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Automatic Newspaper Vendor Powered by Solar Batteries

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Measures for energy saving are being implemented in various fields to cope with global warming. In the field of automatic vending machines, the Japan Vending Machine Manufacturers Association and other organizations are promoting energy saving e.g. through the diffusion of Ecovendors* and the reduction of lighting illumination. Our company has been making efforts to reduce the amount of power consumed by our products. This essay reports an experiment, conducted by us as part of these efforts, on the operation of solar batteries for automatic vendors.

○ Power Consumed by Automatic Newspaper Vendor

An automatic beverage vending machine consumes 2,600 kWh of power per year. The corresponding figure for an automatic tobacco vending machine is 750 kWh (according to data from the Japan Vending Machine Manufacturers Association), and that for our automatic newspaper vending machine (under normal operation conditions) is 400 to 450 kWh. As these figures show, an automatic newspaper vending machine consumes a relatively small amount of power. This is because, unlike an automatic beverage vendor, it does not have to warm or cool products, and also because its operating hours can be limited.

○ Installation of a Solar Power Unit on an Automatic Newspaper Vending Machine

78% of the power used by an automatic newspaper vending machine is consumed by a fluorescent lamp. In the case of a power unit using solar batteries, the vending machine size becomes too large if a fluorescent lamp is used for lighting. The automatic newspaper vending machine manufactured by us in the present experiment has a solar power unit, but does not use a fluorescent lamp. In this case, a simple design can be used, for only a DC current need be supplied to the machine.

Our prototype is of the integrated type, with a solar panel installed on the vendor top (Fig. 1). In reality, however, most automatic vending machines are installed indoors or under the eaves, for they are not suitable for installation at places exposed to direct sunlight. In actual use, therefore, solar panels will often be designed as independent units. Also, an automatic vending machine without lighting may make users doubt whether it is in operation. Accordingly, it will become necessary to equip the prototype with a bright LED or some other power-saving lighting.

○ Conclusion

Sunlight benefits humans in various ways. Its benefits can be enhanced by turning it into electrical energy through the installation of solar panels. A problem with the use of sunlight is that a solar panel requires an unexpectedly large capacity due to the effects of weather and the earth's rotation. Since remarkable advances are being made in developing solar panel and battery technology, we can hope that solar battery-powered automatic vending machines will eventually be commercialized with improvements in performance and downsizing.

*Ecovendor: an energy-saving automatic canned beverage vending machine that helps level demand for electricity by cooling products only in the morning during a summer day