[Document Name] Claims

[Claim 1]

A flare gas combustion treatment system for combustion treatment of flare gas, the system comprising:

a vapor destruction unit (VDU) and an enclosed ground flare (EGF); and

an information processor that controls the entire system, wherein

one end of a flare gas line, through which the flare gas is supplied, is connected to each of the VDU and the EGF,

a supply/shut-off device that allows/shuts off a flow of the flare gas and controls a flow rate of the flare gas is provided in the middle of a flare gas line toward the VDU and in the middle of a flare gas line toward the EGF,

when the flare gas is subjected to combustion treatment by the VDU, the information processor operates the supply/shut-off device for the EGF to close the flare gas line toward the EGF, and

when the flare gas is subjected to the combustion treatment by the EGF, the information processor operates the supply/shut-off device for the VDU to close the flare gas line toward the VDU or control the flow rate, wherein the VDU includes a temperature detector that detects the temperature inside the VDU, and an auxiliary fuel regulation arithmetic device that detects the temperature inside the VDU through the temperature detector and operates an auxiliary fuel flow rate regulator on the basis of the temperature to regulate the amount of auxiliary fuel to be supplied to the VDU.

[Claim 2]

The flare gas combustion treatment system according to claim 1, wherein

the flare gas that has low concentration of a combustible content in the flare gas and is not self-combustible is subjected to the combustion treatment by the VDU.

[Claim 3]

The flare gas combustion treatment system according to claim 1 or 2, wherein

an air intake damper that draws air from outside is provided to the VDU,

the information processor controls an amount of auxiliary fuel when a temperature inside the VDU is increased to be equal to or higher than a preset temperature, and

in the case where the temperature inside the VDU is equal to or higher than the preset temperature even after the amount of the auxiliary fuel is controlled, the air intake damper is opened to draw the air into the VDU from the outside by natural suction.

[Claim 4]

The flare gas combustion treatment system according to any one of claims 1 to 3, wherein

when the temperature inside the VDU is equal to or higher than the preset temperature, the information processor operates the supply/shut-off device for the VDU to close the flare gas line toward the VDU or control the flow rate, and operates the supply/shut-off device for the EGF to open the flare gas line toward the EGF.

[Claim 5]

The flare gas combustion treatment system according to any one of claims 1 to 4, wherein

when a flare gas pressure becomes equal to or lower than a preset value of the flare gas pressure in association with a reduction in the flow rate of the flare gas, the information processor operates the supply/shut-off device for the EGF to close the flare gas line toward the EGF, and operates the supply/shut-off device for the VDU to open the flare gas line toward the VDU or control the flow rate.

[Claim 6]

The flare gas combustion treatment system according to any one of claims 1 to 5, wherein

another end of the flare gas line is connected to a combustible gas reservoir for storing the flare gas and provided with a safety valve that is actuated when being over-pressurized,

a distance from the one end to the other end of the flare gas line has such a length that it takes at least several seconds for the flare gas that has flowed out from the other end to reach the one end,

a safety valve detector that detects actuation of the safety valve is provided in the middle of the flare gas line near the combustible gas reservoir,

when a pressure inside the combustible gas reservoir becomes over-pressurized, and the safety valve is thereby actuated, the safety valve detector detects the actuation and outputs a signal indicating the actuation to the information processor, and

when receiving the signal, the information processor operates the supply/shut-off device for the VDU to close the flare gas line toward the VDU or control the flow rate, and operates the supply/shut-off device for the EGF to open the flare gas line toward the EGF.