【CLAIMS】

【Claim 1】

A boil-off gas (BOG) reliquefaction system comprising:

a compressor compressing BOG;

a heat exchanger cooling the BOG compressed by the compressor through heat exchange using BOG not compressed by the compressor as a refrigerant;

a pressure reducer disposed downstream of the heat exchanger and reducing a pressure of fluid cooled by the heat exchanger; and

a gas/liquid separator disposed downstream of the pressure reducer and separating the BOG into liquefied gas generated through reliquefaction and gaseous BOG;

wherein the liquefied gas separated by the gas/liquid separator is supplied to the storage tank, and the BOG separated by the gas/liquid separator is supplied to the heat exchanger,

a cryogenic oil filter disposed between the pressure reducer and the gas/liquid separator to filter a lubricant oil mixed with the fluid subjected to pressure reduction by the pressure reducer,

wherein the compressor comprises at least one oil-lubrication type cylinder.

【Claim 2】

A BOG reliquefaction system comprising:

a compressor compressing BOG;

a heat exchanger cooling the BOG compressed by the compressor through heat exchange using BOG not compressed by the compressor as a refrigerant;

a pressure reducer disposed downstream of the heat exchanger and reducing a pressure of fluid cooled by the heat exchanger; and

a gas/liquid separator disposed downstream of the pressure reducer and separating the BOG into liquefied gas generated through reliquefaction and gaseous BOG;

wherein the liquefied gas separated by the gas/liquid separator is supplied to a storage tank, and the BOG separated by the gas/liquid separator is supplied to the heat exchanger,

a cryogenic oil filter disposed on a line which the liquefied gas separated by the gas/liquid separator is supplied to the storage tank,

wherein the compressor comprises at least one oil-lubrication type cylinder.

【Claim 3】

A BOG reliquefaction system comprising:

a compressor compressing BOG;

a heat exchanger cooling the BOG compressed by the compressor through heat exchange using BOG not compressed by the compressor as a refrigerant;

a pressure reducer disposed downstream of the heat exchanger and reducing a pressure of fluid cooled by the heat exchanger; and

a gas/liquid separator disposed downstream of the pressure reducer and separating the BOG into liquefied gas generated through reliquefaction and gaseous BOG;

wherein the liquefied gas separated by the gas/liquid separator is supplied to a storage tank, and the BOG separated by the gas/liquid separator is supplied to the heat exchanger,

a cryogenic oil filter disposed on a line which the gaseous BOG separated by the gas/liquid separator is supplied to the heat exchanger,

wherein the compressor comprises at least one oil-lubrication type cylinder.

【Claim 4】

The BOG reliquefaction system according to any one of claims 1 to 3, wherein the cryogenic oil filter separates lubricant oil having a solid phase.

【Claim 5】

The BOG reliquefaction system according to claim 1 or 3, wherein the cryogenic oil filter is an upward discharge type.

【Claim 6】

The BOG reliquefaction system according to claim 2, wherein the cryogenic oil filter is a downward discharge type.

【Claim 7】The BOG reliquefaction system according to any one of claims 1 to 3, wherein the compressor compresses the BOG to a pressure of 150 bar to 350 bar.

【Claim 8】

The BOG reliquefaction system according to any one of claims 1 to 3, wherein the compressor compresses the BOG to a pressure of 80 bar to 250 bar.

【Claim 9】

The BOG reliquefaction system according to any one of claims 1 to 3, wherein the heat exchanger comprises a micro-channel type fluid channel.

【Claim 10】

The BOG reliquefaction system according to claim 9, wherein the heat exchanger is a printed circuit heat exchanger (PCHE).

【Claim 11】

The BOG reliquefaction system according to any one of claims 1 to 3, further comprising:

a bypass line through which the BOG is supplied to the compressor after bypassing the heat exchanger.

【Claim 12】

The BOG reliquefaction system according to claim 11, further comprising:

a first valve disposed upstream of a cold fluid channel of the heat exchanger and regulating a flow rate of fluid and opening/closing of a corresponding supply line,

wherein the bypass line is branched from the corresponding supply line upstream of the first valve.

【Claim 13】

The BOG reliquefaction system according to claim 11, further comprising:

a second valve disposed downstream of a cold fluid channel of the heat exchanger and regulating a flow rate of fluid and opening/closing of a corresponding supply line,

wherein the bypass line is joined to the corresponding supply line downstream of the second valve.

【Claim 14】

The BOG reliquefaction system according to any one of claims 1 to 3, further comprising:

a non-cryogenic oil filter disposed downstream of the compressor and separating lubricant oil from the BOG.

【Claim 15】The BOG reliquefaction system according to claim 14, wherein the non-cryogenic oil filter separates lubricant oil having a vapor phase or mist phase.