CLAIMS

~~1. A refrigerating apparatus, comprising:~~

~~a casing body (21) attached to an opening (14) formed at one end of a box-shaped cooling compartment (11) so as to close the opening (14);~~

~~a refrigeration cycle unit (30) including~~

~~a compressor (31) and a radiator (32) provided on an outer side of the cooling compartment (11) relative to the casing body (21), and~~

~~an evaporator (35) provided on an inner side of the cooling compartment (11) relative to the casing body (21);~~

~~a diagnosis process executer (81) configured to control the refrigeration cycle unit (30) to execute a diagnosis process for diagnosing a performance of the cooling compartment (11); and~~

~~a performance determinator (82) configured to determine the performance of the cooling compartment (11) in the diagnostic process.~~

~~2. The refrigerating apparatus of claim 1, wherein~~

~~the performance determinator (82) is configured to determine airtightness of the cooling compartment (11) in the diagnosis process.~~

~~3~~1. ~~The refrigerating apparatus of claim 2, wherein~~ A refrigerating apparatus, comprising:

a casing body attached to an opening formed at one end of a box-shaped cooling compartment so as to close the opening;

a refrigeration cycle unit including

a compressor and a radiator provided on an outer side of the cooling compartment relative to the casing body, and

an evaporator provided on an inner side of the cooling compartment relative to the casing body;

a diagnosis process executer configured to control the refrigeration cycle unit to execute a diagnosis process for diagnosing a performance of the cooling compartment; and

a performance determinator configured to determine the performance of the cooling compartment in the diagnosis process,

wherein the performance determinator is configured to determine airtightness of the cooling compartment in the diagnosis process,

the refrigeration cycle unit ~~(30)~~ includes a defrosting start determinator ~~(83)~~ configured to start a defrosting operation of the evaporator ~~(35)~~ when an amount of frost on the evaporator ~~(35)~~ exceeds a predetermined amount,

the diagnosis process executer ~~(81)~~ is configured to perform, upon start of the diagnosis process, a cooling operation for cooling an inside of the cooling compartment ~~(11)~~ by the evaporator ~~(35)~~, and

the performance determinator ~~(82)~~ is configured to determine the airtightness of the cooling compartment ~~(11)~~ based on a time $\Delta t1$ between a predetermined point after start of the cooling operation and a point at which the defrosting start determinator ~~(83)~~ starts the defrosting operation.

42. ~~The refrigerating apparatus of claim 2, further comprising:~~ A refrigerating apparatus, comprising:

a casing body attached to an opening formed at one end of a box-shaped cooling compartment so as to close the opening;

a refrigeration cycle unit including

a compressor and a radiator provided on an outer side of the cooling compartment relative to the casing body, and

an evaporator provided on an inner side of the cooling compartment relative to the casing body;

a diagnosis process executer configured to control the refrigeration cycle unit to execute a diagnosis process for diagnosing a performance of the cooling compartment;

a performance determinator configured to determine the performance of the cooling compartment in the diagnosis process; and

a defrosting end determinator ~~(85)~~ configured to terminate a defrosting operation of the evaporator ~~(35)~~ when an amount of frost on the evaporator ~~(35)~~ falls below a predetermined amount during the defrosting operation,

wherein the performance determinator is configured to determine airtightness of the cooling compartment in the diagnosis process,

the diagnosis process executer ~~(81)~~ is configured to execute, upon start of the diagnosis process, a cooling operation for cooling an inside of the cooling compartment ~~(11)~~ by the evaporator ~~(35)~~ and then execute the defrosting operation, and

the performance determinator ~~(82)~~ is configured to determine the airtightness of the cooling compartment ~~(11)~~ based on a time Δt2 between a point at which the defrosting operation is executed and a point at which the defrosting end determinator ~~(85)~~ terminates the defrosting operation.

~~5~~3. ~~The refrigerating apparatus of claim 2, further comprising:~~ A refrigerating apparatus, comprising:

a casing body attached to an opening formed at one end of a box-shaped cooling compartment so as to close the opening;

a refrigeration cycle unit including

a compressor and a radiator provided on an outer side of the cooling compartment relative to the casing body, and

an evaporator provided on an inner side of the cooling compartment relative to the casing body;

a diagnosis process executer configured to control the refrigeration cycle unit to execute a diagnosis process for diagnosing a performance of the cooling compartment;

a performance determinator configured to determine the performance of the cooling compartment in the diagnosis process; and

a defrosting end determinator ~~(85)~~ configured to terminate a defrosting operation of the evaporator ~~(35)~~ when an amount of frost on the evaporator ~~(35)~~ falls below a predetermined amount during the defrosting operation,

wherein the performance determinator is configured to determine airtightness of the cooling compartment in the diagnosis process,

the diagnosis process executer ~~(81)~~ is configured to alternately execute a cooling operation for cooling an inside of the cooling compartment ~~(11)~~ by the evaporator

~~(35)~~ and the defrosting operation such that the defrosting operation is performed after the cooling operation and the cooling operation is resumed when the defrosting end determinator ~~(85)~~ terminates the defrosting operation, and

the performance determinator ~~(82)~~ is configured to determine the airtightness of the cooling compartment ~~(11)~~ by comparing between an execution time for a predetermined defrosting operation and an execution time for a defrosting operation previous to the predetermined defrosting operation.

~~64~~. ~~The refrigerating apparatus of claim 2, further comprising:~~ A refrigerating apparatus, comprising:

a casing body attached to an opening formed at one end of a box-shaped cooling compartment so as to close the opening;

a refrigeration cycle unit including

a compressor and a radiator provided on an outer side of the cooling compartment relative to the casing body, and

an evaporator provided on an inner side of the cooling compartment relative to the casing body;

a diagnosis process executer configured to control the refrigeration cycle unit to execute a diagnosis process for diagnosing a performance of the cooling compartment;

a performance determinator configured to determine the performance of the cooling compartment in the diagnosis process; and

a defrosting start determinator ~~(83)~~ configured to start a defrosting operation of the evaporator ~~(35)~~ when an amount of frost on the evaporator ~~(35)~~ exceeds a predetermined amount,

wherein the performance determinator is configured to determine airtightness of the cooling compartment in the diagnosis process,

the diagnosis process executer ~~(81)~~ is configured to alternately execute a cooling operation for cooling an inside of the cooling compartment ~~(11)~~ by the evaporator ~~(35)~~ and the defrosting operation such that the defrosting start determinator ~~(83)~~ starts the defrosting operation after the cooling operation and then the cooling operation is resumed, and

the performance determinator ~~(82)~~ is configured to determine the airtightness of the cooling compartment ~~(11)~~ by comparing between an execution time for a predetermined cooling operation and an execution time for a cooling operation previous to the predetermined cooling operation.

~~7. The refrigerating apparatus of claim 1 or 2, wherein~~

~~the refrigeration cycle unit (30) includes a temperature detector (70) configured to detect a temperature of air inside the cooling compartment (11),~~

~~the diagnosis process executer (81) is configured to perform a cooling operation for cooling an inside of the cooling compartment (11) to a predetermined temperature by the evaporator (35), perform a rest operation for stopping the evaporator (35) after the cooling operation, and resume the cooling operation after a lapse of a predetermined set time since the rest operation is started, and~~

~~the performance determinator (82) is configured to determine the performance of the cooling compartment (11) based on a change in temperature inside the cooling compartment (11) during the set time.~~

~~8~~5. ~~The refrigerating apparatus of claim 7, wherein~~ A refrigerating apparatus, comprising:

a casing body attached to an opening formed at one end of a box-shaped cooling compartment so as to close the opening;

a refrigeration cycle unit including

a compressor and a radiator provided on an outer side of the cooling compartment relative to the casing body, and

an evaporator provided on an inner side of the cooling compartment relative to the casing body;

a diagnosis process executer configured to control the refrigeration cycle unit to execute a diagnosis process for diagnosing a performance of the cooling compartment; and

a performance determinator configured to determine the performance of the cooling compartment in the diagnosis process,

wherein the refrigeration cycle unit includes a temperature detector configured to detect a temperature of air inside the cooling compartment,

the diagnosis process executer is configured to perform a cooling operation for cooling an inside of the cooling compartment to a predetermined temperature by the evaporator, perform a rest operation for stopping the evaporator after the cooling operation, and resume the cooling operation after a lapse of a predetermined set time since the rest operation is started,

the performance determinator is configured to determine the performance of the cooling compartment based on a change in temperature inside the cooling compartment during the set time,

the refrigeration cycle unit ~~(30)~~ includes a humidity detector ~~(72)~~ configured to detect a humidity of air inside the cooling compartment ~~(11)~~, and

the performance determinator ~~(82)~~ is configured to determine the airtightness of the cooling compartment ~~(11)~~ based on a change in humidity during the set time.

~~9~~6. The refrigerating apparatus of any one of claims ~~3-8~~1-5, wherein

the refrigeration cycle unit ~~(30)~~ includes an in-compartment fan ~~(36)~~ configured to circulate air in the cooling compartment ~~(11)~~ such that the air in the cooling compartment ~~(11)~~ passes through the evaporator ~~(35)~~, and

the diagnosis process executer ~~(81)~~ is configured to operate the in-compartment fan ~~(36)~~ in the cooling operation of the diagnosis process.

~~10~~7. The refrigerating apparatus of any one of claims ~~1-9~~1-6, wherein

the cooling compartment ~~(11)~~ is a trailer ~~(11)~~ mounted in a refrigerated vehicle ~~(10)~~.