supply equipment 10 by discharging to power systems in the consumers 5, and can be charged from the power systems.

[0032]

[Functional Configuration of Each Energy Management Device]

Next, a functional configuration of each energy management device is described.

Fig. 2 is a block diagram illustrating an example of a functional configuration of each of the energy management devices (CEMS6, FEMS8, HEMS9, EV-EMS15). Although Fig. 2 does not illustrate the energy management device 7 (BEMS), the energy management device 7 has the same functions as those of the energy management devices 8 and 9.

[0033]

(Region Energy Management Device)

The region energy management device (CEMS) 6 includes an SOC distribution prediction unit 6a and a region operation planning unit 6b. The SOC distribution prediction unit 6a (an example of a remaining level distribution prediction unit) receives the following information from each of the consumers 5 and predicts a distribution of an SOC (State of charge) of the entire region at each time in the future (for example, 24 hours). The SOC distribution is information indicating the position of the storage battery at each time and a state (remaining level) of the storage battery at each time. In this case, as the SOC distribution of the entire region, an SOC distribution (including information of a stationary storage battery and an EV storage battery) of each of the consumers and an SOC distribution of the EV storage battery 14 of each electric vehicle 13 are predicted. The stationary storage battery is a storage battery included in each of the consumers 5.

[0034]

[0054]

Next, the CPU 31 of the region energy management device 6 uses the communication interface 37 to receive information of a request for adjustment power from the aggregator 3 (S3).

[0055]

Next, the SOC distribution prediction unit 6a of the region energy management device 6 predicts an SOC distribution of the entire region at each time in the future (for example, 24 hours) based on the predicted SOC values of the stationary storage battery and the EV storage battery 14 at each time and the rechargeable and dischargeable amount at each time (S4). That is, the SOC distribution prediction unit 6a predicts an SOC distribution (including information of the stationary storage battery and the EV storage battery) of each consumer 5 and an SOC distribution of the EV storage battery 14 of each electric vehicle 13.

[0056]

Next, the region operation planning unit 6b of the region energy management device 6 performs power supply and demand matching (adjustment) at each time based on the requested adjustment power and the target KPI of the business entity 4 and calculates adjustment power to be allocated to each of the consumers 5 and an amount (power to be output/received by each of the consumers) of power to be interchanged between the consumers 5 (S5). In this case, in the power supply and demand matching (adjustment), for example, optimization calculation is performed for the purpose of minimizing a total value of KPIs of all the consumers for 24 hours. However, when KPIs different for the consumers are used, the optimization calculation is performed for each of the KPIs, and results of performing the power supply and demand matching (adjustment) on the KPIs are summed.

Fig. 5 is a flowchart illustrating an example of a process by the energy management devices 8 and 9 (EMSs) of the consumers 5-2 and 5-N.

First, the CPUs 31 (Fig. 3) of the energy management devices 8 and 9 of the consumers 5-2 and 5-N predict demand for power and demand for heat in the consumers 5 based on weather information and event information received by the communication interfaces 37 via the communication network 19 (S11). Each of the energy management devices 8 and 9 performs the process of step S11 at a predetermined time interval (for example, a time interval of 30 minutes).

[0064]

Next, the CPUs 31 of the energy management devices 8 and 9 receive, from the region energy management device 6 (CEMS), information of adjustment power to be allocated to each of the consumers 5 and power to be output/received (S12).

[0065]

Next, the CPUs 31 of the energy management devices 8 and 9 acquire a value measured by a measuring device (not illustrated) and indicating the SOC of the EV storage battery 14 of the electric vehicle 13 present (parked) at the consumer 5 (S13). Therefore, each of the energy management devices of the consumers 5 can perform various types of calculation based on a measured (latest information) value of the SOC of the EV storage battery 13 and manage energy with high accuracy.

[0066]

Next, the operation planning units 8a and 9a of the energy management devices 8 and 9 calculate a possible adjustment power amount and operation plans for the power supply equipment 10 (including the stationary storage battery and the EV storage battery 14) based on the adjustment power to be allocated and the target KPI for each of