CLAIMS

1. A power generation system for a ship, the system comprising:

a gas turbine that is driven by combustion gas;

a first generator that is driven by the gas turbine and generates power;

a flue gas economizer that generates steam by recovering heat from flue gas discharged from the gas turbine;

a boiler including a furnace and a steam drum;

a circulation flow path that is connected so as to use the steam drum as a steam separator for the flue gas economizer;

a circulating water pump provided in the circulation flow path;

a steam turbine that is driven by steam from the steam drum;

a second generator that is driven by the steam turbine and generates power; and

a control unit that has an operation mode of activating the circulating water pump and feeding water to the flue gas economizer when steam is not generated in the boiler.

2. The power generation system for a ship according to claim 1, comprising a control unit that controls a burner provided in the furnace, wherein

the control unit has, as an operation mode of the boiler, a boiler operation mode of igniting the burner in accordance with a load of the gas turbine.

3. The power generation system for a ship according to claim 1 or 2, comprising a control unit that controls a burner provided in the furnace, wherein

the control unit has, as an operation mode of the boiler, a boiler operation mode of igniting the burner during rated operation of the gas turbine.

4. The power generation system for a ship according to claim 1, comprising a control unit that has, as an operation mode, a first operation mode in which only the second generator performs power generation by stopping the gas turbine to ignite a burner provided in the furnace, and introducing steam from the steam drum into the steam turbine, and a second operation mode in which the first generator and the second generator perform power generation by driving the gas turbine, without igniting the burner, and by introducing steam generated by the flue gas economizer from the steam drum to the steam turbine, wherein

the control unit selects the operation mode in accordance with power needs for a ship.

5. The power generation system for a ship according to claim 4, wherein the control unit selects the first operation mode under a first load where a small amount of power is needed for the ship, and selects the second operation mode under a second load where a load is increased from the low load.

6. The power generation system for a ship according to claim 4, wherein the control unit has, as the operation mode, a third operation mode in which the first generator and the second generator perform power generation by igniting the burner provided in the furnace, and introducing steam from the steam drum into the steam turbine.

7. The power generation system for a ship according to claim 5, wherein the control unit has, as the operation mode, a third operation mode in which the first generator and the second generator perform power generation by igniting the burner provided in the furnace, and introducing steam from the steam drum into the steam turbine.

8. The power generation system for a ship according to claim 7, wherein the control unit selects the third operation mode under a second load where a load is increased from the second load.

9. The power generation system for a ship according to any one of claims 4 to 8, comprising a boiler flue gas pipe through which flue gas is directed from the boiler to the flue gas economizer.

10. The power generation system for a ship according to any one of claims 4 to 8, comprising:

a flue gas economizer for a boiler that heats steam by recovering heat from flue gas discharged from the boiler; and

a boiler flue gas pipe through which flue gas discharged from the boiler is directed to the flue gas economizer for a boiler.

11. The power generation system for a ship according to any one of claims 1 to 10, comprising:

a boiler superheating pipe that connects the steam drum and the steam turbine to direct steam discharged from the drum to the steam turbine; and

a boiler superheater that is provided on the boiler superheating pipe, wherein

the boiler superheater is located within the furnace.

12. A power generation method for a power generation system for a ship, the method comprising:

a gas turbine driving step of driving a gas turbine by

combustion gas;

a first power generating step of generating power by a first generator driven by the gas turbine;

a heat recovering step of recovering heat, in a flue gas economizer, from flue gas discharged from the gas turbine;

a steam separating step of separating steam from water, the steam being obtained in the heat recovering step by a steam drum in a boiler including a furnace and the steam drum;

a steam turbine driving step of driving a steam turbine by steam obtained in the steam separating step;

a second power generating step of generating power by a second generator driven by the steam turbine; and

a water feeding step of activating a circulating water pump and feeding water to the flue gas economizer when steam is not generated in the boiler.

13. A power generation plant comprising:

a gas turbine that is driven by combustion gas;

a first generator that is driven by the gas turbine and generates power;

a flue gas economizer that generates steam by recovering heat from flue gas discharged from the gas turbine;

a boiler including a furnace and a steam drum;

a circulation flow path that is connected so as to use the steam drum as a steam separator for the flue gas

economizer;

a steam turbine that is driven by steam from the steam drum;

a second generator that is driven by the steam turbine and generates power, and

a control unit that has, as an operation mode, a first operation mode in which only the second generator performs power generation by stopping the gas turbine to ignite a burner provided in the furnace, and introducing steam from the steam drum into the steam turbine, and a second operation mode in which the first generator and the second generator perform power generation by driving the gas turbine, without igniting the burner, and by introducing steam generated by the flue gas economizer from the steam drum to the steam turbine, wherein

the control unit selects the first operation mode under a first load where a small amount of power is needed, and selects the second operation mode under a second load where a load is increased from the low load.