{CLAIMS}

{Claim 1}

A boil-off gas processing system comprising:

a boiler configured to combust a boil-off gas generated in a tank storing a liquefied gas and generate steam;

a re-liquefaction device configured to perform a liquefaction process on the boil-off gas generated in the tank;

a separator unit configured to separate, into a gas phase and a liquid phase, a boil-off gas in a gas-liquid mixture state on which the liquefaction process has been performed by the re-liquefaction device;

a first pipe configured to guide a gas-phase boil-off gas separated by the separator unit to a propulsion machinery internal-combustion engine configured to combust a boil-off gas;

a second pipe configured to guide the gas-phase boil-off gas separated by the separator unit to the boiler;

a switch unit configured to switch whether to guide the gas-phase boil-off gas separated by the separator unit to the propulsion machinery internal-combustion engine or to the boiler;

a nitrogen content measurement unit configured to measure a nitrogen content of the gas-phase boil-off gas separated by the separator unit;

a determination unit configured to determine a supply destination of the gas-phase boil-off gas separated by the separator unit based on the nitrogen content measured by the nitrogen content measurement unit; and

a switch control unit configured to control the switch unit so that the gas-phase boil-off gas separated by the separator unit is supplied to the supply destination determined by the determination unit.

{Claim 2}

A boil-off gas processing system comprising:

a boiler configured to combust a boil-off gas generated in a tank storing a liquefied gas and generate steam;

a re-liquefaction device configured to perform a liquefaction process on the boil-off gas generated in the tank;

a separator unit configured to separate, into a gas phase and a liquid phase, a boil-off gas in a gas-liquid mixture state on which the liquefaction process has been performed by the re-liquefaction device;

a first pipe configured to guide a gas-phase boil-off gas separated by the separator unit to a propulsion machinery internal-combustion engine configured to combust a boil-off gas;

a second pipe configured to guide the gas-phase boil-off gas separated by the separator unit to the boiler;

a switch unit configured to switch whether to guide the gas-phase boil-off gas separated by the separator unit to the propulsion machinery internal-combustion engine or to the boiler;

a heat quantity measurement unit configured to measure a quantity of heat of the gas-phase boil-off gas separated by the separator unit;

a determination unit configured to determine a supply destination of the gas-phase boil-off gas separated by the separator unit based on the quantity of heat measured by the heat quantity measurement unit; and

a switch control unit configured to control the switch unit so that the gas-phase boil-off gas separated by the separator unit is supplied to the supply destination determined by the determination unit.

{Claim 3}

A boil-off gas processing system comprising:

a boiler configured to combust a boil-off gas generated in a tank storing a liquefied gas and generate steam;

a re-liquefaction device configured to perform a liquefaction process on the boil-off gas generated in the tank;

a separator unit configured to separate, into a gas phase and a liquid phase, a boil-off gas in a gas-liquid mixture state on which the liquefaction process has been performed by

the re-liquefaction device;

a first pipe configured to guide a gas-phase boil-off gas separated by the separator unit to a propulsion machinery internal-combustion engine configured to combust a boil-off gas;

a second pipe configured to guide the gas-phase boil-off gas separated by the separator unit to the boiler;

a switch unit configured to switch whether to guide the gas-phase boil-off gas separated by the separator unit to the propulsion machinery internal-combustion engine or to the boiler;

a pressure measurement unit configured to measure a pressure of the boiler;

a determination unit configured to determine a supply destination of the gas-phase boil-off gas separated by the separator unit based on the pressure measured by the pressure measurement unit when flame is formed in the boiler; and

a switch control unit configured to control the switch unit so that a boil-off gas is supplied to the supply destination determined by the determination unit,

wherein when the pressure measured by the pressure measurement unit is lower than a predetermined threshold, the determination unit determines that a supply destination of the gas-phase boil-off gas separated by the separator unit is the boiler.

{Claim 4}

A boil-off gas processing system comprising:

a boiler configured to combust a boil-off gas generated in a tank storing a liquefied gas and generate steam;

a re-liquefaction device configured to perform a liquefaction process on the boil-off gas generated in the tank;

a separator unit configured to separate, into a gas phase and a liquid phase, a boil-off gas in a gas-liquid mixture state on which the liquefaction process has been performed by the re-liquefaction device;

a first pipe configured to guide a gas-phase boil-off gas separated by the separator unit to a propulsion machinery internal-combustion engine configured to combust a boil-off gas;

a second pipe configured to guide the gas-phase boil-off gas separated by the separator unit to the boiler;

a switch unit configured to switch whether to guide the gas-phase boil-off gas separated by the separator unit to the propulsion machinery internal-combustion engine or to the boiler;

a determination unit configured to determine a supply destination of the gas-phase boil-off gas separated by the separator unit; and

a switch control unit configured to control the switch

unit so that a boil-off gas is supplied to the supply destination determined by the determination unit,

wherein when flame is formed in the boiler, the determination unit determines that a supply destination of the gas-phase boil-off gas separated by the separator unit is the boiler.

{Claim 5}

A ship comprising the boil-off gas processing system according to any one of claims 1 to 4.