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(54) **HEAT DISSIPATION SYSTEM AND SOLID-STATE TRANSFORMER POWER APPARATUS**

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(57) **ABSTRACT**

A heat dissipation is used to dissipate heat for a power module of an AC-to-DC conversion module. The heat dissipation system includes a chiller, a heat exchanger, a first circulation pipeline, a second circulation pipeline, a first throttle valve, and a control module. The chiller, the heat exchanger, and the first circulation pipeline form a first circulation loop to circulate a low-temperature coolant. The second circulation pipeline is disposed on one side of the power module to form a second circulation loop, and absorbs a heat source generated by the power module by circulating a high-temperature coolant. The control module opens the first throttle valve to introduce the low-temperature coolant into the second circulation loop based on a temperature of the high-temperature coolant being greater than a temperature threshold so as to control the temperature to be less than or equal to the temperature threshold.