CLAIMS

[Claim 1]

A gas supply system comprising:

a gas supply unit for supplying a gas to a production facility; and

a leaked gas detection unit connected to the gas supply unit to detect a gas leaked from the gas supply unit,

wherein the gas supply unit comprises:

a gas storage container storing the gas;

a gas supply pipe connecting the gas storage container and the production facility; and

a container storage cabinet accommodating and storing the gas storage container.

[Claim 2]

The gas supply system of claim 1,

wherein the leaked gas detection unit comprises:

a leaked gas detector detecting the leaked gas;

a leaked gas detection transfer pipe connecting the container storage cabinet and the leaked gas detector; and

a leaked gas detection transfer device disposed on the leaked gas detection transfer pipe to transfer the leaked gas.

[Claim 3]

The gas supply system of claim 1,

further comprising a leaked gas treatment unit connected to the gas supply unit to treat the leaked gas.

[Claim 4]

The gas supply system of claim 3,

wherein the leaked gas treatment unit is connected to the leaked gas detection unit by wire or wirelessly to communicate therewith, and

the leaked gas detection unit controls an operation of the leaked gas treatment unit.

[Claim 5]

The gas supply system of claim 3,

wherein the leaked gas treatment unit comprises:

a first gas discharge pipe connected to the container storage cabinet to discharge a gas in the container storage cabinet;

a gas flow switcher connected to the first gas discharge pipe to switch a flow direction of the gas;

a second gas discharge pipe connected to the gas flow switcher to discharge the gas transferred through the first gas discharge pipe;

a third gas discharge pipe separated from the second gas discharge pipe and connected to the gas flow switcher to discharge the gas transferred through the first gas discharge pipe; and

a leaked gas treater connected to the third gas discharge pipe to neutralize the gas transferred through the first gas discharge pipe and the third gas discharge pipe.

[Claim 6]

The gas supply system of claim 5,

wherein the leaked gas treatment unit further comprises a gas transfer device disposed on the first gas discharge pipe to draw and transfer the gas in the container storage cabinet.

[Claim 7]

The gas supply system of claim 5,

wherein the leaked gas treatment unit further comprises:

a neutralizing agent storage tank disposed adjacent to the leaked gas treater to store neutralizing agent;

a neutralizing agent supply pipe connecting the leaked gas treater and the neutralizing agent storage tank; and

a neutralizing agent supply pump disposed on the neutralizing agent supply pipe to supply the neutralizing agent to the leaked gas treater.

[Claim 8]

The gas supply system of claim 7,

wherein the leaked gas treatment unit further comprises:

a first gas transfer device disposed on the second gas discharge pipe to control transfer of the gas through the first gas discharge pipe and the second gas discharge pipe; and

a second gas transfer device disposed on the third gas discharge pipe to control transfer of the gas through the first gas discharge pipe and the third gas discharge pipe.

[Claim 9]

The gas supply system of claim 8,

wherein the leaked gas detection unit is connected to the gas flow switcher, the first gas transfer device, the second gas transfer device, and the neutralizing agent supply pump by wire or wirelessly to communicate therewith, and

the leaked gas detection unit provides a leaked gas detection signal to the gas flow switcher, the first gas transfer device, the second gas transfer device, and the neutralizing agent supply pump when the leaked gas is detected.

[Claim 10]

The gas supply system of claim 8,

further comprising a system controller connected to the leaked gas detection unit and the leaked gas treatment unit to control operations of the leaked gas detection unit and the leaked gas treatment unit,

wherein the system controller is connected to the leaked gas detection unit, the gas flow switcher, the first gas transfer device, the second gas transfer device, and the neutralizing agent supply pump by wire or wirelessly to communicate therewith,

the leaked gas detection unit provides a leaked gas detection signal to the system controller when the leaked gas is detected, and

the system controller controls operations of the gas flow switcher, the first gas transfer device, the second gas transfer

device, and the neutralizing agent supply pump according to the leaked gas detection signal.

[Claim 11]

The gas supply system of claim 8,

wherein an operating speed of the first gas transfer device and an operating speed of the second gas transfer device are set to satisfy Operating Condition 1 and Operating Condition 2 below:

Operating Condition 1: First transfer time ≥ Leaked gas detection time

Operating Condition 2: First transfer time + Second transfer time ≥ Leaked gas detection time + Neutralizing agent supply pump operation time (Leaked gas treater operation time)

(the first transfer time represents a time period during which the leaked gas is transferred through the first gas discharge pipe at the operating speed of the first gas transfer device, the second transfer time represents a time period during which the leaked gas is transferred through the first gas discharge pipe and the third gas discharge pipe at the operating speed of the second gas transfer device, the leaked gas detection time represents a time period required for the leaked gas detection unit to detect the leaked gas, and the neutralizing agent supply pump operation time represents a time period from when the leaked gas is detected and an operation of the neutralizing agent supply pump starts to when the neutralizing

agent starts to be supplied to the leaked gas treater).

[Claim 12]

The gas supply system of claim 1,

wherein the container storage cabinet has a through-hole,

the gas supply unit further comprises a through-hole opening and closing unit disposed adjacent to the container storage cabinet to open and close the through-hole, and

the through-hole opening and closing unit comprises:

a through-hole blocking plate disposed adjacent to the through-hole to open and close the through-hole;

a blocking plate driving unit connected to the through-hole blocking plate to drive the through-hole blocking plate; and

a blocking plate connection unit connecting the through-hole blocking plate and the blocking plate driving unit.

[Claim 13]

The gas supply system of claim 1,

wherein the gas supply unit further comprises an ultrasonic detector disposed at a connection portion between the gas storage container and the gas supply pipe to detect a leak sound of the leaked gas in the container storage cabinet.

[Claim 14]

A gas supply system comprising:

a gas supply unit for supplying a gas to a production facility,

wherein the gas supply unit comprises:

a gas storage container storing the gas;

a gas supply pipe connecting the gas storage container and the production facility;

a container storage cabinet accommodating and storing the gas storage container; and

an ultrasonic detector disposed in the container storage cabinet.

[Claim 15]

A gas supply system comprising:

a gas supply unit for supplying a gas to a production facility,

wherein the gas supply unit comprises:

a gas storage container storing the gas;

a gas supply pipe connecting the gas storage container and the production facility;

a container storage cabinet accommodating and storing the gas storage container, and having a through-hole; and

a through-hole opening and closing unit disposed adjacent to the container storage cabinet to open and close the through-hole.