[CLAIMS]

[Claim 1]

A positioning configuration design device ~~comprising:~~

~~a~~for calculating a smallest positioning configuration ~~setting unit that excludes facilities which are likely to be able to be excluded from the facilities respectively positioned at a~~ for positioning a plurality of ~~locations and sets a~~ facilities,

wherein the positioning configuration ~~of the facilities;~~

~~a feasibility~~design device comprises a control unit that repeatedly executes confirmation ~~unit that judges whether~~ processing including processing of setting the positioning configuration while excluding the facilities, in which predetermined conditions are not feasible when the facilities are excluded, from a exclusion target and processing of judging whether the conditions are feasible or not in the set positioning configuration~~;~~ while incrementing the number of the facilities to be excluded one at a time until the positioning configuration in which the conditions are feasible in the positioning configuration of the facilities and no further facilities are able to be excluded is able to be calculated.

[Claim 2]

The positioning configuration design device according to claim 1,

~~a storage unit that stores~~ wherein the control unit executes the confirmation processing on the basis of exclusion candidate list data in which information of the excludable facilities allowing the conditions to be feasible even when the facilities are excluded is registered and non-excludable list data in which information of the non-excludable facilities not allowing the conditions to be feasible when the facilities are excluded is registered~~;~~.

~~an~~[Claim 3]

The positioning configuration design device according to claim 2 further comprising:

a storage unit that stores the exclusion candidate list data and the non-excludable list data;

a exclusion candidate list updating unit that registers, in the exclusion candidate list data, information of the facilities excluded in the positioning configuration in which the conditions are feasible; and

a non-excludable list updating unit that registers, in the non-excludable list data, information of the facilities excluded in the positioning configuration in which the conditions are not feasible~~; and~~.

~~a control unit that repeatedly executes confirmation processing including setting of the positioning configuration, judgment of feasibility of the conditions, registration to the exclusion candidate list data, and registration to the non-excludable list data while incrementing the number of the facilities to be excluded one at a time until the positioning configuration in which the conditions are feasible and no further facilities are able to be excluded is able to be calculated,~~

[Claim 4]

The positioning configuration design device according to claim 3,

wherein in the first confirmation processing,

the ~~positioning configuration setting~~control unit sets ~~a~~the plurality of combinations of the positioning configurations by excluding the facilities one at a time from the plurality of facilities~~; the feasibility confirmation unit~~ and judges ~~feasibility of~~whether the conditions are feasible or not for each of the plurality of combinations of the positioning configurations~~;~~ ,

the exclusion candidate list updating unit registers, in the exclusion

candidate list data, the facilities excluded in the positioning configuration in which the conditions are feasible~~;~~, and~~–~~

the non-excludable list updating unit registers, in the non-excludable list data, the facilities excluded in the positioning configuration in which the conditions are not feasible~~;~~.

[Claim 5]

The positioning configuration design device according to any one of claims 3 and 4,

wherein in the nth (n is an integer larger than 1) confirmation processing,

the exclusion candidate list updating unit registers, in the exclusion candidate list data, combinations in which the conditions are feasible of combinations of the n facilities to be excluded, and

the non-excludable list updating unit registers, in the non-excludable list data, combinations in which the conditions are not feasible of the combinations of the n facilities to be excluded~~, and~~.

[Claim 6]

The positioning configuration design device according to any one of claims 3 to 5,

wherein in the n+1th confirmation processing,

the ~~positioning configuration setting~~control unit sets as many combinations of the n+1 facilities to be excluded as possible from the combinations of the n facilities registered in the exclusion candidate list data such that the facilities and combinations of the facilities registered in the non-excludable list data are not included therein.

[Claim 7]

The positioning configuration design device according to any one of claims 2 to 6,

~~[Claim 2]~~

~~The positioning configuration design device according to claim 1,~~

wherein the control unit ends execution of the confirmation processing when the combinations of the n facilities are not able to be created any longer such that combinations of the facilities registered in the non-excludable list data are not included therein in the nth confirmation processing.

[Claim ~~3~~8]

The positioning configuration design device according to any one of claims 1 to ~~2~~7,

wherein the control unit sets an auxiliary feeder line in the vicinity of a location where a value of a voltage becomes the smallest in a power network when the positioning configuration of power facilities supplying power to trains ~~connected to the power network~~ has been calculated.

~~[Claim 4]~~

[Claim 9]

The positioning configuration design device according to any one of claims 1 to ~~3~~8,

wherein the control unit sets an up-down connection resistance connecting an up-line in which a voltage drop in the power network is equal to or greater than a threshold and a down-line in which a voltage drop therein is smaller than the threshold when the positioning configuration of power facilities supplying power to trains ~~connected to the power network~~ has been calculated.

~~[Claim 5]~~

[Claim 10]

A positioning configuration design method ~~comprising:~~for calculating a smallest positioning configuration for positioning a plurality of facilities,

wherein in the positioning configuration design method, confirmation processing including a step of setting the positioning configuration while excluding the facilities, in which ~~are likely to be able to be~~ predetermined conditions are not feasible when the facilities are excluded, from ~~the facilities respectively positioned at a plurality of locations~~a exclusion target and ~~setting a positioning configuration of the facilities;~~

~~a~~ a step of judging whether ~~predetermined~~the conditions are feasible or not in the set positioning configuration ~~of~~is repeatedly executed while incrementing the number of the facilities~~;~~

to be excluded one at a ~~step of registering,~~time until the positioning configuration in ~~exclusion candidate list data~~ which ~~is stored in a storage unit and in which information of the excludable facilities is registered, information of the facilities excluded~~the conditions are feasible in the positioning configuration ~~in which the conditions are feasible; and~~of the facilities and no further facilities are able to be excluded is able to be calculated.

~~a step of registering, in non-excludable list data which is stored in the storage unit and in which information of the non-excludable facilities is registered, information of the facilities excluded in the positioning configuration in which the conditions are not feasible,~~

[Claim 11]

A non-transitory computer-readable medium storing a program for calculating a smallest positioning configuration for positioning a plurality of facilities,

wherein the program causes a computer to repeatedly execute

confirmation processing including ~~the~~a step of setting the positioning configuration~~,~~ while excluding the ~~step of judging whether the~~facilities, in which predetermined conditions are not feasible ~~or not,~~ when the facilities are excluded, from a exclusion target and a step of judging whether the conditions are feasible or not in the ~~step of performing registration to the exclusion candidate list data, and the step of performing registration to the non-excludable list data is repeatedly executed while~~ set positioning configuration while incrementing the number of the facilities to be excluded ~~is incremented~~ one at a time until the positioning configuration in which the conditions are ~~satisfied~~feasible in the positioning configuration of the facilities and no further facilities are able to be excluded is able to be calculated~~,~~

~~wherein in the first confirmation processing, a plurality of combinations of the positioning configurations are set by excluding the facilities one at a time from the plurality of facilities during the step of setting the positioning configuration, feasibility of the conditions is judged for each of the plurality of combinations of the positioning configurations during the step of judging whether the conditions are feasible or not, the facilities excluded in the positioning configuration in which the conditions are feasible are registered in the exclusion candidate list data during the step of performing registration to the exclusion candidate list data, and the facilities excluded in the positioning configuration in which the conditions are not feasible are registered in the non-excludable list data during the step of performing registration to the non-excludable list data,~~

~~wherein in the nth (n is an integer larger than 1) confirmation processing,~~

~~combinations in which the conditions are feasible of combinations of the n facilities to be excluded are registered in the exclusion candidate list data during the step of performing registration to the exclusion candidate list data, and~~

~~combinations in which the conditions are not feasible of the combinations of the n facilities to be excluded are registered in the non-excludable list data during the step of performing registration to the non-excludable list data, and~~

~~wherein in the n+1th confirmation processing, as many combinations of the n+1 facilities to be excluded as possible are set from the combinations of the n facilities registered in the exclusion candidate list data such that the facilities and combinations of the facilities registered in the non-excludable list data are not included therein during the step of setting the positioning configuration.~~

~~[Claim 6]~~

~~A program causing a computer~~

~~to execute processing having~~

~~a step of excluding facilities which are likely to be able to be excluded from the facilities respectively positioned at a plurality of locations and setting a positioning configuration of the facilities,~~

~~a step of judging whether predetermined conditions are feasible or not in the set positioning configuration of the facilities,~~

~~a step of registering, in exclusion candidate list data which is stored in a storage unit and in which information of the excludable facilities is registered, information of the facilities excluded in the positioning configuration in which the conditions are feasible, and~~

~~a step of registering, in non-excludable list data which is stored in the storage unit and in which information of the non-excludable facilities is registered, information of the facilities excluded in the positioning configuration in which the conditions are not feasible;~~

~~to repeatedly execute confirmation processing including the step of setting the~~

positioning configuration, the step of judging whether the conditions are feasible or not, the step of performing registration to the exclusion candidate list data, and the step of performing registration to the non-excludable list data while the number of the facilities to be excluded is incremented one at a time until the positioning configuration in which the conditions are satisfied and no further facilities are able to be excluded is able to be calculated;

to set a plurality of combinations of the positioning configurations by excluding the facilities one at a time from the plurality of facilities during the step of setting the positioning configuration, judge feasibility of the conditions for each of the plurality of combinations of the positioning configurations during the step of judging whether the conditions are feasible or not, register, in the exclusion candidate list data, the facilities excluded in the positioning configuration in which the conditions are feasible during the step of performing registration to the exclusion candidate list data, and register, in the non-excludable list data, the facilities excluded in the positioning configuration in which the conditions are not feasible during the step of performing registration to the non-excludable list data, in the first confirmation processing;

to register, in the exclusion candidate list data, combinations in which the conditions are feasible of combinations of the n facilities to be excluded during the step of performing registration to the exclusion candidate list data, and register, in the non-excludable list data, combinations in which the conditions are not feasible of the combinations of the n facilities to be excluded during the step of performing registration to the non-excludable list data, in the nth (n is an integer larger than 1) confirmation processing; and

to set as many combinations of the n+1 facilities to be excluded as possible from the combinations of the n facilities registered in the exclusion candidate list data such

~~that the facilities and combinations of the facilities registered in the non-excludable list data are not included therein during the step of setting the positioning configuration, in the n+1th confirmation processing.~~

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