Abstract

An object of the present invention is to provide an on-demand control system that supplies power to electric devices based on not predetermined priorities fixed to electric devices, but based on priorities changed according to the use status of the user. The on-demand control system can control supply of power of a commercial power source in real time in response to a power request necessary for the user and controls the supply of power according to the QoL necessary for the user through daily life. The on-demand power control system of the present invention is a multiple power source management system for an on-demand power control system, the on-demand power control system including: a plurality of power sources; a plurality of electric devices; smart taps connected to the electric devices; a multiple power source management apparatus that includes a memory and that controls supply of power to the electric devices; and a network for the multiple power source management apparatus connected through the smart taps, wherein the multiple power source management apparatus includes: power supply plan generation means for setting a power use plan of a commercial power source as initial values of a supply plan of a capacitor, searching a time zone with a maximum dissatisfaction among the time zones of the initial values to set the

time zone as a time-shift destination, searching a time zone with a minimum dissatisfaction to set the time zone as a time-shift source, and repeating the process until the dissatisfaction of the time-shift destination is smaller than the dissatisfaction of the time-shift source to generate a power supply plan; supply power target value update means for setting a target value of supply power for each of the plurality of power sources and feeding back and updating an error between actual power supply amount and the supply power target value at each minimum control interval; and power and power source arbitration means for repeating a process of selecting a device with a minimum priority among an electric device that has requested power and electric devices in operation, selecting a power source with a maximum power source load factor, reducing or stopping power of the electric device, and reducing supply power of the power source by an amount of the reduced power until the following Expressions (1) and (2) are satisfied, thereby arbitrating the power and the power sources to satisfy Expressions (1) and (2) at the same time.

$$\forall a \in A, \forall s \in S : \mathrm{Pri}_a\left(\mathrm{PD}_a^{\mathrm{REQ}}\right) \geq \mathrm{LF}_s\left(\mathrm{PS}_s^{\mathrm{REQ}}\right) \qquad (1)$$

$$\sum_{a \in A} PD_a^{REQ} = \sum_{s \in S} PS_s^{RES} \qquad (2)$$