A cooling system for cooling an electronic device includes a first heat exchanger, a second heat exchanger, a first refrigerant pipe, a second refrigerant pipe, and a pump. The first and second refrigerant pipes receive refrigerants, which can circulate in the first and second heat exchangers. The first heat exchanger is arranged in the electronic device for cooling the electronic device. The second heat exchanger is used for cooling the refrigerants by gasifying liquefied gas. The pump is used for circulating the refrigerants.
COOLING SYSTEM FOR ELECTRONIC DEVICE

BACKGROUND

[0001] 1. Technical Field

[0002] The present disclosure relates to cooling systems, and particularly, to a cooling system for an electronic device.

[0003] 2. Description of Related Art

[0004] With increasing heavy use of on-line applications, the need for computer data centers has increased rapidly. Data centers are centralized computing facilities that include many servers, often arranged on server racks or shelves, and one rack or shelf with several servers can be considered a server system. During operation, server systems generate a lot of heat in the data centers, and a common method for dissipating the heat is to use air conditioners, which are very expensive. Therefore an energy-saving cooling system is needed.

BRIEF DESCRIPTION OF THE DRAWING

[0005] Many aspects of the present embodiments can be better understood with reference to the following drawings. The components in the drawings are not necessarily drawn to scale, the emphasis instead being placed upon clearly illustrating the principles of the present embodiments. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

[0006] The FIGURE is a schematic block diagram of a cooling system of an electronic device, according to an exemplary embodiment.

DETAILED DESCRIPTION

[0007] The disclosure, including the accompanying drawings, is illustrated by way of examples and not by way of limitation. It should be noted that references to “an” or “one” embodiment in this disclosure are not necessarily to the same embodiment, and such references mean at least one.

[0008] Referring to the FIGURE, an embodiment of a cooling system is provided for cooling an electronic device 10. The cooling system includes a first heat exchanger 20, a second heat exchanger 50, a first refrigerant pipe 30, a second refrigerant pipe 40, and a pump 31. The first and second refrigerant pipes 30 and 40 receive refrigerants, which can circulate in the first and second heat exchangers 20 and 50.

[0009] The electronic device 10 may be a container data center, which can generate a lot of heat.

[0010] The first heat exchanger 20 is arranged in the electronic device 10 for cooling the electronic device 10.

[0011] The second heat exchanger 50 is used for cooling the refrigerants flowing through the second heat exchanger 50 by gasifying the liquefied gas 51.

[0012] The first refrigerant pipe 30 is connected between the first heat exchanger 20 and the second heat exchanger 50, for transferring the refrigerants cooled by the second heat exchanger 50 to the first heat exchanger 20, to cool the first heat exchanger 20.

[0013] The second refrigerant pipe 40 is connected between the first heat exchanger 20 and the second heat exchanger 50, for transferring the refrigerants heated by the first heat exchanger 20 to the second heat exchanger 50.

[0014] The pump 31 is arranged between the first refrigerant pipe 30 and the second heat exchanger 50, for circulating the refrigerants. In this embodiment, the pump 31 is used for transferring the refrigerants cooled by the second heat exchanger 50 to the first refrigerant pipe 30. In another embodiment, the pump 31 can be arranged between the second refrigerant pipe 40 and the second heat exchanger 50.

[0015] In this embodiment, the liquefied gas 51 is liquefied natural gas (LNG). Commonly, LNG is heated to a gaseous state for convenient use. In another embodiment, the liquefied gas 51 may be liquid nitrogen (LN).

[0016] The second heat exchanger 50 receives heat medium, which is used for cooling the refrigerants flowing through the second heat exchanger 50. The liquefied gas 51 flows into the second heat exchanger 50 through a gas inlet 52. The liquefied gas 51 cools the heat medium, and then is exhausted through a gas outlet 53. In this embodiment, the heat medium is antifreeze composed of at least one of alcohol, glycol, propylene glycol, and glycerol.

[0017] In this embodiment, the cooling system cools the electronic device 10 by gasifying the liquefied gas 51. In other words, the liquefied gas 51 is gasified by the heat of the electronic device 10, which saves energy.

[0018] Even though numerous characteristics and advantages of the embodiments have been set forth in the foregoing description, together with details of the structure and function of the embodiments, the disclosure is illustrative only, and changes may be made in detail, especially in the matters of shape, size, and arrangement of parts within the principles of the present disclosure to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

1. A cooling system for an electronic device, comprising:
   a first heat exchanger for cooling the electronic device;
   a second heat exchanger;
   a pump connected to the second heat exchanger;
   a first refrigerant pipe connected between the first heat exchanger and the pump; and
   a second refrigerant pipe connected between the first heat exchanger and the second heat exchanger;

2. The cooling system of claim 1, wherein the liquefied gas is liquefied natural gas.

3. The cooling system of claim 1, wherein the liquefied gas is liquid nitrogen.

4. The cooling system of claim 1, wherein the second heat exchanger receives heat medium for transferring heat of the heated refrigerants to the liquefied gas.

5. The cooling system of claim 4, wherein the heat medium is antifreeze.