

[DESCRIPTION]

[TITLE OF INVENTION]

MARINE VESSEL MANUFACTURING METHOD

[Technical Field]

5 [0001]

The present invention relates to a marine vessel manufacturing method.

Priority is claimed on Japanese Patent Application No. 2018-192053, filed October 10, 2018, the content of which is incorporated herein by reference.

[Background Art]

10 [0002]

A marine vessel transporting liquefied natural gas (LNG) and the like includes a hull and a plurality of tanks. The plurality of tanks are provided side by side in the fore and aft direction of the hull and store cargo, such as LNG, therein.

Such a marine vessel is used over a long period of time, for example, 20 years or
15 more. On the other hand, the above-mentioned marine vessel has increased in size with the times, or the rate of fuel consumption thereof during navigation has been improved through the progress of a propulsion engine. For this reason, even though an old type marine vessel is still usable, the rate of operation thereof tends to be lowered.

[0003]

20 Patent Document 1 discloses a method of remodeling two tankers into a connection type carrier-floating dock in order to use an old tanker and a paid tanker. One tanker of which a stern portion is cut and removed and the other tanker of which a bow portion is cut and removed can be connected to each other in this method.

[Citation List]

25 [Patent Document]

[0004]

[Patent Document 1]

Japanese Unexamined Patent Application, First Publication No. S60-18480

[Summary of Invention]

5 [Technical Problem]

[0005]

Incidentally, in the case of a marine vessel transporting LNG and the like, tanks are made of a material that does not easily corrode, such as an aluminum alloy.

Accordingly, the marine vessel has a high utility value. For this reason, there is a desire

10 to effectively use a marine vessel where a hull or a propulsion engine can be used.

The invention has been made in consideration of the above-mentioned circumstances, and an object of the invention is to provide a marine vessel manufacturing method that can effectively use an existing marine vessel including a plurality of tanks.

[Solution to Problem]

15 [0006]

The invention employs the following means in order to achieve the object.

According to a first aspect of the invention, a marine vessel manufacturing method includes: a removing step of removing an intermediate hull portion from an existing marine vessel including a hull where a plurality of tanks are arranged in a fore and aft direction, the intermediate hull portion being part of the hull in the fore and aft direction in which the some of the plurality of tanks are disposed; and a joining step of joining a bow-side hull portion disposed closer to a bow than the intermediate hull portion in the hull to a stern-side hull portion disposed closer to a stern than the intermediate hull portion in the hull.

25 [0007]

Since the intermediate hull portion including some of the plurality of tanks is removed from the existing marine vessel and the bow-side hull portion and the stern-side hull portion are joined to each other in this way, it is possible to manufacture a marine vessel of which the length in the fore and aft direction is shorter than that of the existing marine vessel and the number of tanks is smaller than that of the existing marine vessel. Such a marine vessel also has a small load capacity for cargo to be stored in the tanks and turns in a small radius. Accordingly, the marine vessel can be effectively used even in a case where efficiency is low in a large marine vessel or even in the case of a port or a course where the large marine vessel is difficult to navigate. Further, since the total weight of the marine vessel is smaller than that of the existing marine vessel, the rate of fuel consumption of a propulsion engine for navigation of the marine vessel is also improved. Accordingly, the existing marine vessel including the plurality of tanks can be effectively used.

[0008]

According to a second aspect of the invention, in the joining step according to the first aspect, a connecting hull portion that is configured to connect the bow-side hull portion to the stern-side hull portion may be additionally disposed between a rear end of the bow-side hull portion and a front end of the stern-side hull portion.

According to this configuration, the bow-side hull portion and the stern-side hull portion can be connected to each other through the connecting hull portion.

Accordingly, in a case where the hull cross-sectional shapes of the rear end of the bow-side hull portion and the front end of the stern-side hull portion are significantly different from each other, the bow-side hull portion and the stern-side hull portion can be satisfactorily connected to each other by the connecting hull portion. Further, various

devices and the like can also be installed in the additionally provided connecting hull portion.

[0009]

According to a third aspect of the invention, the connecting hull portion
5 according to the second aspect may integrally include a bow-side connecting portion of which a hull cross-sectional shape orthogonal to the fore and aft direction is the same as that of the rear end of the bow-side hull portion, a stern-side connecting portion of which a hull cross-sectional shape orthogonal to the fore and aft direction is the same as that of the front end of the stern-side hull portion, and an intermediate connecting portion that
10 connects the bow-side connecting portion to the stern-side connecting portion.

According to this configuration, the bow-side connecting portion of the connecting hull portion can be easily connected to the rear end of the bow-side hull portion. Likewise, the stern-side connecting portion of the connecting hull portion can be easily connected to the front end of the stern-side hull portion. For this reason, even
15 though the hull cross-sectional shapes of the rear end of the bow-side hull portion and the front end of the stern-side hull portion are different from each other, the bow-side hull portion and the stern-side hull portion can be easily continuously connected to each other by the connecting hull portion.

[0010]

20 According to a fourth aspect of the invention, the connecting hull portion according to the second or third aspect may include a connecting pipe and connection wiring that connect a bow-side pipe and bow-side wiring disposed in the bow-side hull portion to a stern-side pipe and stern-side wiring disposed in the stern-side hull portion.

According to this configuration, the bow-side pipe and the bow-side wiring
25 provided in the bow-side hull portion and the stern-side pipe and the stern-side wiring

provided in the stern-side hull portion can be connected to each other through the connecting pipe and the connection wiring.

[0011]

According to a fifth aspect of the invention, the intermediate hull portion
5 according to any one aspect of the first to fourth aspects may include the some of the plurality of tanks, which are disposed at an intermediate portion in the fore and aft direction, among the plurality of tanks arranged in the fore and aft direction.

Generally, the hull cross-sectional shape of a marine vessel is significantly changed in a fore and aft direction at a bow portion and a stern portion, and the hull
10 cross-sectional shape of the marine vessel is almost unchanged at an intermediate portion in the fore and aft direction. For this reason, in a case where the intermediate hull portion including tanks disposed at the intermediate portion in the fore and aft direction is removed, a difference in the hull cross-sectional shape between the rear end of the bow-side hull portion and the front end of the stern-side hull portion is reduced.
15 Accordingly, the bow-side hull portion and the stern-side hull portion are likely to be joined to each other.

[Advantageous Effects of Invention]

[0012]

According to the marine vessel manufacturing method, an existing marine vessel
20 including a plurality of tanks can be effectively used.

[Brief Description of Drawings]

[0013]

Fig. 1 is a side view showing the schematic configuration of an existing marine vessel that is used in a marine vessel manufacturing method according to a first
25 embodiment of the invention.

Fig. 2 is a flowchart of the marine vessel manufacturing method.

Fig. 3 is a side view showing a state where an intermediate hull portion of the existing marine vessel is removed in the marine vessel manufacturing method.

Fig. 4 is a side view showing a state where a bow-side hull portion and a stern-side hull portion of the existing marine vessel are joined to each other in the marine vessel manufacturing method.

Fig. 5 is a plan view showing a state where the bow-side hull portion and the stern-side hull portion of the existing marine vessel are joined to each other in the marine vessel manufacturing method.

Fig. 6 is a flowchart of a marine vessel manufacturing method according to a second embodiment of the invention.

Fig. 7 is a side view of a marine vessel that is manufactured by the marine vessel manufacturing method.

Fig. 8 is a plan view of the marine vessel that is manufactured by the marine vessel manufacturing method.

[Description of Embodiments]

[0014]

A marine vessel manufacturing method according to an embodiment of the invention will be described below with reference to the drawings.

(First embodiment)

A marine vessel manufacturing method according to this embodiment is to manufacture a marine vessel using an existing marine vessel.

Fig. 1 is a side view showing the schematic configuration of the existing marine vessel that is used in the marine vessel manufacturing method according to this embodiment.

As shown in Fig. 1, the existing marine vessel 1 includes a hull 2 and a plurality of tanks 3. The hull 2 includes a pair of broadsides 2s provided on both sides in a marine vessel width direction and a bottom 2b. The hull 2 includes an upper deck 2t that is provided above the bottom 2b with an interval therebetween. The hull 2 includes an upper structure 2h provided close to a stern 2r in a fore and aft direction Da. The hull 2 includes a cargo loading section (hold) 2k that is provided closer to a bow 2a than the upper structure 2h in the fore and aft direction Da.

[0015]

The upper deck 2t is a fully exposed deck exposed to the outside and is provided so as to cover the upper portion of the cargo loading section 2k.

[0016]

Each of the plurality of tanks 3 is an independent tank and stores liquefied gas such as LNG, which is cargo, therein. The tank 3 is made of, for example, an aluminum alloy or the like in order to ensure toughness in a low-temperature atmosphere or corrosion resistance. The plurality of tanks 3 are disposed in the cargo loading section 2k, which is provided in the hull 2, in the fore and aft direction Da. A case where the existing marine vessel 1 of this embodiment includes five tanks 3 which are moss-type independent spherical tanks will be illustrated. Upper portions 3a of these tanks 3 are disposed above the upper deck 2t.

[0017]

Fig. 2 is a flowchart of the marine vessel manufacturing method. Fig. 3 is a side view showing a state where an intermediate hull portion of the existing marine vessel is removed in the marine vessel manufacturing method.

As shown in Fig. 2, the marine vessel manufacturing method using the existing marine vessel 1 includes a removing step S1 and a joining step S2.

[0018]

In the removing step S1, an intermediate hull portion 5C, which is an intermediate portion in the fore and aft direction Da, is removed from the existing marine vessel 1 as shown in Fig. 3. Here, the intermediate hull portion 5C is a portion that includes some tanks 3 among the plurality of tanks 3 and part of the hull 2 of the existing marine vessel 1 in the fore and aft direction Da in which the tanks 3 are provided.

[0019]

In order to perform the above-mentioned removal, the hull 2 of the existing marine vessel 1 is cut at each of a position P1 that corresponds to a predetermined distance from the bow 2a in the fore and aft direction Da and a position P2 that corresponds to a predetermined distance from the stern 2r in the fore and aft direction Da. Each of these positions P1 and P2 is set between the tanks 3 adjacent to each other in the fore and aft direction Da. Since the hull 2 is cut at the positions P1 and P2 in this way, the existing marine vessel 1 is divided into the intermediate hull portion 5C that is disposed at an intermediate portion in the fore and aft direction Da, a bow-side hull portion 5A that is disposed closer to the bow 2a than the intermediate hull portion 5C, and a stern-side hull portion 5B that is disposed closer to the stern 2r than the intermediate hull portion 5C. Accordingly, only the intermediate hull portion 5C is removed.

[0020]

In this embodiment, for example, the hull 2 is cut at each of the position P1 set between a first tank 3A and a second tank 3B from the bow 2a and the position P2 set between a third tank 3C and a fourth tank 3D from the bow 2a. That is, the intermediate hull portion 5C of this embodiment includes a hull 2C provided between the positions P1 and P2, which is part of the intermediate portion in the fore and aft direction Da, and the

second tank 3B and the third tank 3C from the bow 2a. As described above, the intermediate hull portion 5C includes the tanks 3B and 3C that are disposed at the intermediate portion in the fore and aft direction Da among the plurality of tanks 3.

[0021]

5 In the joining step S2, a rear end 5r of the bow-side hull portion 5A and a front end 5f of the stern-side hull portion 5B are joined to each other as shown in Figs. 4 and 5. The rear end 5r of the bow-side hull portion 5A and the front end 5f of the stern-side hull portion 5B are mainly joined to each other by welding. In a case where the shapes of the cut surfaces of the hull 2 at the rear end 5r of the bow-side hull portion 5A and the
10 front end 5f of the stern-side hull portion 5B are different from each other, a connecting plate 8 (see Fig. 5) extending in a plane direction crossing the fore and aft direction Da may be provided between the rear end 5r of the bow-side hull portion 5A and the front end 5f of the stern-side hull portion 5B.

[0022]

15 For example, in a case where part or all of a manifold 23 provided in the existing marine vessel 1 is disposed in the intermediate hull portion 5C, part or all of the manifold 23 may be provided in the bow-side hull portion 5A. Further, since a cargo device 24, such as a cargo pump, is provided at the stern-side hull portion 5B of the existing marine vessel 1, the cargo device 24 may be provided at the position as it is.

20 [0023]

After the rear end 5r of the bow-side hull portion 5A and the front end 5f of the stern-side hull portion 5B are joined to each other, various pipes and wirings are connected between the bow-side hull portion 5A and the stern-side hull portion 5B. As a result, a marine vessel 10A is manufactured.

The marine vessel 10A includes a hull 2X of which the length in the fore and aft direction Da is shorter than that of the existing marine vessel 1 (see Fig. 1). Further, the marine vessel 10A includes tanks 3 of which the number is smaller than that of the existing marine vessel 1.

5 [0024]

In the above-mentioned method of manufacturing the marine vessel 10A according to the first embodiment, the intermediate hull portion 5C including two tanks 3 is removed and the bow-side hull portion 5A and the stern-side hull portion 5B are joined to each other. Accordingly, it is possible to manufacture the marine vessel 10A that
10 includes the hull 2X of which the length in the fore and aft direction Da is shorter than that of the existing marine vessel 1 and the tanks 3 of which the number is smaller than that of the existing marine vessel 1. Such a marine vessel 10A also has a small load capacity for cargo to be stored in the tanks 3 and turns in a small radius. Accordingly, the marine vessel 10A is advantageous in a case where efficiency is low in the large
15 existing marine vessel 1 or in the case of a port or a course where the large existing marine vessel 1 is difficult to navigate. Further, since the total weight of the marine vessel 10A is smaller than that of the existing marine vessel 1, the rate of fuel consumption of a propulsion engine for navigation of the marine vessel 10A is also improved. The existing marine vessel 1 including the plurality of tanks 3 can be
20 effectively used in this way.

[0025]

(Second embodiment)

Next, a marine vessel manufacturing method according to a second embodiment of the invention will be described. Since the second embodiment to be described below
25 is different from the first embodiment in terms of only the configuration of a connecting

hull portion 20, the same portions as those of the first embodiment will be denoted by the same reference numerals as those of the first embodiment and repeated description will be omitted.

[0026]

5 Fig. 6 is a flowchart of the marine vessel manufacturing method according to the second embodiment of the invention. Fig. 7 is a side view of a marine vessel that is manufactured by the marine vessel manufacturing method. Fig. 8 is a plan view of the marine vessel that is manufactured by the marine vessel manufacturing method.

 As shown in Fig. 6, the marine vessel manufacturing method according to the
10 second embodiment using an existing marine vessel 1 includes a removing step S11, a connecting hull-inserting step S12, and a joining step S13.

[0027]

 In the removing step S11, an intermediate hull portion 5C is removed from the existing marine vessel 1 as in the first embodiment (see Fig. 3).

15 [0028]

 In the connecting hull-inserting step S12, as shown in Figs. 7 and 8, a connecting hull portion 20 is inserted between a rear end 5r of a bow-side hull portion 5A that is disposed closer to a bow 2a than the removed intermediate hull portion 5C and a front end 5f of a stern-side hull portion 5B that is disposed closer to a stern 2r than the
20 intermediate hull portion 5C.

[0029]

 The connecting hull portion 20 is connected to each of the bow-side hull portion 5A and the stern-side hull portion 5B in the joining step S13 to be described later. The connecting hull portion 20 integrally includes a bow-side connecting portion 20a, a stern-side connecting portion 20r, and an intermediate connecting portion 20c. The outline of
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the cross section of the bow-side connecting portion 20a viewed in the fore and aft direction Da, that is, the hull cross-sectional shape of the bow-side connecting portion 20a orthogonal to the fore and aft direction Da is the same as the outline of the cut surface of the rear end 5r of the bow-side hull portion 5A. Likewise, the outline of the cross section of the stern-side connecting portion 20r viewed in the fore and aft direction Da, that is, the hull cross-sectional shape of the stern-side connecting portion 20r orthogonal to the fore and aft direction Da is the same as the outline of the cut surface of the front end 5f of the stern-side hull portion 5B.

[0030]

In this way, the intermediate connecting portion 20c is formed so as to continuously connect the bow-side connecting portion 20a to the stern-side connecting portion 20r. That is, the connecting hull portion 20 is provided between the bow-side hull portion 5A and the stern-side hull portion 5B so that the outer surface of a hull 2Y is continuous.

The connecting hull portion 20 may be adapted so that the length L of the connecting hull portion 20 in the fore and aft direction Da is shorter than the length of one tank 3 in the fore and aft direction Da. As a result, an increase in the length of a marine vessel 10B in the fore and aft direction Da can be suppressed.

[0031]

The connecting hull portion 20 includes a pair of broadsides 20s provided on both sides in a marine vessel width direction and a bottom 20b. The connecting hull portion 20 includes an upper deck 20t that is provided above the bottom 20b with an interval therebetween.

[0032]

As shown in Fig. 7, the connecting hull portion 20 includes a connecting pipe and connection wiring 21 therein. The connecting pipe and the connection wiring 21 connect a bow-side pipe and bow-side wiring 6 that are provided in the bow-side hull portion 5A to a stern-side pipe and stern-side wiring 7 that are provided in the stern-side hull portion 5B.

[0033]

In the joining step S13, the bow-side hull portion 5A and the stern-side hull portion 5B are joined to each other through the connecting hull portion 20. Specifically, the rear end 5r of the bow-side hull portion 5A and the bow-side connecting portion 20a of the connecting hull portion 20 are joined to each other by welding, and the front end 5f of the stern-side hull portion 5B and the stern-side connecting portion 20r of the connecting hull portion 20 are joined to each other by welding.

[0034]

In the joining step S13, the upper deck 20t of the connecting hull portion 20 and the upper decks 2t of the bow-side hull portion 5A and the stern-side hull portion 5B are further joined to each other by welding.

In the joining step S13, the bow-side pipe and the bow-side wiring 6 and the stern-side pipe and the stern-side wiring 7 are further connected to the connecting pipe and the connection wiring 21 in the connecting hull portion 20, respectively.

[0035]

Here, in a case where part or all of a manifold 23 provided in the existing marine vessel 1 is provided in the intermediate hull portion 5C, the manifold 23 may be provided in the connecting hull portion 20.

[0036]

A ballast tank 25 or the like that is used to improve the balance of the marine vessel 10B lost due to the removal of the intermediate hull portion 5C may be provided in the connecting hull portion 20 of the marine vessel 10B.

The connecting hull portion 20 can also be further provided with various
5 devices, such as a regasifier and a ballast treatment device (both not shown), an item storage space, and the like.

The connecting hull portion 20 is additionally provided between the bow-side hull portion 5A and the stern-side hull portion 5B in this way, so that the marine vessel 10B is manufactured. Since the connecting hull portion 20 is provided, the draft of the
10 marine vessel 10B can be made shallow. Accordingly, it is possible to cope with the transport of LNG at an LNG terminal where the depth of water is shallow.

[0037]

In the above-mentioned method of manufacturing the marine vessel 10B according to the second embodiment, the intermediate hull portion 5C including two
15 tanks 3 is removed and the connecting hull portion 20 is additionally provided between the bow-side hull portion 5A and the stern-side hull portion 5B. Accordingly, it is possible to manufacture the marine vessel 10B that includes the hull 2Y of which the length in the fore and aft direction D_a is shorter than that of the existing marine vessel 1 and the tanks 3 of which the number is smaller than that of the existing marine vessel 1,
20 from the existing marine vessel 1. The existing marine vessel 1 including the plurality of tanks 3 can be effectively used in this way.

[0038]

Further, even in a case where the hull cross-sectional shapes of the rear end 5r of the bow-side hull portion 5A and the front end 5f of the stern-side hull portion 5B are
25 significantly different from each other depending on the connecting hull portion 20, the

bow-side hull portion 5A and the stern-side hull portion 5B can be satisfactorily connected to each other through the connecting hull portion 20. Furthermore, various devices and the like can also be installed in the additionally provided connecting hull portion 20.

5 [0039]

Moreover, since the connecting hull portion 20 includes the bow-side connecting portion 20a and the stern-side connecting portion 20r, the connecting hull portion 20 can continuously connect the bow-side hull portion 5A to the stern-side hull portion 5B.

[0040]

10 Further, the connecting hull portion 20 includes the connecting pipe and the connection wiring 21. Accordingly, the bow-side pipe and the bow-side wiring 6 provided in the bow-side hull portion 5A and the stern-side pipe and the stern-side wiring 7 provided in the stern-side hull portion 5B can be connected to each other through the connecting pipe and the connection wiring 21, respectively.

15 Since the bow-side hull portion 5A and the stern-side hull portion 5B are part of the same existing marine vessel 1, the bow-side pipe and the bow-side wiring 6 and the stern-side pipe and the stern-side wiring 7 are often disposed at the same positions in a cross section orthogonal to the fore and aft direction Da. For this reason, the bow-side pipe and the bow-side wiring 6 and the stern-side pipe and the stern-side wiring 7 can be particularly easily connected to each other through the connecting pipe and the connection wiring 21, respectively.

[0041]

(Other modification examples)

The invention is not limited to the above-mentioned embodiments and includes various modifications of the above-mentioned embodiments without departing from the

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scope of the invention. That is, the specific shape, configuration, and the like mentioned in the embodiments are merely exemplary and can be appropriately modified.

For example, the intermediate hull portion 5C is adapted to include the second tank 3B and the third tank 3C from the bow 2a in the above-mentioned embodiments, but is not limited thereto. The intermediate hull portion 5C may include tanks 3 disposed at the intermediate portion in the fore and aft direction Da or may include tanks 3 close to the bow and the stern in the fore and aft direction Da, among the plurality of tanks 3.

Moreover, the number of tanks 3 of the existing marine vessel 1, the number of tanks 3 to be removed from the existing marine vessel 1, the number of the tanks 3 of each of the marine vessels 10A and 10B, and the shape of the tank 3 may be arbitrary.

In addition, the tank 3 is not limited to a tank that stores LNG, and may be a tank that stores other cargo, such as liquefied petroleum gas (LPG).

[Industrial Applicability]

[0042]

According to the marine vessel manufacturing method, an existing marine vessel including a plurality of tanks can be effectively used.

[Reference Signs List]

[0043]

- 1: Existing marine vessel
- 20 2: Hull
- 2C: Hull
- 2X: Hull
- 2Y: Hull
- 2a: Bow
- 25 2b: Bottom

	2h: Upper structure
	2k: Cargo loading section
	2r: Stern
	2s: Broadside
5	2t: Upper deck
	3, 3A, 3B, 3C, 3D: Tank
	3a: Upper portion
	5A: Bow-side hull portion
	5B: Stern-side hull portion
10	5C: Intermediate hull portion
	5f: Front end
	5r: Rear end
	6: Bow-side pipe and bow-side wiring
	7: Stern-side pipe and stern-side wiring
15	8: Connecting plate
	10A, 10B: Marine vessel
	20: Connecting hull portion
	20a: Bow-side connecting portion
	20r: Stern-side connecting portion
20	20c: Intermediate connecting portion
	20s: Broadside
	20b: Bottom
	20t: Upper deck
	21: Connecting pipe and connection wiring
25	23: Manifold

24: Cargo device

25: Ballast tank

Da: Fore and aft direction

S1, S11: Removing step

5

S2, S13: Joining step

S12: Connecting hull-inserting step

[CLAIMS]

What is claimed is:

[Claim 1]

A marine vessel manufacturing method comprising:

5 a removing step of removing an intermediate hull portion from an existing marine vessel including a hull where a plurality of tanks are arranged in a fore and aft direction, the intermediate hull portion being part of the hull in the fore and aft direction in which the some of the plurality of tanks are disposed; and

a joining step of joining a bow-side hull portion disposed closer to a bow than
10 the intermediate hull portion to a stern-side hull portion disposed closer to a stern than the intermediate hull portion.

[Claim 2]

The marine vessel manufacturing method according to Claim 1,

15 wherein in the joining step, a connecting hull portion that is configured to connect the bow-side hull portion to the stern-side hull portion is additionally disposed between a rear end of the bow-side hull portion and a front end of the stern-side hull portion.

20 [Claim 3]

The marine vessel manufacturing method according to Claim 2,

wherein the connecting hull portion integrally includes a bow-side connecting portion of which a hull cross-sectional shape orthogonal to the fore and aft direction is the same as that of the rear end of the bow-side hull portion, a stern-side connecting
25 portion of which a hull cross-sectional shape orthogonal to the fore and aft direction is

the same as that of the front end of the stern-side hull portion, and an intermediate connecting portion that connects the bow-side connecting portion to the stern-side connecting portion.

5 [Claim 4]

The marine vessel manufacturing method according to Claim 2 or 3,
wherein the connecting hull portion includes a connecting pipe and connection wiring that connect a bow-side pipe and bow-side wiring disposed in the bow-side hull portion to a stern-side pipe and stern-side wiring disposed in the stern-side hull portion.

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[Claim 5]

The marine vessel manufacturing method according to any one of Claims 1 to 4,
wherein the intermediate hull portion includes the some tanks, which are
disposed at an intermediate portion in the fore and aft direction, among the plurality of
15 tanks arranged in the fore and aft direction.