

DESCRIPTION

SHIP-SHAPED FLOATING STRUCTURE

5 TECHNICAL FIELD

[0001] The present invention relates to a ship-shaped floating structure that includes a ship hull and a retrofitted accommodation area on an upper deck of the ship hull.

10 BACKGROUND ART

[0002] When building a new ship-shaped floating structure, such as a cargo ship and an FPSO (Floating Production Storage and Offloading) installation and the like, an accommodation area is generally constructed on the upper deck of the ship
15 hull after the construction of the ship hull has been completed. Various types of tanks and pipes connecting the tanks to various facilities, and the like, are provided on the ship hull. Remote-control valves and pumps, and the like are provided on the pipes. The machinery such as the remote-
20 control valves and the pumps are controlled by a cargo control system. Normally, the cargo control system is provided inside a cargo control room that is located inside an accommodation area and used for monitoring and controlling cargo operation. Furthermore, a remote-control unit for the
25 monitoring and the controlling is also provided with the

cargo control system inside the cargo control room (see paragraph [0062] of Patent Document 1).

PRIOR ART DOCUMENT

PATENT DOCUMENT

5 [0003] PATENT DOCUMENT 1: NATIONAL PUBLICATION OF THE
TRANSLATED VERSION No. 2009-526704

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0004] The configuration of the conventional ship-shaped
10 floating structure makes it impossible to test the operations
of the machinery located at the ship hull until the
accommodation area is constructed on the upper deck of the
ship hull and the cargo control system located inside the
cargo control room is connected to the machinery of the ship
15 hull. Especially when the ship hull is built at a different
shipyard than the accommodation area and the topsides, it
takes relatively more time to start the test operations for
each machine of the ship hull, which wastes building time.
Another problem is caused by too many procedures required for
20 connecting each machine located at the ship hull to the cargo
control system located inside the accommodation area.

[0005] The present invention aims to enable test operations
for various types of machinery provided at the ship hull of
the ship-shaped floating structure in an early stage of the
25 building process.

MEANS TO SOLVE THE PROBLEMS

[0006] A ship-shaped floating structure of the present invention comprises a ship hull comprising an area for installing an accommodation area; a controlled facility
5 related to cargo handling that is located at the ship hull; and a controller for controlling the controlled facility; the controller being provided inside the ship hull.

[0007] A remote-control unit for remotely controlling the controller is provided in an area other than the inside of
10 the ship hull. Furthermore, the remote-control unit is preferably located inside the accommodation area.

[0008] A junction box for connecting signal wires that communicate between the controller and the remote-control unit may be provided on the ship hull at a boundary of the
15 accommodation area. The ship-shaped floating structure may comprise a floating production storage and offloading installation.

EFFECT OF THE INVENTION

[0009] According to the present invention, the test
20 operations for various types of machinery provided at the ship hull of the ship-shaped floating structure may commence in an early stage of the building processes.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

25 [FIG. 1] A schematic, partially enlarged cross-sectional view

of a ship-shaped floating structure according to a first embodiment of the present invention.

DESCRIPTION OF THE EMBODIMENTS

[0011] An embodiment of the present invention will be
5 described below with reference to the accompanying drawing.

Fig. 1 is a sectional view schematically illustrating a part of a ship-shaped floating structure of an embodiment of the present invention including an accommodation area.

[0012] The ship-shaped floating structure 10 of the present
10 embodiment, for example, is a floating structure such as a Floating Production Storage and Offloading (FPSO) installation and the like. The body portion of the ship-shaped floating structure 10 comprises a ship hull 12 and an accommodation area 16, with topsides (not shown) provided on
15 the upper deck 14. The accommodation area 16, for example, is provided in a predetermined area of the stern portion of the ship hull 12 and the topsides are located on the upper deck 14 in front of the accommodation area 16. However, the accommodation area 16 may also be provided in a predetermined
20 area of the stem portion, and furthermore, it may also be provided on both the stern and stem portions.

[0013] The ship hull 12, for example, is built at a first shipyard and then moved to a second shipyard where the accommodation area 16 had been constructed in parallel, such
25 that the accommodation area and the topsides are ready to be

installed on the upper deck 14 of the ship hull 12 when it arrives at the second shipyard. Note that, the ship hull 12 and the accommodation area 16 may also be built at the same shipyard as different blocks.

5 [0014] In a cargo area 18 inside the ship hull 12, a plurality of cargo tanks (not shown) for storing petroleum or gas and the like, and a plurality of ballast tanks (not shown) for holding ballast water, are located. A level gauge 22 of a radar type or a pressure type is provided on each
10 tank. Remote-control valves 24 are provided on pipes in the cargo area 18 to control their flow rates. Furthermore, other types of machinery 26 are also located in the cargo area 18.

[0015] The radar/pressure-type level gauge 22, remote-control
15 valves 24 and the other machinery 26 are connected to a cargo-handling control unit (controller) 28 located outside the cargo area, such as in an engine room 20 inside the ship hull 12, through signal wires routed across the upper deck 14. A plurality of systems 30, such as a cargo pump driver (a
20 steam turbine, an electric motor, a diesel engine, etc.) for handling the petroleum or gas inside the cargo tanks, a ballast pump driver (a steam turbine, an electric motor, a diesel engine, etc.) for collecting/draining the ballast water, an inert gas system for supplying an inert gas to the
25 tanks, and an automatic stripping system and the like is

located inside the engine room 20. Devices in the systems 30 are connected to the cargo-handling control unit 28 through signal wires.

[0016] The accommodation area 16 is located on the ship hull 12 above the engine room 20. On a boundary of the accommodation area 16 in the accommodation area installation area of the ship hull 12, a junction box 32 is provided. The junction box 32 is a facility for connecting the signal wires from a remote controller (a remote-control element) 36 located inside a cargo control room 34 of the accommodation area 16, which is installed/constructed on the ship hull 12 after the ship hull 12 is completed, to the signal wires from the cargo control unit 28 inside the engine room 20, where the remote controller 36 remotely operates the cargo control unit 28 inside the engine room 20.

[0017] The cargo control unit 28 is implemented with a radar/pressure-type level gauge control unit for operating the level gauge 22 of either the radar type or the pressure type, a control valve control unit for controlling the opening and closing operation of the remote-control valve 24, a control unit for controlling the other machinery 26 inside the cargo area 18, and control units included in the system 30 inside the engine room 20, such as a pump control unit for controlling the cargo pump driver (the steam turbine, the electric motor, the diesel engine, etc.) and the ballast pump

driver (the steam turbine, the electric motor, the diesel engine, etc.), and a control unit for an inert gas system control console, an inert gas system intrinsic safety barrier, an automatic stripping system relay unit and the like. Each
5 device can be controlled by the cargo control unit 28. Note that each of the control units implemented for the cargo control unit 28 can be remotely controlled using the remote controller 36 once the remote controller 36 of the accommodation area 16 is connected.

10 [0018] Namely, according to the present embodiment, the monitoring and control of the devices located at the ship hull 12, which were conventionally controllable only from a control console in the cargo (central) control room 34 of the accommodation area 16, are also available in the ship hull.
15 Thereby, at the stage when the construction of the ship hull 12 at the first shipyard is completed, the radar/pressure-type lever gauge 22, the remote-control valve 24, the other machinery 26 and the system 30, for example, can be operated by the cargo control unit 28 located in the engine room 20.
20 Therefore, unlike the conventional art, test operations of the above-discussed devices located at the ship hull 12 can be performed even before moving the ship hull 12 to the second shipyard, installing the accommodation area 16 and connecting the remote controller 36 to the junction box 32.
25 Furthermore, the efficiency of the building operations is

improved since a wire-connecting operation in the second shipyard consists of merely connecting the junction box 32 of the ship hull 12 to the remote controller 36.

[0019] Furthermore, the cargo control unit 28 is normally
5 used only for the test operation so that display devices and input devices of the cargo control unit 28 can be simplified and, for example, a portable computer and the like may be connected and used. On the other hand, the remote controller 36 of the cargo control room 34 does not have to function by
10 directly controlling each of the devices. For example, only the remote operating function of the cargo control unit 28 and displays for monitoring the devices are required for the remote controller 36, thus enabling its configuration to be simplified and downsized.

15 [0020] Note that, although the present embodiment is explained with respect to an FPSO installation, as an example, the present invention may also be applied to a cargo ship, such as an oil tanker. Furthermore, the operational objects of the cargo control unit and the remote controller may also
20 be devices unrelated to the cargo handling if they are in the ship hull. The remote controller may also be located in an area other than the accommodation area.

EXPLANATION OF REFERENCES

[0021]

25 10: ship-shaped floating structure

- 12: ship hull
- 14: upper deck
- 16: accommodation area
- 18: cargo area
- 5 20: engine room
- 22: radar/pressure-type level gauge
- 24: remote-control valve
- 28: cargo control unit (controller)
- 30: systems
- 10 32: junction box
- 34: cargo control room
- 36: remote controller

CLAIMS

1. A ship-shaped floating structure comprising:
 - a ship hull comprising an area for installing an
5 accommodation area;
 - a controlled facility related to cargo handling and
located inside the ship hull; and
 - a controller for controlling the controlled facility;
the controller being provided inside the ship hull.
- 10 2. The ship-shaped floating structure according to claim 1,
wherein a remote-control unit for remotely controlling the
controller is provided in an area other than the inside of
the ship hull.
3. The ship-shaped floating structure according to claim 2,
15 wherein the remote-control unit is located inside the
accommodation area.
4. The ship-shaped floating structure according to claim 3,
wherein a junction box for connecting signal wires that
communicate between the controller and the remote-control
20 unit is provided on the ship hull at a boundary of the
accommodation area.
5. The ship-shaped floating structure according to one of
claims 1 to 4, wherein the ship-shaped floating structure
comprises a floating production storage and offloading
25 installation.