CLAIMS

1. An air-conditioner unit comprising:

a temperature regulation unit having a condenser;

a tray for collecting a condensate from the condenser;

a condensate filtration unit comprising

at least one conduit connected to the tray and arranged to receive the condensate from the tray;

a collection tank to store received condensate from the tray;

a dispensing tank for storage of filtered condensate;

a filter unit arranged to receive condensate from the collection tank and direct filtered condensate to the dispensing tank;

a dispenser arranged to receive filtered condensate from the dispensing tank;

wherein the air-conditioner unit comprises a controller to operate the condensate filtration unit between a plurality of purging states, the plurality of purging states comprises a first purging state wherein condensate stored in the collection tank is purged bypassing the filter unit and a second purging state wherein filtered condensate from the dispensing tank is purged.

2. The air-conditioner unit according to claim 1, wherein the temperature regulation unit and condensate filtration unit are shaped and dimensioned such that the condensate filtration unit is arranged below the temperature regulation unit.

3. The air-conditioner unit according to claims 1 or 2, wherein the condensate filtration unit is a water filtration unit and comprises a plurality of filters arranged to receive condensate from the collection tank and direct filtered condensate to the dispensing tank.

4. The air-conditioner unit according to claim 3, wherein in the first purging state, condensate from the collection tank is sent

directly to a dispenser pump bypassing the plurality of filters, and in the second purging state condensate is sent to the plurality of filters.

5. The air-conditioner unit according to claim 3 or 4, wherein the collection tank comprises a first outlet and a second outlet, such that in the first purging state, condensate from the collection tank is sent directly to a dispenser pump for purging via the first outlet, and in the second purging state, condensate from the collection tank is directed to the plurality of filters via the second outlet.

6. The air-conditioner unit according to any one of the preceding claims, wherein the controller is an electronic controller that operates to receive the following as inputs:

a. the level of condensate stored in the collection tank; and

b. the level of filtered condensate stored in the dispensing tank

the electronic controller operable to provide an output corresponding to the activation or opening of at least one valve.

7. The air-conditioner unit according to claim 6, wherein the condensate filtration unit comprises a flow meter operable to obtain a total volume of condensate passing through the flow meter from a preset time as another input.

8. The air-conditioner unit according to claim 6 or 7, wherein the inputs are binary inputs.

9. The air-conditioner unit according to claim 8, wherein the output is a binary output.

10. The air-conditioner unit according to claim 7, wherein if the total volume of condensate passing through the flow meter is less than a first pre-fixed amount X, the controller operates the condensate filtration unit in the first purging state.

11. The air-conditioner unit according to claim 10, wherein if the total volume of condensate passing through the flow meter is more than the first pre-fixed

amount X but less than a second pre-fixed amount Y, the controller operates the condensate filtration unit in the second purging state.

12. The air-conditioner unit according to claim 11, wherein if the total volume of condensate passing through the flow meter is more than a third pre-fixed amount Z, the controller operates the condensate filtration unit in the third purging state corresponding to a maintenance mode and a prompt to a user to change the filter unit.

13. The air-conditioner unit according to claim 12, wherein if the total volume of condensate passing through the flow meter is more than the second pre-fixed amount Y but less than the third pre-fixed amount Z, the controller operates the condensate filtration unit in a dispensing state.

14. The air-conditioner unit according to any one of the preceding claims, further comprising a first ultra-violet source that operates to disinfect the condensate in the collection tank.

15. The air-conditioner unit according to any one of the preceding claims, further comprising a second ultra-violet source that operates to disinfect the filtered condensate in the dispensing tank.

16. The air-conditioner unit according to claim 1, wherein the temperature regulation unit comprises a second electronic controller and an electronic expansion valve throttling device, the second electronic controller operates to regulate the amount and state of refrigerant flowing pass the expansion valve throttling device.

17. The air-conditioner unit according to claim 16, wherein the second electronic controller is operable to switch the temperature regulation unit between a full feature mode and a priority mode.

18. The air-conditioner unit according to claim 17, wherein the priority mode comprises a cooling priority mode, a water dispensing priority mode, and a refrigeration priority mode.

19. The air-conditioner unit according to any one of claims 16 to 18, wherein the temperature regulation unit comprises an evaporator and a refrigerator, the evaporator arranged to be connected to the refrigerator such that heat energy absorbed by the evaporator results in the cooling of the refrigerator.

20. The air-conditioner unit according to claim 19, wherein the evaporator and condenser are arranged such that a portion of the heat energy generated by the condenser is passed to the evaporator.

21. The air-conditioner unit according to any one of the preceding claims, comprising a dispenser having a first compartment for storage of hot water and a second compartment for storage of cold water.

22. The air-conditioner unit according to claim 21, wherein the first compartment comprises a humidifier.

23. A condensate filtration unit for use with a portable air-conditioner unit, comprising at least one conduit connected to a condensate container and arranged to receive condensate from the condensate container; the condensate filtration unit further comprising a collection tank to store received condensate from the condensate container; a dispensing tank for storage of filtered condensate; a filter unit arranged to receive condensate from the collection tank and direct filtered condensate to the dispensing tank; a dispenser arranged to receive filtered condensate from the dispensing tank;

wherein the condensate filtration unit comprises a controller to operate the condensate filtration unit between a plurality of purging states, the plurality of purging states comprises a first purging state wherein condensate stored in the collection tank is purged bypassing the filter unit and a second purging state wherein filtered condensate from the dispensing tank is purged.

24. An air-conditioner unit comprising:

a compressor for compressing a refrigerant;

a condenser interface arranged to receive compressed refrigerant from the compressor;

a water source arranged to pass water to the condenser interface to remove heat from the compressed refrigerant; the water source further comprising a compartment arranged to store water heated by the compressed refrigerant;

an electronic expansion valve-throttling device arranged to receive compressed refrigerant flowing out of the condenser interface; and

an electronic controller operable to control the electronic expansion valve-throttling device to regulate the quantity of compressed refrigerant flowing through the expansion valve throttling device via adjustments of pressure and temperature.

25. The air-conditioner unit according to claim 24, wherein the electronic controller is pre-programmed to regulate the compressed refrigerant based on a plurality of modes depending on different priority.

26. The air-conditioner unit according to claim 25, wherein the plurality of modes comprise two or more of the following:
a temperature regulation mode, a water dispensing mode, a refrigeration mode.

27. The air-conditioner unit according to claim 24, further comprising an evaporator arranged at the output of the expansion valve-throttling device.

28. The air-conditioner unit according to claim 27, further comprising a refrigerator arranged to be connected to an outlet of the evaporator.

29. The air-conditioner unit according to claim 28, wherein an outlet of the refrigerator is connected to an inlet of the condenser interface.

30. A method for obtaining condensate from an air-conditioner unit comprising the steps of:

a. collecting a condensate from a condenser;

b. directing the condensate via at least one conduit to a condensate filtration unit, the condensate filtration unit comprises a filter unit;

c. storing the condensate in a collection tank;

wherein upon receipt of an electronic signal,

d. operating the condensate filtration unit between a first purging state and a second purging state;

wherein in the first purging state, condensate stored in the collection tank is purged bypassing the filter unit;

and wherein in the second purging state, condensate in the collection tank is directed pass the filter unit to a dispensing tank; and condensate in the dispensing tank is purged.

CLAIMS

1. An air-conditioner unit comprising:

a temperature regulation unit having a condenser;

a tray for collecting a condensate from the condenser;

a condensate filtration unit comprising

at least one conduit connected to the tray and arranged to receive the condensate from the tray;

a collection tank to store received condensate from the tray;

a dispensing tank for storage of filtered condensate;

a filter unit arranged to receive condensate from the collection tank and direct filtered condensate to the dispensing tank;

a dispenser arranged to receive filtered condensate from the ~~condensate filtration unit~~dispensing tank;

wherein the air-conditioner unit comprises a controller to ~~switch~~ operate the condensate filtration unit between a plurality of purging states, the plurality of purging states ~~and a dispensing state~~comprises a first purging state wherein condensate stored in the collection tank is purged bypassing the filter unit and a second purging state wherein filtered condensate from the dispensing tank is purged.

2. The air-conditioner unit according to claim 1, wherein the temperature regulation unit and condensate filtration unit are shaped and dimensioned such that the condensate filtration unit is arranged below the temperature regulation unit.

~~3. The air-conditioner unit according to claim 1 or 2, wherein the condensate filtration unit comprises a collection tank to store received condensate from the tray.~~

~~4. The air-conditioner unit according to any one of the preceding claims, wherein the condensate filtration unit comprises a dispensing tank for storage of filtered condensate.~~

5 ~~5~~3. The air-conditioner unit according to claims ~~3 and 4~~1 or 2, wherein the condensate filtration unit is a water filtration unit and comprises a plurality of filters arranged to receive ~~water~~ condensate from the collection tank and direct filtered ~~water~~ condensate to the dispensing tank.

10 ~~4~~6. The air-conditioner unit according to claim ~~5~~3, wherein in the first purging state, ~~the water filtration unit is switchable between a first state wherein water~~ condensate from the collection tank is sent

directly to a dispenser pump bypassing the plurality of filters, and in the second purging state ~~a second state wherein~~ condensate is sent to the plurality of filters.

~~7~~5. The air-conditioner unit according to claim 3 or ~~4~~6, wherein the collection tank comprises a first outlet and a second outlet, ~~wherein~~ such that in the first purging state, ~~water~~ condensate from the collection tank is sent directly to ~~the~~ a dispenser pump for purging via the first outlet, and ~~wherein~~ in the second purging state, ~~water~~ condensate from the collection tank is directed to ~~a~~ the plurality of filters via the second outlet.

~~6~~8. The air-conditioner unit according to any one of the preceding claims ~~3 and 4~~, wherein the controller is an electronic controller that operates to receive the following as inputs:

a. the level of condensate stored in the collection tank; and

b. the level of filtered condensate stored in the dispensing tank

the electronic controller operable to provide an output corresponding to the activation or opening of at least one valve.

~~7~~9. The air-conditioner unit according to claim ~~6~~8, wherein the condensate filtration unit comprises a flow meter operable to obtain a total volume of condensate passing through the flow meter from a preset time as ~~the~~ another input.

~~8~~10. The air-conditioner unit according to claim ~~6~~8 or ~~7~~9, wherein the inputs are binary inputs.

~~9~~11. The air-conditioner unit according to claim ~~8~~10, wherein the output is a binary output.

10. The air-conditioner unit according to claim 7, wherein if the total volume of condensate passing through the flow meter is less than a first pre-fixed

amount X, the controller operates the condensate filtration unit in the first purging state.

11. The air-conditioner unit according to claim 10, wherein if the total volume of condensate passing through the flow meter is more than the first pre-fixed amount X but less than a second pre-fixed amount Y, the controller operates the condensate filtration unit in the second purging state.

12. The air-conditioner unit according to claim 11, wherein if the total volume of condensate passing through the flow meter is more than a third pre-fixed amount Z, the controller operates the condensate filtration unit in the third purging state corresponding to a maintenance mode and a prompt to a user to change the filter unit.

~~12. The air-conditioner unit according to claim 1, wherein the purging state comprises a start-up purging mode and a filter cleaning purging mode.~~

13. The air-conditioner unit according to claim 12, wherein if the total volume of condensate passing through the flow meter is more than the second pre-fixed amount Y but less than the third pre-fixed amount Z, the controller operates the condensate filtration unit in a dispensing state.

1413. The air-conditioner unit according to ~~claim 3~~any one of the preceding claims, further comprising a first ultra-violet source that operates to disinfect the condensate in the collection tank.

1514. The air-conditioner unit according to ~~claim 4~~any one of the preceding claims, further comprising a second ultra-violet source that operates to disinfect the filtered condensate in the dispensing tank.

1615. The air-conditioner unit according to claim 1, wherein the temperature regulation unit comprises a second electronic controller and an electronic expansion valve throttling device, the second electronic controller operates to regulate the amount and state of refrigerant flowing pass the expansion valve throttling device.

1716. The air-conditioner unit according to claim 1615, wherein the second electronic controller is operable to switch the temperature regulation unit between a full feature mode and a priority mode.

1817. The air-conditioner unit according to claim 1716, wherein the priority mode comprises a cooling priority mode, a water dispensing priority mode, and a refrigeration priority mode.

1918. The air-conditioner unit according to any one of claims 1615 to 1817, wherein the temperature regulation unit comprises an evaporator and a refrigerator, the evaporator arranged to be connected to the refrigerator such that heat energy absorbed by the evaporator results in the cooling of the refrigerator.

2019. The air-conditioner unit according to claim 1918, wherein the evaporator and condenser are arranged such that a portion of the heat energy generated by the condenser is passed to the evaporator.

2120. The air-conditioner unit according to any one of the preceding claims, ~~wherein the~~comprising a ~~-~~dispenser ~~comprises~~ having a first compartment for storage of hot water and a second compartment for storage of cold water.

2221. The air-conditioner unit according to claim 2115, wherein the first compartment comprises a humidifier.

~~22~~23. A condensate filtration unit for use with a portable air-conditioner unit, comprising at least one conduit connected to a condensate container and arranged to receive condensate from the condensate container; the condensate filtration unit further comprising a collection tank to store received condensate from the condensate container; a dispensing tank for storage of filtered condensate; a filter unit arranged to receive condensate from the collection tank and direct filtered condensate to the dispensing tank; a dispenser arranged to receive filtered condensate from the dispensing tank; ~~a dispenser arranged to receive filtered condensate from the condensate filtration unit;~~ wherein the condensate filtration unit comprises a controller to ~~switch~~ operate the condensate filtration unit between a ~~purging state and a dispensing state~~ plurality of purging states, the plurality of purging states comprises a first purging state wherein condensate stored in the collection tank is purged bypassing the filter unit and a second purging state wherein filtered condensate from the dispensing tank is purged.

~~24~~23. An air-conditioner unit comprising:

a compressor for compressing a refrigerant;

a condenser interface arranged to receive compressed refrigerant from the compressor;

a water source arranged to pass water to the condenser interface to remove heat from the compressed refrigerant; the water source further comprising a compartment arranged to store water heated by the compressed refrigerant;

an electronic expansion valve-throttling device arranged to receive compressed refrigerant flowing out of the condenser interface; and

an electronic controller operable to control the electronic expansion valve-throttling device to regulate the quantity of compressed refrigerant flowing through the expansion valve throttling device via adjustments of pressure and temperature.

2524. The air-conditioner unit according to claim 2423, wherein the electronic controller is pre-programmed to regulate the compressed refrigerant based on a plurality of modes depending on different priority.

2625. The air-conditioner unit according to claim 2524, wherein the plurality of modes comprise two or more of the following:
a temperature regulation mode, a water dispensing mode, a refrigeration mode.

2726. The air-conditioner unit according to claim 2423, further comprising an evaporator arranged at the output of the expansion valve-throttling device.

2827. The air-conditioner unit according to claim 2726, further comprising a refrigerator arranged to be connected to an outlet of the evaporator.

2928. The air-conditioner unit according to claim 2728, wherein an outlet of the refrigerator is connected to an inlet of the condenser interface.

3029. A method for obtaining ~~water~~ condensate from an air-conditioner unit comprising the steps of:

a. collecting a condensate from a condenser;

b. directing the condensate via at least one conduit to a condensate filtration unit, the condensate filtration unit comprises a filter unit;

c. storing the condensate in a collection tank;

wherein upon receipt of an electronic signal,

~~d. passing the condensate through a plurality of filters or directing the condensate to a dispenser pump;~~

~~wherein the dispenser pump is positioned at an output of the water filtration unit to pump filtered water to be stored or purge the condensate~~.d. operating the condensate filtration unit between a first purging state and a second purging state;

wherein in the first purging state, condensate stored in the collection tank is purged bypassing the filter unit;

and wherein in the second purging state, condensate in the collection tank is directed pass the filter unit to a dispensing tank; and condensate in the dispensing tank is purged.