maximum load expected at the time of design, however, a temperature of returning water from the load is low in many cases in actual operations, with respect to the round-trip temperature difference used to design the load of the cold water. FIG. 18 is a diagram showing a relationship between the COP and a cooling amount (%) in a centrifugal chiller. In an operation state in which the round-trip temperature difference for the load of cold water is small, the COP of the chiller decreases and the flow rate required for cooling the load increases, and thereby the required pump power increases in some cases as shown in FIG. 18.

{0006}

Further, there is a problem that the cooling amount of the load in the designed flow rate decreases and the designed maximum amount of heat processing cannot be performed. For example, when one chiller and one constant flow rate pump are provided, if the flow rate of the pump is increased before the cooling capacity of the chiller becomes 100 % when the temperature difference is small, two chillers and two pumps are required to be operated instead of one chiller and one pump. Therefore, the system COP of the heat source system decreases.

{0007}

In view of the actual circumstances described above, ~~the object~~embodiments of the present invention ~~is~~seek to provide a heat source

system which improves a system COP without decreasing an operating efficiency of a cold source, and also a control method therefor and a program therefor.

{Solution to Problem}

{0008}

According to a first aspect, a second aspect and a third aspect, there are provided heat source systems, ~~according to claims 1, 2, 5 is one for which~~wherein pumps that send a heat medium to at least one of a cold source for cooling the heat medium and a heat exchanger for exchanging heat between the cooled heat medium and a load, the cold source, and the heat exchanger of the load, are connected by pipes through which the heat medium flows, and has the following characteristics.

{0009}

The heat source system according to ~~claim 1~~the first aspect includes a load heat amount measurement unit that measures an amount of heat which the heat medium exchanges with the load, a cold water return temperature measurement unit that measures a temperature of the heat medium which exchanges heat with the load and returns to the cold source, and a first control unit that lowers a temperature set value of the heat medium at an outlet of the cold source, if a temperature of the heat medium falls below a temperature set value thereof and a difference between the temperature of the heat medium and the temperature set value of the heat medium at the outlet of the cold source becomes less

than a predetermined set value.

{0010}

The heat source system according to ~~claim 2~~the second aspect includes a load heat amount measurement unit that measures an amount of heat which the heat medium exchanges with the load, a cold water return temperature measurement unit that measures a temperature of the heat medium which exchanges heat with the load and returns to the cold source, and a second control unit that changes a temperature set value of the heat medium at an outlet of the cold source to be lower than a predetermined temperature set value at the time of a maximum load.

{0011}

The heat source system according to ~~claim 5~~the third aspect includes a load heat amount measurement unit that measures an amount of heat which the heat medium exchanges with the load, a cold water return temperature measurement unit that measures a temperature of the heat medium which exchanges heat with the load and returns to the cold source, a heat medium flow rate measurement unit that measures a flow rate of the heat medium which exchanges heat with the load, and a third control unit that raises a temperature set value of the heat medium which is cooled by the cold source if the flow rate of the heat medium is in a set range of temperature raising determination flow rate, and on the other hand, lowers the temperature set value of the heat medium which

~~1.~~ is cooled by the cold source if the flow rate of the heat medium is in a set range of temperature lowering determination flow rate and the temperature of the heat medium is lower than a predetermined temperature lowering determination temperature.

{0012}

~~Control methods according to claims 11, 12, 15 for heat source systems are~~According to embodiments, control methods for heat source systems according to ~~claims 1, 2, 5,~~the first, second and third aspects respectively are provided.

{0012a}

According to a fourth aspect, there is provided a control method for a heat source system, wherein pumps that send a heat medium to at least one of a cold source for cooling the heat medium and a heat exchanger for exchanging heat between the cooled heat medium and a load, the cold source, and the heat exchanger of the load, are connected by pipes through which the heat medium flows, wherein a temperature set value of the heat medium at an outlet of the cold source is lowered, if a temperature of the heat medium returning to the cold source after heat exchanging with the load falls below a temperature set value thereof and a difference with the temperature set value of the heat medium at the outlet of the cold source becomes less than a predetermined set value.

{0012b}

According to a fifth aspect, there is provided a control method for a heat source system, wherein pumps that send a heat medium to at least one of a cold source for cooling the heat medium and a heat exchanger for exchanging heat between the cooled heat medium and a load, the cold source, and the heat exchanger of the load, are connected by pipes through which the heat medium flows, wherein a temperature set value of the heat medium at an outlet of the cold source is changed to be lower than a predetermined temperature set value at the time of a maximum load.

{0012c}

According to a sixth aspect, there is provided a control method for a heat source system, wherein pumps that send a heat medium to at least one of a cold source for cooling the heat medium and a heat exchanger for exchanging heat between the cooled heat medium and a load, the cold source, and the heat exchanger of the load, are connected by pipes through which the heat medium flows, wherein if a flow rate of the heat medium which is heat exchanged with the load is in a set range of temperature raising determination flow rate, a temperature set value of the heat medium which is cooled by the cold source is raised, and on the other hand, if the flow rate of the heat medium is in a set range of temperature lowering determination flow rate and the temperature of the heat medium is lower than a predetermined temperature lowering determination temperature, the temperature set value of the heat medium which is cooled by the cold source is lowered.

{0013}

~~A program a~~According to ~~claim 19 for the heat source system is~~a seventh aspect, there is provided a program for performing on a computer the control method according to any one of ~~claims 11, 12, 15 for the heat source system~~the fourth, fifth or sixth aspect.

{Advantageous Effects of Invention}

{0014}

According to embodiments of the present invention, it is possible to provide a heat source system which prevents the system COP from decreasing without reducing the operating efficiency of the cold source, and also a control method therefor, and a program therefor.

{Brief Description of Drawings}

{0015}

FIG. 1 is a block diagram of a heat source system according to a first embodiment of the present invention.