WHAT IS CLAIMED IS:

1. A drive apparatus of an elevator apparatus comprising:

a rotator drive circuit which drives a hoisting rotator for lifting and lowering an elevator car as well as having a power generation capability and is connected to a commercial power source;

an electric storage device which supplies power to the hoisting rotator and stores power generated by the hoisting rotator; and

a charge/discharge device which discharges power from the electric storage device to the hoisting rotator and charges power generated by the hoisting rotator to the electric storage device,

the charge/discharge device including:

a switching unit which performs charge or discharge by a switching operation of a switching element provided in the charge/discharge device; and

a charge/discharge control unit which decreases a switching frequency of the switching element or stops the switching operation when the elevator car is in a predetermined operating state.

2. The drive apparatus of the elevator apparatus according to claim 1,

wherein the predetermined operating state is determined

by charge/discharge necessity determination means for determining based on power supplied to the hoisting rotator or power supplied from the hoisting rotator or a load quantity of the elevator car.

3. The drive apparatus of the elevator apparatus according to claim 2,

wherein in the case where positive power is defined as power supplied to the hoisting rotator and negative power is defined as power supplied from the hoisting rotator; if power supplied to the hoisting rotator is less than a predetermined positive power threshold, the charge/discharge necessity determination means sends a signal for decreasing the switching frequency of the switching element or stopping the switching operation to the charge/discharge device.

4. The drive apparatus of the elevator apparatus according to claim 2,

wherein in the case where positive power is defined as power supplied to the hoisting rotator and negative power is defined as power supplied from the hoisting rotator; if the power is less than a predetermined positive first power threshold and more than a predetermined negative second power threshold, the charge/discharge necessity determination means sends a signal for decreasing the switching frequency of the switching

element or stopping the switching operation to the charge/discharge device.

5. The drive apparatus of the elevator apparatus according to claim 2,

wherein the elevator apparatus is an elevator apparatus that does not have a balance weight balancing with the elevator car, and if the load quantity of the elevator car is less than a predetermined load threshold, the charge/discharge necessity determination means sends a signal for decreasing the switching frequency of the switching element or stopping the switching operation to the charge/discharge device.

6. The drive apparatus of the elevator apparatus according to claim 2,

wherein the elevator apparatus is an elevator apparatus that has a balance weight balancing with the elevator car, and if the load quantity of the elevator car is less than a predetermined first load threshold and more than a predetermined second load threshold less than the first load threshold, the charge/discharge necessity determination means sends a signal for decreasing the switching frequency of the switching element or stopping the switching operation to the charge/discharge device.

7. The drive apparatus of the elevator apparatus according to claim 6,

wherein the first load threshold is a threshold that is on a larger side of the load quantity of the elevator car with respect to a state of balancing the elevator car with the balance weight, and the second load threshold is a threshold that is on a smaller side of the load quantity of the elevator car with respect to the state of balancing the elevator car with the balance weight.

8. The drive apparatus of the elevator apparatus according to claim 1,

wherein the predetermined operating state is determined by charge/discharge necessity determination means for determining based on both of power supplied to or from the hoisting rotator and a load quantity of the elevator car.

9. The drive apparatus of the elevator apparatus according to claim 8, wherein

(1) if the load quantity of the elevator car is less than a predetermined first load threshold and more than a predetermined second load threshold less than the first load threshold, the elevator apparatus being an elevator apparatus that has a balance weight balancing with the elevator car, and

(2) if the power is more than a predetermined negative

second power threshold, positive power being defined as power supplied to the hoisting rotator and negative power being defined as power supplied from the hoisting rotator,

the charge/discharge necessity determination means sends a signal for decreasing the switching frequency of the switching element or stopping the switching operation to the charge/discharge device.

10. The drive apparatus of the elevator apparatus according to any one of claims 1 to 9,

wherein the charge/discharge device sends a signal indicating the state of a charge/discharge operation to a display installed in the elevator car or an elevator hall.

WHAT IS CLAIMED IS:

1. A drive apparatus of an elevator apparatus comprising:

a rotator drive circuit which drives a hoisting rotator for lifting and lowering an elevator car as well as having a power generation capability and is connected to a commercial power source;

an electric storage device which supplies power to the hoisting rotator and stores power generated by the hoisting rotator; and

a charge/discharge device which discharges power from the electric storage device to the hoisting rotator and charges power generated by the hoisting rotator to the electric storage device,

the charge/discharge device including:

a switching unit which performs charge or discharge by a switching operation of a switching element provided in the charge/discharge device; and

a charge/discharge control unit which stops the switching operation of the switching element when the elevator car is in a predetermined operating state.

2. The drive apparatus of the elevator apparatus according to claim 1,

wherein the predetermined operating state is determined by charge/discharge necessity determination means for determining based on power supplied to the hoisting rotator or power supplied from the hoisting rotator or a load quantity of the elevator car.

3. The drive apparatus of the elevator apparatus according to claim 2,

wherein in the case where positive power is defined as power supplied to the hoisting rotator and negative power is defined as power supplied from the hoisting rotator; if power supplied to the hoisting rotator is less than a predetermined positive power threshold, the charge/discharge necessity determination means sends a signal for stopping the switching operation of the switching element to the charge/discharge device.

4. The drive apparatus of the elevator apparatus according to claim 2,

wherein in the case where positive power is defined as power supplied to the hoisting rotator and negative power is defined as power supplied from the hoisting rotator; if the power is less than a predetermined positive first power threshold and more than a predetermined negative second power threshold, the charge/discharge necessity determination means sends a signal for stopping the switching operation of the switching element to the charge/discharge device.

5. The drive apparatus of the elevator apparatus according to claim 2,

wherein the elevator apparatus is an elevator apparatus that does not have a balance weight balancing with the elevator car, and if the load quantity of the elevator car is less than a predetermined load threshold, the charge/discharge necessity determination means sends a signal for stopping the switching operation of the switching element to the charge/discharge device.

6. The drive apparatus of the elevator apparatus according to claim 2,

wherein the elevator apparatus is an elevator apparatus that has a balance weight balancing with the elevator car, and if the load quantity of the elevator car is less than a predetermined first load threshold and more than a predetermined second load threshold less than the first load threshold, the charge/discharge necessity determination means sends a signal for stopping the switching operation of the switching element to the charge/discharge device.

7. The drive apparatus of the elevator apparatus according to claim 6,

wherein the first load threshold is a threshold that is on a larger side of the load quantity of the elevator car with respect to a state of balancing the elevator car with the balance weight, and the second load threshold is a threshold that is on a smaller side of the load quantity of the elevator car with respect to the

state of balancing the elevator car with the balance weight.

8. The drive apparatus of the elevator apparatus according to claim 1,

wherein the predetermined operating state is determined by charge/discharge necessity determination means for determining based on both of power supplied to or from the hoisting rotator and a load quantity of the elevator car.

9. The drive apparatus of the elevator apparatus according to claim 8, wherein

(1) if the load quantity of the elevator car is less than a predetermined first load threshold and more than a predetermined second load threshold less than the first load threshold, the elevator apparatus being an elevator apparatus that has a balance weight balancing with the elevator car, and

(2) if the power is more than a predetermined negative second power threshold, positive power being defined as power supplied to the hoisting rotator and negative power being defined as power supplied from the hoisting rotator,

the charge/discharge necessity determination means sends a signal for stopping the switching operation of the switching element to the charge/discharge device.

10. The drive apparatus of the elevator apparatus according to any one of claims 1 to 9,

wherein the charge/discharge device sends a signal indicating the state of a charge/discharge operation to a display installed in the elevator car or an elevator hall.