{CLAIMS}

{Claim 1}

A power supply apparatus comprising:

a storage battery for supplying electric power to an electric power load of a crane, the storage battery being chargeable and dischargeable;

a power receiving unit for receiving supply of a predetermined electric power from a commercial power supply;

a calculating unit for calculating an electric power difference between the electric power consumed by the electric power load and the electric power supplied from the commercial power supply; and

a controlling unit for charging/discharging electric power according to the electric power difference calculated by the calculating unit, to/from the storage battery.

{Claim 2}

A power supply apparatus that supplies AC power to an electric power load of a crane including a power generator or a crane from which an existing power generator is eliminated, the power supply apparatus comprising:

a storage battery for supplying electric power to the electric power load, the storage battery being chargeable and dischargeable;

a power receiving unit for receiving supply of a

predetermined electric power from a commercial power supply;

a calculating unit for calculating an electric power difference between the electric power consumed by the electric power load and the electric power supplied from the commercial power supply;

a controlling unit for charging/discharging electric power according to the electric power difference calculated by the calculating unit, to/from the storage battery; and

a supplying unit for converting DC power from each of the storage battery and the power receiving unit into AC power and supplying the converted power to a power feeding path leading to the electric power load.

{Claim 3}

A power supply apparatus according to claim 1 or claim 2, wherein

the crane is transferrable from one lane to another lane, and

the controlling unit charges/discharges the storage battery during transfer of the crane between the lanes, assuming that no electric power is supplied from the commercial power supply.

{Claim 4}

A power supply apparatus according to any one of claim 1

to claim 3, wherein

the electric power supplied from the commercial power supply is set to be variable within a range equal to or less than the predetermined electric power.

{Claim 5}

A power supply apparatus according to claim 4, wherein

the controlling unit changes the electric power supplied from the commercial power supply, on a basis of a history of a charge state of the storage battery.

{Claim 6}

A power supply apparatus according to claim 4, wherein

the controlling unit changes the electric power supplied from the commercial power supply, on a basis of a history of the electric power supplied to the electric power load.

{Claim 7}

A power supply apparatus according to any one of claim 1 to claim 6, wherein

the crane changes acceleration in a hoisting operation in which a suspension cargo is hoisted, to thereby perform the hoisting operation so as to suppress the electric power consumed by the electric power load, and

an electric power capacity of the storage battery is

based on the electric power suppressed through the hoisting operation.

{Claim 8}

A crane comprising:

the power supply apparatus according to any one of claim 1 to claim 7; and

an electric power load that is driven with electric power supplied from the power supply apparatus.

{Claim 9}

A power supply method for supplying electric power to an electric power load of a crane,

the crane including:

a storage battery for supplying electric power to the electric power load, the storage battery being chargeable and dischargeable; and

a power receiving unit for receiving supply of a predetermined electric power from a commercial power supply,

the power supply method comprising:

a first stage of calculating an electric power difference between the electric power consumed by the electric power load and the electric power supplied from the commercial power supply; and

a second stage of charging/discharging electric

power according to the electric power difference calculated in the first stage, to/from the storage battery.

{Claim 10}

A power supply method for a power supply apparatus that supplies AC power to an electric power load of a crane including a power generator or a crane from which an existing power generator is eliminated,

the power supply apparatus including:

a storage battery for supplying electric power to the electric power load of the crane, the storage battery being chargeable and dischargeable;

a power receiving unit for receiving supply of a predetermined electric power from a commercial power supply; and

a supplying unit for converting DC power from each of the storage battery and the power receiving unit into AC power and supplying the converted power to a power feeding path leading to the electric power load,

the power supply method comprising:

a first stage of calculating an electric power difference between the electric power consumed by the electric power load and the electric power supplied from the commercial power supply; and

a second stage of charging/discharging electric

power according to the electric power difference calculated in the first stage, to/from the storage battery.

{Claims}

{Claim 1}

A power supply apparatus comprising:

a storage battery for supplying electric power to an electric power load of a crane, the storage battery being chargeable and dischargeable and being provided with the crane;

a power receiving unit for receiving supply of a predetermined electric power from a commercial power supply;

a calculating unit for calculating an electric power difference between the electric power consumed by the electric power load of the crane and the electric power supplied from the commercial power supply; and

a controlling unit for charging/discharging electric power according to the electric power difference calculated by the calculating unit, to/from the storage battery,

wherein the crane changes acceleration in a hoisting operation in which a suspension cargo is hoisted, to thereby perform the hoisting operation so as to suppress the electric power consumed by the electric power load of the crane, and

wherein an electric power capacity of the storage battery is based on the electric power suppressed through the hoisting

operation.

{Claim 2}

A power supply apparatus that supplies AC power to an electric power load of a crane including a power generator or a crane from which an existing power generator is eliminated, the power supply apparatus comprising:

a storage battery for supplying electric power to the electric power load of the crane, the storage battery being chargeable and dischargeable and being provided with the crane;

a power receiving unit for receiving supply of a predetermined electric power from a commercial power supply;

a calculating unit for calculating an electric power difference between the electric power consumed by the electric power load of the crane and the electric power supplied from the commercial power supply;

a controlling unit for charging/discharging electric power according to the electric power difference calculated by the calculating unit, to/from the storage battery; and

a supplying unit for converting DC power from each of the storage battery and the power receiving unit into AC power and supplying the converted power to a power feeding path leading to the electric power load of the crane,

wherein the crane changes acceleration in a hoisting operation in which a suspension cargo is hoisted, to thereby perform the hoisting operation so as to suppress the electric power consumed by the electric power load of the crane, and

wherein an electric power capacity of the storage battery is based on the electric power suppressed through the hoisting operation.

{Claim 3}

A power supply apparatus according to claim 1 or claim 2, wherein

the crane is transferrable from one lane to another lane, and

the controlling unit charges/discharges the storage battery during transfer of the crane between the lanes, assuming that no electric power is supplied from the commercial power supply.

{Claim 4}

A power supply apparatus according to any one of claim 1 to claim 3, wherein

the electric power supplied from the commercial power supply is set to be variable within a range equal to or less

than the predetermined electric power.

{Claim 5}

A power supply apparatus according to claim 4, wherein the controlling unit changes the electric power supplied from the commercial power supply, on a basis of a history of a charge state of the storage battery.

{Claim 6}

A power supply apparatus according to claim 4, wherein the controlling unit changes the electric power supplied from the commercial power supply, on a basis of a history of the electric power supplied to the electric power load of the crane.

{Claim 7}

A crane comprising:

the power supply apparatus according to any one of claim 1 to claim 6; and

an electric power load that is driven with electric power supplied from the power supply apparatus.

{Claim 8}

A power supply method for supplying electric power to an electric power load of a crane,

the crane including:

a storage battery for supplying electric power to the electric power load of the crane, the storage battery being chargeable and dischargeable and being provided with the crane; and

a power receiving unit for receiving supply of a predetermined electric power from a commercial power supply,

the power supply method comprising:

a first stage of calculating an electric power difference between the electric power consumed by the electric power load and the electric power supplied from the commercial power supply; and

a second stage of charging/discharging electric power according to the electric power difference calculated in the first stage, to/from the storage battery,

wherein the crane changes acceleration in a hoisting operation in which a suspension cargo is hoisted, to thereby perform the hoisting operation so as to suppress the electric power consumed by the electric power load of the crane, and

wherein an electric power capacity of the storage battery is based on the electric power suppressed through the hoisting

operation.

{Claim 9}

A power supply method for a power supply apparatus that supplies AC power to an electric power load of a crane including a power generator or a crane from which an existing power generator is eliminated,

the power supply apparatus including:

a storage battery for supplying electric power to the electric power load of the crane, the storage battery being chargeable and dischargeable and being provided with the crane;

a power receiving unit for receiving supply of a predetermined electric power from a commercial power supply; and

a supplying unit for converting DC power from each of the storage battery and the power receiving unit into AC power and supplying the converted power to a power feeding path leading to the electric power load of the crane,

the power supply method comprising:

a first stage of calculating an electric power difference between the electric power consumed by the electric power load of the crane and the electric power supplied from the commercial power supply; and

a second stage of charging/discharging electric power according to the electric power difference calculated in the first stage, to/from the storage battery,

wherein the crane changes acceleration in a hoisting operation in which a suspension cargo is hoisted, to thereby perform the hoisting operation so as to suppress the electric power consumed by the electric power load of the crane, and

wherein an electric power capacity of the storage battery is based on the electric power suppressed through the hoisting operation.