second insulating filler material is formed to fill the inside of the second slit in multiple layers so that the plurality of spaces are formed inside the second slit,

the second insulating filler material includes a second upper insulating filler material formed in an upper portion of the second slit,

a second middle insulating filler material spaced a predetermined interval from the second upper insulating filler material and formed in a middle of the second slit, and

a second lower insulating filler material spaced a predetermined interval from the second middle insulating filler material and formed in a lower portion of the second slit,

each of the second upper insulating filler material, the second middle insulating filler material, and the second lower insulating filler material is formed of the same insulating material or different insulating materials, and

the insulating material includes glass wool, super lite, a soft foam material, or an aerogel blanket.

[Claim 6]

The liquefied gas storage tank of claim 1, comprising one or more third slits formed in a longitudinal direction of the connection insulation wall and positioned collinearly with the second slit formed in the longitudinal direction when the connection insulation wall is inserted and installed between the fixed insulation walls,

wherein the second slit is formed to a depth corresponding to at least half or less of a total thickness of the fixed insulation wall and is not filled with an insulating filler material therein,

the third slit is formed to a depth corresponding to at least half or less of a total thickness of the connection insulation wall and is not filled with the insulating filler material therein

, and

a heat convection path is intermittently formed in the first slit, the second slit, and the third slit as the first slit is filled with the first insulating filler material.