CLAIMS:

1. A temperature regulation system, comprising:

a condenser (CON 100);

an evaporator (EVA100);

~~a pipe (P100) for circulating a refrigerant (REF 100) between the condenser (CON100) and the evaporator (EVA100);~~

at least one refrigerant injection device (IJ100) ~~connected to the condenser (CON100) by a section of the pipe (P100) and~~ incorporated in or formed integrally with the evaporator (EVA100) for injecting refrigerant (REF100) into the evaporator (EVA100)~~, said refrigerant injection device including at least one pressurizing injector for pressurizing the refrigerant (REF 100) supplied by the condenser (CON 100)~~;

a drive circuit device (CD100) connected to the at least one refrigerant injection device (IJ100) for controlling an amount and intensity of the refrigerant (REF100) injected into the evaporator (EVA100) in a fixed or periodic scan driving direction, so that said refrigerant (REF100) ~~be~~is sprayed into the evaporator as one of a refrigerant stream, fine particles, or mist; and

a fluid compression pump (PUMP100) connected to an outlet of the evaporator (EVA100)~~, said outlet enabling escaped of a vaporized or incompletely vaporized said refrigerant (REF100),~~ for compressing the vaporized ~~said~~ refrigerant (REF100) and supplying ~~vaporized and compressed~~ said refrigerant (REF100) to the condenser (CON100) ~~for conversion to said liquid~~.

2. A temperature regulation system according to claim 1, further comprising:

an operation input device (OID100) for inputting operation signals to control actuation or stopping of the system, select operation modes, regulate temperature settings, and set an air output level when a fan is installed; and

an electric control unit (ECU100) connected to receive the operation signals from the operation input device (OID100) and for supplying control signals to the driving circuit device (CD100) to control a pressurization and injection timing of the injection device (IJ100) in order to control said injection amount and intensity.

3. A temperature regulation system according to claim 2, further comprising a

temperature detector (TD100) for detecting a temperature of the evaporator, wherein said electronic control unit (ECU100) controls said driving circuit device (CD100) in response to temperature detection signals from the temperature detector (TD100).

4. A temperature regulation system according to claim 2 or 3, further comprising a liquid refrigerant detector (HD100) installed in the evaporator for detecting an evaporation state of the refrigerant (REF100) and, when the refrigerant (REF100) is not completely evaporated, sending a feedback signal to the electric control unit (ECU100) to control the driving circuit device (CD100) to reduce an amount of refrigerant (REF100) injected by the injection device (IJ100) into the evaporator (EVA100).

5. A temperature regulation system according claim 4, further comprising a fan (F101) for blowing air through the evaporator (EVA100), said fan (F101) being controlled by the electric control unit (ECU100) in response to feedback from at least one of the temperature detector (TD100) and the liquid refrigerant detector (HD100).

6. A temperature regulation system according to claim 5, further comprising a second fan (F102) controlled by the electric control unit (ECU100) for blowing air through the condenser (CON100).

7. A temperature regulation system according to claim 2, wherein the evaporator (EVA100) is included in a heat exchanger (HE100) having a secondary side pipeline (P200), the heat exchanger (HE100) transferring heat between the refrigerant (REF100) in the evaporator (EVA100) and a fluid in the secondary side pipeline (P200).

~~8. A temperature regulation system according to claim 7, further comprising a liquid refrigerant detector (HD100) installed in the evaporator (EVA100) for detecting an evaporation state of the refrigerant (REF100) and, when the refrigerant (REF100) is not completely evaporated, sending a feedback signal to the electric control unit (ECU100) to control the drive circuit device (CD100) to reduce an amount of refrigerant (REF100) injected into the evaporator (EVA100).~~

~~9. A temperature regulation system according to claim 8, further comprising a~~

~~temperature detector (TD100) for detecting a temperature of the evaporator (EVA100), wherein said electronic control unit (ECU100) controls said driving circuit device (CD100) in response to temperature detection signals from the temperature detector (TD100).~~

~~10. A temperature regulation system according to claim 9, further comprising a fan (F102) controlled by the electric controlled by the electric control unit (ECU100) for blowing air through the condenser (CON100).~~

8~~11~~. A temperature regulation system according to claim 2, further comprising a pressure reduction throttle device (R100) connected between the condenser (CON100) and the injection device (IJ100) and comprising one of an expansion valve, a capillary device, and a liquid level control device for reducing a pressure and throttling of said refrigerant (REF100) supplied in a liquid state from the condenser (CON100) to the injection device

~~12. A temperature regulation system according to claim 11, further comprising a temperature detector (TD100) for detecting a temperature of the evaporator, wherein said electronic control unit (ECU100) controls said driving circuit device (CD100) in response to temperature detection signals from the temperature detector (TD100).~~

~~13. A temperature regulation system according to claim 12, further comprising a liquid refrigerant detector (HD100) installed in the evaporator for detecting an evaporation state of the refrigerant (REF100) and, when the refrigerant (REF100) is not completely evaporated, sending a feedback signal to the electric control unit (ECU100) to control the driving circuit device (CD100) to reduce an amount of refrigerant (REF100) injected by the injection device (U100) into the evaporator (EVA100).~~

~~14. A temperature regulation system according to claim 13, further comprising a temperature detector (TD100) for detecting a temperature of the evaporator (EVA100), wherein said electronic control unit (ECU100) controls said driving circuit device (CD100) in response to temperature detection signals from the temperature detector (TD100).~~

~~15. A temperature regulation system according to claim 14, further comprising a fan (F101) for blowing air through the evaporator (EVA100), said fan (F101) being controlled by the electric control unit (ECU100) in response to feedback from at least one of the temperature detector (TD100) and the liquid refrigerant detector (HD100).~~

~~16. A temperature regulation system according to claim 15, further comprising a second fan (F102) controlled by the electric control unit (ECU100) for blowing air through the condenser (CON100).~~

~~17. A temperature regulation system according to claim 11, wherein the evaporator (EVA100) is included in a heat exchanger (HE100) having a secondary side pipeline (P200), the heat exchanger (HE100) transferring heat between the refrigerant (REF100) in the evaporator (EVA100) and a fluid in the secondary side pipeline (P200).~~

~~18. A temperature regulation system according to claim 17, further comprising a liquid refrigerant detector (HD100) installed in the evaporator (EVA100) for detecting an evaporation state of the refrigerant (REF100) and, when the refrigerant (REF100) is not completely evaporated, sending a feedback signal to the electric control unit (ECU100) to control the drive circuit device (CD100) to reduce an amount of refrigerant (REF100) injected into the evaporator (EVA100).~~

~~19. A temperature regulation system according to claim 18, further comprising a temperature detector (TD100) for detecting a temperature of the evaporator (EVA100), wherein said electronic control unit (ECU100) controls said driving circuit device (CD100) in response to temperature detection signals from the temperature detector (TD100).~~

~~20. A temperature regulation system according to claim 19, further comprising a fan (F102) controlled by the electric controlled by the electric control unit (ECU100) for blowing air through the condenser (CON100).~~

9~~21~~. A temperature regulation system according to claim 2, wherein the system is

included in one of an air conditioner, refrigerator, and freezer.

1022. A temperature regulation system according to claim 2, wherein the at least one pressurizing injector of the refrigerant injection device (IJ100) is one of a mechanical, electromagnetic, magnetostrictive, and piezoelectric injector.