

CLAIMS

[Claim 1]

An air-conditioning control system for air-conditioning an electronic device installation room housing a plurality of electronic devices by a plurality of air conditioners, comprising:

an integrated management server which calculates a required amount of cooling energy based on power data on the electronic devices as sent from a first client server including a job management means for managing jobs for the electronic devices and outputs information to control operation of the air conditioners; and

a control panel which controls operation of the air conditioners based on a command from the integrated management server,

wherein the integrated management server includes an environment optimization means to calculate a temperature distribution in the electronic device installation room in controlling operation of the air conditioners based on the required amount of cooling energy and sends a command for controlling operation of the air conditioners to the control panel so that the temperature distribution calculated using the environment optimization means is within a predetermined permissible range.

wherein each air conditioner includes a return air temperature sensor for detecting a temperature of air flowing into the air conditioner, a supply air temperature sensor for detecting

a temperature of outflowing air, and a means for detecting a frequency of a fan of the air conditioner; and

wherein the second client server or the integrated management server calculates an amount of currently used cooling energy based on outputs from the return air temperature sensor, the supply air temperature sensor, and the frequency detecting means; and

wherein the required amount of cooling energy is a sum of actual power consumption of the electronic devices, or a sum of future power consumption of the electronic devices as predicted by the first client server according to a job plan which the first client server receives, or the calculated amount of currently used cooling energy, whichever is the largest.

[Claim 2]

The air-conditioning control system according to Claim 1, wherein the required amount of cooling energy is a sum of actual power consumption of the electronic devices.

[Claim 3]

The air-conditioning control system according to Claim 1, wherein the required amount of cooling energy is a sum of actual power consumption of the electronic devices or a sum of future power consumption of the electronic devices as predicted by the first client server according to a job plan which the first client server receives, whichever is larger.

~~[Claim 4]~~

~~The air conditioning control system according to Claim 1, wherein each air conditioner includes a return air temperature sensor for detecting a temperature of air flowing into the air conditioner, a supply air temperature sensor for detecting a temperature of outflowing air, and a means for detecting a frequency of a fan of the air conditioner; and~~

~~wherein the second client server or the integrated management server calculates an amount of currently used cooling energy based on outputs from the return air temperature sensor, the supply air temperature sensor, and the frequency detecting means; and~~

~~wherein the required amount of cooling energy is a sum of actual power consumption of the electronic devices, or a sum of future power consumption of the electronic devices as predicted by the first client server according to a job plan which the first client server receives, or the calculated amount of currently used cooling energy, whichever is the largest.~~

[Claim 54]

An air-conditioning control method for air-conditioning an electronic device installation room housing a plurality of electronic devices by a plurality of air conditioners, comprising
5 the steps of:

obtaining power data on the electronic devices by a first client server including a job management means for managing jobs for the electronic devices;

10 calculating a required amount of cooling energy needed for air-conditioning the electronic devices, based on the power data on the electronic devices as obtained by the first client server and calculating information to control operation of the air conditioners; and

15 the integrated management server giving an operation command to the control panel,

wherein at the step of the integrated management server giving the operation command to the control panel, a command to control operation of the air conditioners is sent to the control panel so
20 that a temperature distribution obtained using an environment optimization means for calculating a temperature distribution and an air current in the electronic device installation room is within a predetermined permissible range when operation of the air conditioners is controlled based on the power data on the electronic
25 devices and the required amount of cooling energy.

wherein the second client server or the integrated management server calculates an amount of currently used cooling energy based on outputs from a return air temperature sensor, a supply air temperature sensor, and a frequency detecting means which are provided in each air conditioner; and

wherein the required amount of cooling energy is a sum of actual power consumption of the electronic devices, or a sum of future power consumption of the electronic devices as predicted by the first client server according to a job plan which the first client server receives, or the calculated amount of currently used cooling energy, whichever is the largest.

[Claim 56]

The air-conditioning control method according to Claim 45, wherein the required amount of cooling energy is a sum of actual power consumption of the electronic devices.

5 [Claim 67]

The air-conditioning control method according to Claim 45, wherein the required amount of cooling energy is a sum of actual power consumption of the electronic devices or a sum of future power consumption of the electronic devices as predicted by the first client server according to a job plan which the first client server receives, whichever is larger.

{Claim 8}

~~The air conditioning control method according to Claim 5, wherein the second client server or the integrated management server calculates an amount of currently used cooling energy based on outputs from a return air temperature sensor, a supply air temperature sensor, and a frequency detecting means which are provided in each air conditioner; and~~

~~wherein the required amount of cooling energy is a sum of actual power consumption of the electronic devices, or a sum of future power consumption of the electronic devices as predicted by the first client server according to a job plan which the first client server receives, or the calculated amount of currently used cooling energy, whichever is the largest.~~