Solution to Problem

[0015]

A liquefied-gas transport vessel for achieving the object described above is a liquefied-gas transport vessel loaded with a MOSS-type low-temperature liquefied gas tank, wherein a total loading capacity of the low-temperature liquefied gas tank is equal to or more than 60,000 m^3 but equal to or less than 90,000 m^3, the low-temperature liquefied gas tank includes a thermal insulation construction for LNG, a structural strength of the low-temperature liquefied gas tank and a structural strength of a cargo hold loaded with the low-temperature liquefied gas tank are configured so as to allow loading of LNG, ethane, ethylene or LPG, and a hull structure is configured so as to include a sufficient freeboard and stability with respect to heel for the navigation when performing a navigation by securing a capacity of a ballast water tank and by setting an arrangement of the ballast water tank and a shape of the hull, in each of three cases, that is, a case where all the low-temperature liquefied gas tanks are loaded with LNG, a case where all the low-temperature liquefied gas tanks are loaded with ethane, ethylene or LPG and a case where the low-temperature liquefied gas tanks are mix-loaded with two or more of LNG, ethane, ethylene and LPG.

[0016]

In this configuration, the total loading capacity of the low-temperature liquefied gas tanks is equal to or more than 60,000 m^3 but equal to or less than 90,000 m^3, and thus with this medium-sized liquefied-gas transport vessel, it is possible to efficiently perform the medium-sized and

strength of a cargo hold loaded with the low-temperature liquefied gas tank are configured to be structural strengths for LNG, ethane, ethylene or LPG; and a hull designing step of designing a hull structure so as to allow a navigation by securing a capacity of a ballast water tank and by setting an arrangement of the ballast water tank and a shape of the hull, in each of three cases, that is, a case where all the low-temperature liquefied gas tanks are loaded with LNG, a case where all the low-temperature liquefied gas tanks are loaded with ethane, ethylene or LPG and a case where the low-temperature liquefied gas tanks are mix-loaded with two or more of LNG, ethane, ethylene and LPG.

[0030]

Namely, in particular, when mixed loading can be performed, the MOSS-type cargo tank is designed so as to be capable of coping with thermal contraction and a high load such that the requirement for the extremely low temperature of LNG is satisfied and such that the requirement for loading of the high specific gravity of ethane, ethylene or LPG is satisfied. The liquefied-gas transport vessel transports low-temperature liquefied gases such as LNG, ethane, ethylene and LPG and can also be used as a dedicated vessel for each of the liquefied gases, and the liquefied-gas transport vessel is configured so as to be able to cope with being used as a multiple-gas carrier that can change cargos in accordance with the type of liquefied gas, by additional provision of a liquefying device and a gas processing device when needed.

[0031]

In the liquefied-gas transport vessel designing method

CLAIMS

1. A liquefied-gas transport vessel loaded with a MOSS-type low-temperature liquefied gas tank,

wherein a total loading capacity of the low-temperature liquefied gas tank is equal to or more than 60,000 m^3 but equal to or less than 90,000 m^3,

the low-temperature liquefied gas tank includes a thermal insulation construction for LNG,

a structural strength of the low-temperature liquefied gas tank and a structural strength of a cargo hold loaded with the low-temperature liquefied gas tank are configured so as to allow loading of LNG, ethane, ethylene or LPG, and

a hull structure is configured so as to include a sufficient freeboard and stability with respect to heel for the navigation when performing a navigation by securing a capacity of a ballast water tank and by setting an arrangement of the ballast water tank and a shape of the hull, in each of three cases, that is, a case where all the low-temperature liquefied gas tanks are loaded with LNG, a case where all the low-temperature liquefied gas tanks are loaded with ethane, ethylene or LPG and a case where the low-temperature liquefied gas tanks are mix-loaded with two or more of LNG, ethane, ethylene and LPG.

2. The liquefied-gas transport vessel according to claim 1, wherein a loading number of the low-temperature liquefied gas tanks is three, and a capacity of one tank is equal to or more than 20,000 m^3 but equal to or less than 30,000 m^3.

3. The liquefied-gas transport vessel according to claim 1 or 2, wherein a cargo machine room is arranged in front of the low-temperature liquefied gas tank in a forefront portion, and in one area, several areas or all areas between the low-temperature liquefied gas tanks, a manifold for piping connection is arranged that connects piping on a cargo-handling facility on land or on sea.

4. A liquefied-gas transport vessel designing method of a liquefied-gas transport vessel loaded with a MOSS-type low-temperature liquefied gas tank, the method comprising:

a tank designing step of performing a design such that a total loading capacity of the low-temperature liquefied gas tank is equal to or more than 60,000 m^3 but equal to or less than 90,000 m^3, such that the low-temperature liquefied gas tank has a thermal insulation specification for LNG and such that a structural strength of the low-temperature liquefied gas tank and a structural strength of a cargo hold loaded with the low-temperature liquefied gas tank are configured to be structural strengths for LNG, ethane, ethylene or LPG; and

a hull designing step of designing a hull structure so as to allow a navigation by securing a capacity of a ballast water tank and by setting an arrangement of the ballast water tank and a shape of the hull, in each of three cases, that is, a case where all the low-temperature liquefied gas tanks are loaded with LNG, a case where all the low-temperature liquefied gas tanks are loaded with ethane, ethylene or LPG and a case where the low-temperature liquefied gas tanks are mix-loaded with two or more of LNG, ethane, ethylene and LPG.

5. The liquefied-gas transport vessel designing method according to claim 4, wherein the tank designing step includes a tank capacity determination step of designing the low-temperature liquefied gas tank such that a loading number of the low-temperature liquefied gas tanks is three and such that a capacity of one tank is equal to or more than 20,000 m^3 but equal to or less than 30,000 m^3.

6. The liquefied-gas transport vessel designing method according to claim 4 or 5, wherein the hull designing step includes an existing tank utilization step in which, on an assumption that the low-temperature liquefied gas tank in an existing LNG vessel having a MOSS-type low-temperature liquefied gas tank whose capacity is equal to or more than 125,000 m^3 but equal to or less than 135,000 m^3 is removed and mounted, the hull structure is designed in accordance with the low-temperature liquefied gas tank in the existing LNG vessel.

7. The liquefied-gas transport vessel designing method according to any one of claims 4 to 6, the method further comprising:

a tank periphery designing step in which a cargo machine room is arranged in front of the low-temperature liquefied gas tank in a forefront portion, and in which in one area, several areas or all areas between the low-temperature liquefied gas tanks, there is arranged a manifold for piping connection that connects piping on a cargo-handling facility on land or on sea.

CLAIMS

1. A liquefied-gas transport vessel loaded with a MOSS-type low-temperature liquefied gas tank,

wherein a total loading capacity of the low-temperature liquefied gas tank is equal to or more than 60,000 m^3 but equal to or less than 90,000 m^3,

the low-temperature liquefied gas tank includes a thermal insulation construction for LNG,

a structural strength of the low-temperature liquefied gas tank and a structural strength of a cargo hold loaded with the low-temperature liquefied gas tank are configured so as to allow loading of LNG, ethane, ethylene or LPG, and

a hull structure is configured so as to include a sufficient freeboard and stability with respect to heel for the navigation when performing a navigation, in each of three cases, that is, a case where all the low-temperature liquefied gas tanks are loaded with LNG, a case where all the low-temperature liquefied gas tanks are loaded with ethane, ethylene or LPG and a case where the low-temperature liquefied gas tanks are mix-loaded with two or more of LNG, ethane, ethylene and LPG.

2. The liquefied-gas transport vessel according to claim 1,

wherein a loading number of the low-temperature liquefied gas tanks is three, and a capacity of one tank is equal to or more than 20,000 m^3 but equal to or less than 30,000 m^3.

3. The liquefied-gas transport vessel according to claim 1 or 2,

wherein a cargo machine room is arranged in front of the low-temperature liquefied gas tank in a forefront portion, and in one area, several areas or all areas between the low-temperature liquefied gas tanks, a manifold for piping connection is arranged that connects piping on a cargo-handling facility on land or on sea.

4. A liquefied-gas transport vessel designing method of a liquefied-gas transport vessel loaded with a MOSS-type low-temperature liquefied gas tank, the method comprising:

a tank designing step of performing a design such that a total loading capacity of the low-temperature liquefied gas tank is equal to or more than 60,000 m^3 but equal to or less than 90,000 m^3, such that the low-temperature liquefied gas tank has a thermal insulation specification for LNG and such that a structural strength of the low-temperature liquefied gas tank and a structural strength of a cargo hold loaded with the low-temperature liquefied gas tank are configured to be structural strengths for LNG, ethane, ethylene or LPG; and

a hull designing step of designing a hull structure so as to allow a navigation, in each of three cases, that is, a case where all the low-temperature liquefied gas tanks are loaded with LNG, a case where all the low-temperature liquefied gas tanks are loaded with ethane, ethylene or LPG and a case where the low-temperature liquefied gas tanks are mix-loaded

with two or more of LNG, ethane, ethylene and LPG.

5. The liquefied-gas transport vessel designing method according to claim 4,

wherein the tank designing step includes a tank capacity determination step of designing the low-temperature liquefied gas tank such that a loading number of the low-temperature liquefied gas tanks is three and such that a capacity of one tank is equal to or more than 20,000 m^3 but equal to or less than 30,000 m^3.

6. The liquefied-gas transport vessel designing method according to claim 4 or 5,

wherein the hull designing step includes an existing tank utilization step in which, on an assumption that the low-temperature liquefied gas tank in an existing LNG vessel having a MOSS-type low-temperature liquefied gas tank whose capacity is equal to or more than 125,000 m^3 but equal to or less than 135,000 m^3 is removed and mounted, the hull structure is designed in accordance with the low-temperature liquefied gas tank in the existing LNG vessel.

7. The liquefied-gas transport vessel designing method according to any one of claims 4 to 6, the method further comprising:

a tank periphery designing step in which a cargo machine room is arranged in front of the low-temperature liquefied gas

tank in a forefront portion, and in which in one area, several areas or all areas between the low-temperature liquefied gas tanks, there is arranged a manifold for piping connection that connects piping on a cargo-handling facility on land or on sea.