CLAIMS

1. A combine cycle power generation system, comprising:

a gas engine using combustible gas for fuel thereof;

a first power generator driven by the gas engine;

a refrigerant turbine using hydrocarbon refrigerant for working fluid thereof;

a second power generator driven by the refrigerant turbine;

a first heater for heating the refrigerant using cooling liquid for the gas engine as a heat source thereof;

a second heater for further heating the refrigerant heated by the first heater by using exhaust gas of the gas engine as a heat source; and

a condenser for condensing the refrigerant expelled from the refrigerant turbine.

2. A combine cycle power generation system, comprising:

a gas engine using combustible gas for fuel thereof;

a first power generator driven by the gas engine;

a refrigerant turbine using hydrocarbon refrigerant for working fluid thereof;

a second power generator driven by the refrigerant turbine;

a first heater for heating the cooling liquid of the gas engine using exhaust gas from the gas engine as a heat source thereof;

a second heater for heating the refrigerant using the cooling liquid heated in the first heater as a heat source thereof; and

a condenser for condensing the refrigerant expelled from the refrigerant turbine.

3. The combine cycle power generation system according to claim 1 or 2, wherein the condenser is configured to condense the refrigerant by using liquefied natural gas.

4. The combine cycle power generation system according to any one of claims 1 to 3, wherein the combustible gas consists of boil off gas of liquefied natural gas.

5. The combine cycle power generation system according to claim 1 or 2, wherein the condenser is configured to condense the refrigerant by using brine.

6. The combine cycle power generation system according to any one of claims 1 to 5, wherein the refrigerant consists of a mixture of methane and propane.

CLAIMS

1. A combine cycle power generation system, comprising:
a gas engine using combustible gas for fuel thereof;
a first power generator driven by the gas engine;
a refrigerant turbine using hydrocarbon refrigerant for working fluid thereof;
a second power generator driven by the refrigerant turbine;
a condenser for condensing the refrigerant expelled from the refrigerant turbine by using a cold source;
a first heater for heating the refrigerant condensed by the condenser using cooling liquid for the gas engine as a heat source thereof;
a second heater for further heating the refrigerant heated by the first heater by using exhaust gas of the gas engine as a heat source; and
a pipe connecting the condenser and a site where the cold source is generated,,
wherein the refrigerant turbine is driven by the refrigerant heated by the second heater.

2. A combine cycle power generation system, comprising:
a gas engine using combustible gas for fuel thereof;
a first power generator driven by the gas engine;
a refrigerant turbine using hydrocarbon refrigerant for working fluid thereof;
a second power generator driven by the refrigerant turbine;
a condenser for condensing the refrigerant expelled from the refrigerant turbine by using a cold source;
a first heater for heating the cooling liquid of the gas engine using exhaust gas from the gas engine as a heat source thereof;
a second heater for heating the refrigerant condensed by the condenser using the cooling liquid heated in the first heater as a heat source thereof; and
a pipe connecting the condenser and a site where the cold source is generated,
wherein the refrigerant turbine is driven by the refrigerant heated by the second heater.

3. The combine cycle power generation system according to claim 1 or 2, wherein the cold source is liquefied natural gas generated at an LNG base, and the condenser is configured to condense the refrigerant by using the liquefied natural gas.

4. The combine cycle power generation system according to any one of claims 1 to 3, wherein the combustible gas consists of boil off gas of liquefied natural gas.

5. The combine cycle power generation system according to claim 1 or 2, wherein the cold source is brine from a refrigerator using plant low temperature waste heat as a heat source, and the condenser is configured to condense the refrigerant by using the brine.

6. The combine cycle power generation system according to any one of claims 1 to 5, wherein the refrigerant consists of a mixture of methane and propane.

7. The combine cycle power generation system according to any one of claims 1 to 6, wherein the condenser is configured to condense the refrigerant by using a cold source having a temperature lower than the water freezing point, and wherein the combine cycle power generation system further comprise a preheater that preheats the refrigerant condensed by the condenser to a temperature which will not cause the cooling liquid to freeze before the refrigerant condensed by the condenser is heated by using the cooling liquid as a heat source.