

REFRIGERATION FACILITY

TECHNICAL FIELD

[0001] The present invention relates to a refrigeration facility, which includes a
5 refrigeration device cooling an interior of a storage chamber, and more specifically to a
technique for lowering the risk of corrosion of components installed in the interior of the
storage chamber.

BACKGROUND

10 [0002] Refrigeration containers used in, e.g., marine transportation are known in the art as
refrigeration facilities provided with a refrigeration device for cooling an interior of a
container. Such refrigeration containers include a container refrigeration device cooling the
interior of a container body. Refrigeration storages and cold storages are also known in the art
as a refrigeration facilities cooling an interior of a container.

15 [0003] Patent Document 1 discloses a container refrigeration device. This container
refrigeration device is installed at a front opening of a container. The container refrigeration
device includes a frame, at a lower side of which an outside storage space facing an exterior
of the container is formed. A compressor, a condenser, an exterior fan, and other components
are installed in this outside storage space. Moreover, an inside storage space facing an interior
20 of the container is formed at an upper side of the frame. An evaporator and an interior fan are
installed in this inside storage space. In this container refrigeration device, the compressor, the
condenser and the evaporator are connected by a refrigerant pipe thus forming a refrigerant
circuit. A refrigerating cycle is operated as a refrigerant is circulated through this refrigerant
circuit, and air inside the container is cooled by the evaporator.

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CITATION LIST

PATENT DOCUMENTS

[0004] PATENT DOCUMENT 1: Japanese Unexamined Patent Publication No. 2004-325022

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SUMMARY OF THE INVENTION

TECHNICAL PROBLEM

[0005] In a refrigeration container loaded with plants such as grapes, fumigation is applied to sterilize an interior of the container. However, cases have occurred where components
10 installed inside the container have suffered from corrosion due to fumigants released during fumigation, as well as due to gases (e.g., SO₂) emerging from disinfectant wipes. Corrosion may occur on components made of copper (pipes, temperature thermistors etc.), aluminum (fan blades, plate members etc.), or stainless steel.

[0006] Components suffering from corrosion need to be repaired or exchanged. Moreover,
15 while the corrosion of components can be detected after the fact, it is difficult to estimate in advance whether corrosion is imminent. A procedure is conceivable where, for example, a worker surveys whether air inside the container contains SO₂ and, based on results of this survey, estimates the possibility of corrosion. This, however, is no realistic procedure. The corrosion of components is a problem occurring not only in refrigeration containers. It may
20 also occur in refrigeration facilities such as refrigeration storages and cold storages.

[0007] In view of the foregoing background, the present invention attempts to provide a technique for easily surveying corrosion of components installed inside a refrigeration facility.

25 SOLUTION TO THE PROBLEM

[0008] A first aspect of the present disclosure relates to a refrigeration facility including a refrigeration device (10), which cools an interior of a storage chamber and has an evaporator (24) allowing air inside the container to pass through, the refrigeration facility including: a condensate treatment unit (40) including a condensate collection unit (41) collecting
5 condensate water generated by the evaporator (24) and a condensate disposal unit (42) disposing condensate water from the condensate collection unit (41); and a corrosive gas detector (50) installed in the condensate treatment unit (40) to detect corrosive gas in air inside the container based on properties of the condensate water.

[0009] In the first aspect, by using the corrosive gas detector (50) to examine the properties
10 of the condensate water, it may be detected whether corrosion of components installed inside the container is imminent.

[0010] In a second aspect, which is an embodiment of the first aspect, the corrosive gas detector (50) may be installed in the condensate disposal unit (42).

[0011] In the second aspect, the corrosive gas detector (50) is installed in the condensate
15 disposal unit (42). The corrosive gas detector (50) may as well be installed in the condensate collection unit (41). Since, however, the condensate disposal unit (42) may be installed at an arbitrary spot in the refrigeration facility, in the second aspect corrosive gas detection may be performed easily at an arbitrary location.

[0012] In a third aspect of the present disclosure, which is an embodiment of the second
20 aspect, the refrigeration device (10) may be a container refrigeration device (10) including a casing (12) mounted to a container (11), the condensate disposal unit (42) may be a drain hose (42) connected to the condensate collection unit (41), the drain hose (42) may have a part at a condensate disposal side located in an external storage space (S1), which is formed in the casing (12) so as to house refrigerant circuit components of the refrigeration device
25 (10), and the corrosive gas detector (50) may be installed in the drain hose (42) at a location

inside the external storage space (S1).

[0013] According to the third aspect, in the container refrigeration device (10), corrosive gas inside the container may be detected by using the corrosive gas detector (50) installed in the drain hose (42) provided in the exterior storage space (S1), which is easy to access for maintenance.

[0014] In a fourth aspect of the present disclosure, which is an embodiment of the third aspect, a condensate trap (44) may be formed in the drain hose (42) at a location inside the external storage space (S1), and the corrosive gas detector (50) may be installed in the condensate trap (44) of the drain hose (42).

[0015] In the fourth aspect, the condensate trap (44) is installed in the drain hose (42). As condensate accumulates in the condensate trap (44), corrosive gas detection may be performed easily based on the properties of the accumulated condensate water.

[0016] In a fifth aspect of the present disclosure, which is an embodiment of the fourth aspect, the condensate trap (44) may include a first U-turn (44a) curving downward and a second U-turn (44b) curving upward, which are formed in the run of the drain hose (42) and connected from upstream to downstream, and the corrosive gas detector (50) may be installed in the second U-turn portion (44b) and located above a level of condensate water accumulated in the first U-turn (44a) when the condensate water flows through the second U-turn (44b).

[0017] In the fifth aspect, condensate water accumulates in the first U-turn (44a) of the condensate trap (44). Installed above the level of the accumulated condensate water when the condensate water flows out of the second U-turn (44b), the corrosive gas detector (50) may perform corrosive gas detection based on the water properties gained from information regarding the condensate water. Moreover, accumulating in the first U-turn (44a), the condensate water seals off an end of the drain hose (42) inside the container from an end of

the drain hose (42) at a disposal side. When the refrigeration device is operated and the container is cooled inside, pressure inside the container lowers and air tends to enter from the condensate disposal side. As a countermeasure, condensate water accumulated in the first U-turn (44a) serves as a seal and keeps air from entering the container.

5 [0018] In a sixth aspect of the present disclosure, which is an embodiment of any one of the first to fifth aspects, the corrosive gas detector (50) may be a condensate port (43) including a portable pH sensor (45), which measures a pH value as a property of the condensate water.

[0019] In the sixth aspect, installing the portable pH sensor (45) in the condensate port
10 (43), which is provided for a refrigeration facility such as a refrigeration container or a refrigeration storage, allows for detecting corrosive gas inside the container.

[0020] In a seventh aspect of the present disclosure, which is an embodiment of any one of the first to fifth aspects, the corrosive gas detector (50) may include a stationary pH sensor (47) measuring the pH value as the property of the condensate water, and the refrigeration
15 facility may further include a measurement result display (48) connected to the pH sensor and displaying measurement results provided by the sensor.

[0021] In the seventh aspect, the pH sensor (47) is permanently installed in a refrigeration facility such as a refrigeration container or a refrigeration storage and detects corrosive gas inside the refrigeration facility. Measurement results provided by the pH sensor (47) are
20 displayed on the measurement result display (48).

ADVANTAGES OF THE INVENTION

[0022] According to the first aspect of the present disclosure, by using the corrosive gas detector (50) to examine properties of the condensate water, it may be easily determined
25 whether corrosion of the components installed inside the container is imminent. Thus, an

imminent corrosion of the components inside the container may be delayed by cleaning the interior of the container. Further, in the first aspect of the present disclosure, simply installing the corrosive gas detector (50) in the condensate treatment unit (40) may reduce the risk of failures of the refrigeration device and may cut costs to a minimum.

5 [0023] According to the second aspect of the present disclosure, the corrosive gas detector (50) is installed in the condensate disposal unit (42), the installation location of which may be chosen relatively freely within the refrigeration device. Therefore, corrosive gas detection for the interior of the container may be performed even outside the container, which improves efficiency in performing the detection procedure.

10 [0024] According to the third aspect of the present disclosure, disposing the drain hose (42) in the external storage space (S1) of the container refrigeration device (10) and installing the corrosive gas detector (50) in the drain hose (42) allows for performing corrosive gas detection for the interior of the container (11) in the external storage space (S1), which is easy to access for maintenance.

15 [0025] According to the fourth aspect of the present disclosure, installing the condensate trap (44) in the drain hose (42) and having the condensate water accumulate in the condensate trap (44) may allow for easily performing corrosive gas detection based on the properties of the accumulated condensate water as well as for maintaining an uncomplicated configuration.

[0026] According to the fifth aspect of the present disclosure, the corrosive gas detector
20 (50) is installed above the level of the condensate water accumulated in the first U-turn (44a) of the condensate trap (44) when the condensate water flows out of the second U-turn (44b). Thus, using this corrosive gas detector (50) may allow for easily and accurately performing corrosive gas detection based on the properties of the condensate water gained from information regarding the condensate water level. Moreover, since it is superfluous to provide
25 a sealant for preventing water leakage from the condensate port (43), an uncomplicated

configuration may be maintained.

[0027] According to the sixth aspect of the present disclosure, installing the condensate port (43) in a refrigeration facility such as a refrigeration container or a refrigeration storage allows for easily detecting corrosive gas in an interior of the refrigeration facility by using the
5 portable pH sensor (45).

[0028] According to the seventh aspect of the present disclosure, the pH sensor (45) is permanently installed in a refrigeration facility such as a refrigeration container or a refrigeration storage, and measurement results provided by the pH sensor (47) are displayed on the measurement result display (46). Thus, if a concentration of corrosion gas in the
10 interior of the refrigeration facility is high, an alarm signal may be given out to prompt cleaning of the interior of the refrigeration facility. Further, by re-performing the corrosion gas detection after the cleaning, it may be determined whether the interior of the refrigeration facility is clean.

15 BRIEF DESCRIPTION OF THE DRAWINGS

[0029] [FIG. 1] FIG. 1 is a perspective view of a container refrigeration device according to an embodiment of the present invention when viewed from outside the container.

[FIG. 2] FIG. 2 is a cross-sectional side view illustrating a configuration of
20 the container refrigeration device according to the embodiment.

[FIG. 3] FIG. 3 is a piping system diagram illustrating a configuration of a refrigerant circuit of the embodiment.

[FIG. 4] FIG. 4 is a front view of the container refrigeration device having an electrical component box removed.

25 [FIG. 5] FIG. 5 is a perspective view of the container refrigeration device

having the electrical component box, a condenser and a gas mixture supply device removed.

[FIG. 6] FIG. 6 is a side view showing a part of a drain hose at a condensate disposal side.

[FIG. 7] FIG. 7 is a back view of the container refrigeration device.

5 [FIG. 8] FIG. 8 is a partial cross-sectional view of the container refrigeration device.

[FIG. 9] FIG. 9 is a side view illustrating a part of the condensate disposal side according to a variation of the embodiment.

[FIG. 10] FIG. 10 is a side view illustrating a part of the drain hose at a
10 condensate disposal side according to another variation of the embodiment.

DESCRIPTION OF EMBODIMENTS

[0030] Embodiments of the present invention will be described in detail with reference to the drawings. In the following embodiments, the present invention has been applied to a
15 container (refrigeration container) serving as an example refrigeration device. Note that the beneficial embodiments explained below are mere examples in nature, and are not intended to limit the scope, applications, and use of the present invention.

[0031] As shown in FIGS. 1 and 2, a container refrigeration device (10) is designed to cool or to refrigerate an interior of a container (11) used in, e.g., marine transportation. The
20 container refrigeration device (10) includes a refrigerant circuit (20) employing a refrigerating cycle to cool air in the container (11) (see FIG. 3). The interior of a container (11) is loaded with plants (15) packed in boxes, such as grapes.

[0032] The container (11) has the shape of a box with an open end. A casing (12) is attached to close this one open end. The casing (12) includes an exterior wall (12a) located
25 outside the container (11) and an interior wall (12b) located inside the container (11). The

exterior and interior walls (12a) and (12b) may be made of, for example, aluminum alloy.

[0033] The exterior wall (12a) is attached to a periphery of the opening of the container (11) so as to close the open end of the container (11). The exterior wall (12a) is formed such that a lower part of the exterior wall (12a) protrudes into the container (11).

5 [0034] The interior wall (12b) faces the exterior wall (12a). The interior wall (12b) fits the lower part of the exterior wall (12a), and protrudes into the container. A thermal insulator (12c) is provided in a space between the interior and exterior walls (12b) and (12a).

[0035] A lower part of the casing (12) is formed so as to protrude into the container (11). In this way, an external storage space (S1) is formed outside the container (11) in the lower part
10 of the casing (12), and an internal storage space (S2) is formed inside the container (11) in an upper part of the casing (12).

[0036] The casing (12) has two access doors (16), which are arranged side by side in a width direction and can be opened and closed during maintenance. An electrical component box (17) adjacent to an external fan (25), which will be described later, is located in the
15 external storage space (S1) of the casing (12).

[0037] A partition plate (18) is located inside the container (11). This partition plate (18) is a substantially rectangular plate member, and stands upright against a face of the casing (12) inside the container (11). This partition plate (18) separates the internal storage space (S2) from the interior of the container (11).

20 [0038] A suction port (18a) is formed between an upper end of the partition plate (18) and a ceiling surface of the container (11). Air inside the container (11) is taken through the suction port (18a) into the internal storage space (S2).

[0039] A floorboard (19) is provided inside the container (11), leaving a gap between the floorboard (19) and a bottom surface of the container (11). The boxed plants (15) are placed
25 on the floorboard (19). An air passage (19a) is formed between the floorboard (19) and the

bottom surface of the container (11). A gap is left between a lower end of the partition plate (18) and the bottom surface of the container (11) and communicates with the air passage (19a).

[0040] A blowout port (18b) is provided at a front side of the container (11) at the floorboard (19) (on the right in FIG. 2) for blowing air treated by the container refrigeration device (10) (i.e., cooled air inside the container) into the container (11).

[0041] As shown in FIG. 3, the container refrigeration device (10) includes a refrigerant circuit (20) in which a vapor compression refrigeration cycle is operated as a refrigerant is circulated. The refrigerant circuit (20) includes a compressor (21), a condenser (22), an expansion valve (23), and an evaporator (24), which are connected by a refrigerant pipe (28) in this order.

[0042] As shown in FIGS. 1 and 2, the compressor (21) and the condenser (external heat exchanger) (22) are housed in the external storage space (S1). The external fan (25) is located above the condenser (22). The external fan (25) is driven in rotation by an external fan motor (25a), guides air outside the container (11) into the external storage space (S1), and sends the air to the condenser (22). In the condenser (22), heat is exchanged between a refrigerant flowing through the condenser (22) and the outside air.

[0043] The evaporator (24) is housed in the internal storage space (S2). Two internal fans (26) are located above the evaporator (24) in the internal storage space (S2) and arranged side by side in the width direction of the casing (12).

[0044] The internal fans (26) are driven in rotation by internal fan motors (26a), and guide the air inside the container (11) through the suction port (18a) to send the air into the evaporator (24). In the evaporator (24), heat is exchanged between a refrigerant flowing through the evaporator (24) and the air inside the container. The air inside the container is cooled when passing through the evaporator (24) as heat is dissipated by the refrigerant, and

is then blown via the air passage (19a) from the blowout port (18b) into the container (11).

[0045] The container refrigeration device (10) includes a gas mixture supply device (30) for regulating oxygen concentration inside the container by supplying a gas mixture, which has a low oxygen concentration, into the container (11). The gas mixture supply device (30) is a unit located in a lower left corner of the external storage space (S1) as shown in FIG. 1. An inverter box (29) housing a drive circuit for driving the compressor (21) at a variable velocity is located to the right of the gas mixture supply device (30).

[0046] FIG. 4 is a front view of the container refrigeration device (10) having the electrical component box (17) removed. FIG. 5 is a perspective view of the container refrigeration device (10) having the electrical component box (17), the condenser (22), and a gas mixture supply device (30) removed. FIG. 6 is a side view showing a part of a condensate disposal side of the drain hose (42). Further, FIG. 7 is a back view of the container refrigeration device (10), and FIG. 8 is a partial cross-sectional view of the container refrigeration device (10).

[0047] As shown in FIG. 7, according to this embodiment, a drain pan (condensate collection unit) (41) collecting condensate water generated by the evaporator (24) is provided at a bottom of the internal storage space (S2). This drain pan (41) has an inclined face which becomes lower from both ends toward a center of the casing (12). The drain hose (condensate disposal unit) (42), which disposes condensate water from the drain pan (41), is connected to a center of the drain pan (41) and extends into the external storage space (S1). The drain pan (41) and the drain hose (42) form the condensate treatment unit (40).

[0048] The drain hose (42) has a part at the condensate disposal side located in the external storage space (S1), which is formed in the casing (12) so as to house components of the refrigerant circuit (20). The drain hose (42) includes the condensate port (43), which is located inside the external storage space (S1). Specifically, the condensate trap (44) is formed in the drain hose (42) inside the external storage space (S1), and the condensate port (43) is

installed in the condensate trap (44) of the drain hose (42).

[0049] As schematically shown in FIG. 9, the condensate port (43) may include a portable corrosive gas sensor (45) detecting corrosive gas in the air inside the container based on properties of the condensate water. Such a condensate port (43) is a port detecting corrosive gas in the air inside the container based on the properties of the condensate water, and forms the corrosive gas detector (50) of the present invention. More precisely, a portable pH sensor measuring a hydrogen ion exponent (pH value) of the condensate water may be employed as the portable corrosive gas sensor (45).

[0050] The condensate trap (44) specifically includes a first U-turn (44a) curving downward and a second U-turn (44b) curving upward, which are formed in the run of the drain hose (42) and connected from upstream to downstream. The condensate port (43), which is the corrosive gas detector (50), is installed in the second U-turn portion (44b) and located above a level of condensate water accumulated in the first U-turn (44a) when the condensate water flows through the second U-turn (44b).

[0051] In the present embodiment, when the refrigeration device (11) is operated, water drops condensed on the evaporator drop down into the drain pan (41) as indicated by arrows in FIG. 7, and this condensate water flows toward the center of the drain pan (41). Then, the condensate water flows through the drain hose (42) and is disposed via the condensate trap (44) out of the device.

[0052] While detecting corrosive gas inside the container, the pH sensor (45) is installed in the condensate port (43) and examines the properties (pH value) of the condensate water. A low pH value detected by the pH sensor (45) signifies a high acidity and it may be concluded that corrosion of components installed inside the container is imminent since it may be assumed that acid gasses contained in the air inside the container may be found dissolved in the condensate water. In the case where corrosion inside the container is imminent, it is

beneficial to clean the interior of the container. A high pH value, however, signifies a low acidity, which may lead to the conclusion that corrosion of components installed inside the container is not imminent.

[0053] —Advantages of Embodiment—

5 According to the present embodiment, the condensate port (43) is installed in the drain hose (42) and serves as the corrosive gas detector (50). The pH sensor (45) is installed in this condensate port (43) to measure the pH value of the condensate water. In this way it may be determined whether the condensate water has a high acidity, and thus it may be easily determined whether corrosion of the components installed inside the container is imminent. If
10 corrosion of the components installed inside the container is imminent, it is beneficial to clean the interior of the container.

[0054] Moreover, in the present embodiment, the drain trap (44) is formed in the drain hose (42), and the condensate port (43) is installed in the condensate trap (44). Thus, as shown in FIG. 9, the pH sensor (45) may be securely introduced into the condensate water. This may
15 make corrosion gas detection more precise.

[0055] Further, in the present embodiment, the condensate port (43), which is the corrosive gas detector (50), is installed above the level of the condensate water accumulated in the first U-turn (44a) of the condensate trap (44) when the condensate water flows out of the second U-turn (44b). Thus, the condensate port (43) above the level of the condensate water may
20 perform the corrosive gas detection easily and accurately based on the properties of the condensate water accumulated in the first U-turn (44a) of the condensate trap (44). Moreover, since it is superfluous to provide a sealant for preventing water leakage from the condensate port (43), an uncomplicated configuration may be maintained.

[0056] Furthermore, since in the present embodiment condensate water accumulates in the
25 first U-turn (44a), an end of the drain hose (42) inside the container and an end of the drain

hose (42) at a disposal side are sealed off by the condensate water. Generally, when a refrigeration device is operated and an interior of a container is cooled, pressure inside the container lowers and air tends to enter from a condensate disposal side. As a countermeasure, in the above configuration, the condensate water accumulated in the first U-turn (44a) serves
5 as a seal and keeps air from entering the container.

[0057] «Other Embodiments»

The above embodiment may have the following configurations.

[0058] Regarding the above embodiment, an example has been described where the present invention is applied to the container (11) including the container refrigeration device (10)
10 cooling the interior of the container. However, the present invention is not limited to the container (11). The present invention may be for example applied to a refrigeration storage or a cold storage, given that the refrigeration storage or cold storage is a refrigeration facility, which includes a refrigeration device cooling the interior of the facility, and that this refrigeration device has an evaporator, which allows air inside the facility to pass through.

15 [0059] Furthermore, regarding the present embodiment, an example has been described where the properties of the condensate water are examined using the portable pH sensor (45), and where corrosive gas inside the container is detected based on these properties. As shown in FIG. 10, however, a stationary pH sensor (47) serving as the corrosive gas detector (50) may be installed in the drain hose (42) instead. In this case, a measurement result display (48),
20 which is connected to the pH sensor (47) and displays measurement results provided by the pH sensor (47), is installed in the container refrigeration device (10) (see FIG. 1). FIG. 1 shows an example where the measurement result display (48) is installed in the electrical component box (17). Installing the measurement result display (46) allows for giving out a warning signal to prompt cleaning of the interior of the container. Further, by re-performing
25 the corrosion gas detection after the cleaning, it may be determined whether the interior of the

container is clean.

[0060] Moreover, in the above embodiment, the corrosive gas detector (50) is installed in the drain hose (42). However, as long as the corrosive gas detector (50) is installed at a location in the condensate treatment unit (40) which is reached by the condensate water, the corrosive gas detector (50) may as well be installed in the drain pan (41). Also, in the case where the corrosive gas detector (50) is installed in the drain hose (42), an installation location different from that in the above embodiment may be chosen.

INDUSTRIAL APPLICABILITY

[0061] As can be seen from the foregoing, the present invention is useful for a technique for lowering the risk of corrosion of components installed inside a refrigeration facility, which includes a refrigeration device cooling an interior of the refrigeration facility.

DESCRIPTION OF REFERENCE CHARACTERS

15	[0062]	10	Container Refrigeration Device (Refrigeration Device)
		11	Container (Refrigeration Facility)
		12	Casing
		24	Evaporator
		40	Condensate Treatment Unit
20		41	Drain Pan (Condensate Collection Unit)
		42	Drain Hose (Condensate Disposal Unit)
		43	Condensate Port (Corrosive Gas Detector)
		44	Condensate Trap
		45	pH Sensor
25		47	pH Sensor

48	Measurement Result Display
50	Corrosive Gas Detector
S1	External Storage Space

CLAIMS

1. A container refrigeration facility including a refrigeration device (10), which cools an interior of a storage chamber and has an evaporator (24) allowing air inside the storage chamber to pass through, the refrigeration facility comprising:

a condensate treatment unit (40) including a condensate collection unit (41) collecting condensate water generated by the evaporator (24) and a condensate disposal unit (42) disposing condensate water from the condensate collection unit (41); and a corrosive gas detector (50) installed in the condensate treatment unit (40) to detect corrosive gas in air inside the container based on properties of the condensate water, wherein

the corrosive gas detector (50) is installed in the condensate disposal unit (42),

the refrigeration device (10) is a container refrigeration device (10) including a casing (12) mounted to a container (11),

the condensate disposal unit (42) is a drain hose (42) connected to the condensate collection unit (41),

the drain hose (42) has a part at a condensate disposal side located in an external storage space (S1), which is formed in the casing (12) so as to house refrigerant circuit components of the refrigeration device (10), and

the corrosive gas detector (50) is installed in the drain hose (42) at a location inside the external storage space (S1).

2. The container refrigeration facility of claim 1, wherein

a condensate trap (44) is formed in the drain hose (42) at a location inside the external storage space (S1), and

the corrosive gas detector (50) is installed in the condensate trap (44) of the drain hose (42).

3. The container refrigeration facility of claim 2, wherein

the condensate trap (44) includes a first U-turn (44a) curving downward and a second U-turn (44b) curving upward, which are formed in the run of the drain hose (42) and connected from upstream to downstream, and

the corrosive gas detector (50) is installed in the second U-turn (44b) and located above a level of condensate water accumulated in the first U-turn (44a) when the condensate water flows through the second U-turn (44b).

4. The container refrigeration facility of any one of claims 1 to 3, wherein

the corrosive gas detector (50) is a condensate port (43) including a portable pH sensor (45), which measures a pH value as a property of the condensate water.

5. The container refrigeration facility of any one of claims 1 to 3, wherein

the corrosive gas detector (50) includes a stationary pH sensor (47) measuring a pH value as the property of the condensate water, and

the refrigeration facility further includes a measurement result display (48) connected to the pH sensor and displaying measurement results provided by the stationary pH sensor (47).