performs: a first action of allowing the heat source to heat the moisture absorber and allowing the air transport mechanism to transport the air in the second space to the first space; and a second action of allowing the heat source to cool the moisture absorber and allowing the air transport mechanism to transport the air in the first space to the second space, and the controller stops the air transport mechanism for a predetermined period after the end of the first action and before the start of the second action.

[0019]

In the above aspect, the air in the second space is humidified by the moisture absorber and transported to the first space in the first action.

[0020]

[0021]

In the above aspect, the air in the second space is humidified by the moisture absorber, and is then transported to the first space in the first action. The air in the first space gives moisture to the moisture absorber, and is then transported to the second space in the second action.

[0022]

[0023]

In the above aspect, the air transport mechanism stops after the end of the first action. During this period, high humidity air transported to the first space can be dispersed.

[0024]

According to a fourth aspect, there is provided humidity control unit, including: an air passage through which a first space which is a target space and a second space communicate with each other; a moisture absorber arranged in the air passage and configured to absorb moisture from air and desorb the moisture to the air; a heat source arranged in the air passage

and configured to at least cool or heat the moisture absorber; an air transport mechanism configured to allow the air in the air passage to flow in reverse directions; and a controller configured to control the heat source and the air transport mechanism, the controller alternately performs: a first action of allowing the heat source to heat the moisture absorber and allowing the air transport mechanism to transport the air in the second space to the first space; and a second action of allowing the heat source to cool the moisture absorber and allowing the air transport mechanism to transport the air in the first space to the second space, and the controller stops the air transport mechanism for a predetermined period after the end of the second action and before the start of the first action.

[0025]

In the above aspect, the air transport mechanism stops after the end of the second action. During this period, low humidity air transported to the second space can be dispersed.

[0026]

In an embodiment of the above aspect, the first space is an indoor space, and the second space is an outdoor space.

[0027]

In the above embodiment, the air passage allows the indoor space to communicate with the outdoor space. The air transport mechanism is able to switch the action of supplying the air in the outdoor space to the indoor space and the action of discharging the air in the indoor space to the outdoor space.

[0028]

In an embodiment of the above aspect, the heat source includes a heat exchange unit in which a heating medium flows.

[0029]

CLAIMS

1. A humidity control unit, comprising:

an air passage (12) through which a first space (S1) which is a target space and a second space (S2) communicate with each other;

a moisture absorber (30, 32) arranged in the air passage (12) and configured to absorb moisture from air and desorb the moisture to the air;

a heat source (21, 22, 32) arranged in the air passage (12) and configured to at least cool or heat the moisture absorber (30, 32);

an air transport mechanism (M) configured to allow the air in the air passage (12) to flow in reverse directions; and

a controller (C) configured to control the heat source (21, 22, 32) and the air transport mechanism (M),

the controller (C) alternately performs:

a first action of allowing the heat source (21, 22, 32) to cool the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the second space (S2) to the first space (S1); and

a second action of allowing the heat source (21, 22, 32) to heat the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the first space (S1) to the second space (S2), and

the controller (C) stops the air transport mechanism (M) for a predetermined period after the end of the first action and before the start of the second action.

2. A humidity control unit, comprising:

an air passage (12) through which a first space (S1) which is a target space and a second space (S2) communicate with each other;

a moisture absorber (30, 32) arranged in the air passage (12) and configured to absorb moisture from air and desorb the moisture to the air;

a heat source (21, 22, 32) arranged in the air passage (12) and configured to at least cool or heat the moisture absorber (30, 32);

an air transport mechanism (M) configured to allow the air in the air passage (12) to flow in reverse directions; and

a controller (C) configured to control the heat source (21, 22, 32) and the air transport mechanism (M),

the controller (C) alternately performs:

a first action of allowing the heat source (21, 22, 32) to cool the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the second space (S2) to the first space (S1); and

a second action of allowing the heat source (21, 22, 32) to heat the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the first space (S1) to the second space (S2), and

the controller (C) stops the air transport mechanism (M) for a predetermined period after the end of the second action and before the start of the first action.

3. A humidity control unit, comprising:

an air passage (12) through which a first space (S1) which is a target space and a second space (S2) communicate with each other;

a moisture absorber (30, 32) arranged in the air passage (12) and configured to absorb moisture from air and desorb the moisture to the air;

a heat source (21, 22, 32) arranged in the air passage (12) and configured to at least cool or heat the moisture absorber (30, 32);

an air transport mechanism (M) configured to allow the air in the air passage (12) to flow in reverse directions; and

a controller (C) configured to control the heat source (21, 22, 32) and the air transport mechanism (M),

the controller (C) alternately performs:

a first action of allowing the heat source (21, 22, 32) to heat the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the second space (S2) to the first space (S1); and

a second action of allowing the heat source (21, 22, 32) to cool the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the first space (S1) to the second space (S2), and

the controller (C) stops the air transport mechanism (M) for a predetermined period after the end of the first action and before the start of the second action.

4. A humidity control unit, comprising:

an air passage (12) through which a first space (S1) which is a target space and a second space (S2) communicate with each other;

a moisture absorber (30, 32) arranged in the air passage (12) and configured to absorb moisture from air and desorb the moisture to the air;

a heat source (21, 22, 32) arranged in the air passage (12) and configured to at least cool or heat the moisture absorber (30, 32);

an air transport mechanism (M) configured to allow the air in the air passage (12) to flow in reverse directions; and

a controller (C) configured to control the heat source (21, 22, 32) and the air transport mechanism (M),

the controller (C) alternately performs:

a first action of allowing the heat source (21, 22, 32) to heat the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the second space (S2) to the first space (S1); and

a second action of allowing the heat source (21, 22, 32) to cool the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the first space (S1) to the second space (S2), and

the controller (C) stops the air transport mechanism (M) for a predetermined period after the end of the second action and before the start of the first action.

5. The humidity control unit of any one of claims 1 to 4, wherein

the first space (S1) is an indoor space, and the second space (S2) is an outdoor space.

6. The humidity control unit of any one of claims 1 to 5, wherein

the heat source (21, 22, 32) includes a heat exchange unit (21, 22, 32) in which a heating medium flows.

7. The humidity control unit of claim 6, wherein

the heat exchange unit includes:

a first heat exchanger (21) arranged closer to the first space (S1) than the moisture absorber (30) and configured to cool and heat the air; and

a second heat exchanger (22) arranged closer to the second space (S2) than the moisture absorber (30) and configured to cool and heat the air.

8. The humidity control unit of claim 6, wherein

the heat exchange unit is an adsorption heat exchanger (32) having an adsorbent for

adsorbing and desorbing water and serving as the moisture absorber (30, 32).

9. The humidity control unit of any one of claims 6 to 8, further comprising:

a refrigerant circuit (R) for circulating a refrigerant as the heating medium to perform a refrigeration cycle.

10. The humidity control unit of claim 9, further comprising:

an outdoor unit (20a) having a compressor (23) and an outdoor heat exchanger (24) that are connected to the refrigerant circuit (R).

11. The humidity control unit of any one of claims 1 to 9, wherein

the air transport mechanism (M) is a fan capable of rotating in a forward direction and a reverse direction.

12. The humidity control unit of any one of claims 1 to 9, wherein

the air transport mechanism (M) includes a first fan (44) for sending the air to the first space (S1) and a second fan (45) for sending the air to the second space (S2).

13. The humidity control unit of any one of claims 1 to 9, wherein

the air transport mechanism (M) includes:

at least one fan (46); and

a flow path switching mechanism (D1, D2, D3) configured to switch a flow path of the air in the air passage (12) between a first state and a second state, and

the fan (46) allows the air to flow from the second space (S2) to the first space (S1) in the air passage (12) in the first state, and allows the air to flow from the first space (S1) to the second space (S2) in the air passage (12) in the second state.

14. The humidity control unit of any one of claims 1 to 13, wherein

a center of an opening (13) to the first space (S1) in the air passage (12) and a center of an opening (14) to the second space (S2) in the air passage (12) substantially coincide with each other in a direction of the air flowing in the air passage (12).

15. The humidity control unit of any one of claims 1 to 14, wherein

the air passage (12) is provided to penetrate a wall (W) that is a partition between the

first space (S1) and the second space (S2).

16. The humidity control unit of any one of claims 1 to 15, wherein

the air passage (12) is arranged in a window (5) or a window frame (6) between an indoor space (S1) as the first space and an outdoor space (S2) as the second space.

17. The humidity control unit of any one of claims 1 to 16, further comprising:

a filter (38) arranged in the air passage (12) to be closer to the outdoor space (S2) as the second space than the moisture absorber (30, 32) and the heat source (21, 22, 32),

the filter (38) being configured such that dust adhering to the filter (38) is removed by the air flowing from the indoor space (S1) as the first space to the outdoor space (S2).

18. A humidity control system comprising

a plurality of humidity control units configured to control humidity of a target space, wherein

each of the plurality of humidity control units is the humidity control unit of any one of claims 1 to 17.

19. The humidity control system of claim 18, further comprising:

an interlock control unit (C) configured to control the plurality of humidity control units (10) in a coordinated manner.

20. The humidity control system of claim 19, wherein

the plurality of humidity control units (10) include at least one first humidity control unit (10A) and at least one second humidity control unit (10B),

the first humidity control unit (10A) and the second humidity control unit (10B) alternately perform:

a first action of allowing the heat source (21, 22, 32) to cool the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the second space (S2) to the first space (S1); and

a second action of allowing the heat source (21, 22, 32) to heat the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the first space (S1) to the second space (S2), and

the interlock control unit (C) controls the first humidity control unit (10A) and the

second humidity control unit (10B) so that the second humidity control unit (10B) performs the second action when the first humidity control unit (10A) performs the first action, and the second humidity control unit (10B) performs the first action when the first humidity control unit (10A) performs the second action.

21. The humidity control system of claim 20, wherein

at least one of the first humidity control unit (10A) or the second humidity control unit (10B) is configured to stop the air transport mechanism (M) for a predetermined period between the first action and the second action, and

the interlock control unit (C) controls the first humidity control unit (10A) and the second humidity control unit (10B) so that one of the first humidity control unit (10A) or the second humidity control unit (10B) performs the first or second action while the other of the first humidity control unit (10A) or the second humidity control unit (10B) is stopped.

22. The humidity control system of claim 20 or 21, wherein

the first humidity control unit (10A) and the second humidity control unit (10B) alternately perform:

a third action of allowing the heat source (21, 22, 32) to heat the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the second space (S2) to the first space (S1); and

a fourth action of allowing the heat source (21, 22, 32) to cool the moisture absorber (30, 32) and allowing the air transport mechanism (M) to transport the air in the first space (S1) to the second space (S2), and

the interlock control unit (C) controls the first humidity control unit (10A) and the second humidity control unit (10B) so that the second humidity control unit (10B) performs the fourth action when the first humidity control unit (10A) performs the third action, and the second humidity control unit (10B) performs the third action when the first humidity control unit (10A) performs the fourth action.

23. The humidity control system of claim 22, wherein

at least one of the first humidity control unit (10A) or the second humidity control unit (10B) is configured to stop the air transport mechanism (M) for a predetermined period between the third action and the fourth action, and

the interlock control unit (C) controls the first humidity control unit (10A) and the

second humidity control unit (10B) so that one of the first humidity control unit (10A) or the second humidity control unit (10B) performs the third or fourth action while the other of the first humidity control unit (10A) or the second humidity control unit (10B) is stopped.

24. The humidity control system of any one of claims 19 to 23, further comprising:

a first determination unit (71) configured to determine a degree of pollution of the air in the second space (S2), wherein

when at least a condition that the first determination unit (71) determines that the degree of pollution of the air exceeds a predetermined value is met, the interlock control unit (C) controls the plurality of humidity control units (10) so that the total amount of the air supplied by the humidity control units (10) exceeds the total amount of air discharged by the humidity control units (10).

25. The humidity control system of claim 24, further comprising:

an entry detector (70) configured to detect the entry of the air from the second space (S2) to the first space (S1), wherein

when at least a condition that the first determination unit (71) determines that the degree of pollution of the air exceeds a predetermined value and a condition that the entry detector (70) detects the entry of the air are met, the interlock control unit (C) controls the plurality of humidity control units (10) so that the total amount of the air supplied by the humidity control units (10) exceeds the total amount of air discharged by the humidity control units (10).

26. The humidity control system of any one of claims 19 to 25, further comprising:

a second determination unit (72) configured to determine a degree of pollution of the air in the first space (S1), wherein

when at least a condition that the second determination unit (72) determines that the degree of pollution of the air exceeds a predetermined value is met, the interlock control unit (C) controls the plurality of humidity control units (10) so that the total amount of the air discharged by the humidity control units (10) exceeds the total amount of the air supplied by the humidity control units (10).

27. The humidity control system of any one of claims 19 to 26, further comprising:

an air volume detector (73) configured to detect the amount of air supplied or discharged by a ventilator (8) installed in the first space (S1), wherein

the interlock control unit (C) controls the plurality of humidity control units (10) based on the amount of the air supplied or discharged detected by the air volume detector (73) so that the total amount of the air supplied to the first space (S1) and the total amount of the air discharged from the first space (S1) become substantially identical to each other.