

# Food Distribution



Vending Machines  
Store Distribution

With the shift of COVID-19 to Category 5, the food distribution market is facing a strong need to respond to environmental issues (SDGs and carbon neutrality) and the declining birthrate and aging population, which are fundamental social issues.

## Vending machines

As a result of customers striving to achieve their 2030 environmental targets, as well as the recent rise in electricity prices, customer requirements for energy saving have reached unprecedented levels. There is a strong demand for the saving of natural resources, not only for the power used in operations, but also in installation and management. To meet these needs, Fuji Electric has developed the “Sustainable Vending Machine Series,” which promotes environmental measures such as energy saving and the minimization of natural resource consumption. In this series, we have developed a new inverter cooling unit equipped with a control system that can be flexibly applied in vending machines of different sizes with different capabilities while further improving the efficiency of heat pump operation. Furthermore, we have strengthened the insulation of the housing to reduce the amount of power consumption by up to 20%. To reduce the machine weight, we have also devised a bending method for the sheet metal used for the bases of vending machines to reduce the thickness of the plate while retaining its strength. In addition, we have reduced the packaging materials of the vending machine in order to save natural resources during installation.

In terms of functionality, we have developed “dynamic pricing buttons” that can be used to automatically change the prices of products. These buttons receive instructions from an external communication device to automatically change the information displayed by the LEDs in the product selection buttons, such as the price. The price display has changed from the con-

ventional three digits to four digits to allow high price items to be sold. It also enables the additional display of text such as “Highly recommended!” and “Discount” for customers to promote the products that the vendor wants to sell. This function can eliminate the need for manual price changes and point-of-purchase (POP) advertising for individual vending machines, thereby enabling significant improvements in operational efficiency.

## Store Distribution

In the store distribution field, Fuji Electric has developed a refrigerated showcase with a built-in cooling unit for improved energy saving. This showcase makes it possible to take full advantage of the characteristics of the refrigerant by employing an electronic expansion valve in the cooling circuit while controlling the inverter compressor with high efficiency in response to internal load fluctuations. By combining these compressors with electronic expansion valve control, we have reduced the amount of power consumed by approximately 32% compared to existing models.

In the store distribution field, the “Act on Rational Use and Proper Management of Fluorocarbons,” which came into effect in 2015, requires refrigerants used in refrigeration and air conditioning equipment to have low global warming potential (GWP). We are also planning new developments to achieve further reductions in the impact we have on the environment.

Going forward, we will strike a balance between meeting the needs of society, such as through energy saving and carbon neutrality, and meeting the needs of customers in terms of labor saving and resource saving. Fuji Electric will continue to strive to develop products to remain a pioneer in the retail and distribution industry.

## Vending machines

### 1 “Dynamic Pricing Buttons” for Vending Machines

Fuji Electric has developed “dynamic pricing buttons,” which allow the display of prices and promotional information to be changed remotely to increase sales and reduce the disposal of products sold at vending machines. The product selection button displays the price with its internal LEDs, and the displayed content can be changed remotely in real time using an external communication device. The main features are as follows:

- (1) Functions to bring attention to products the vendor wants to sell by displaying text such as “Highly recommended!” and “Discount” to contribute to sales growth
- (2) Automatic changing and display of prices of beverages that are about to expire to promote sales, thereby contributing to the reduction of food loss
- (3) A function to display product temperature zones, which eliminates the need for physical cold or warm signs, making vending machine operations more efficient when changing products

Fig.1 “Dynamic pricing buttons”



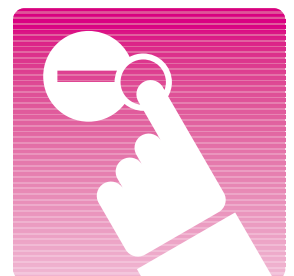
## Store Distribution

### 1 Refrigerated Showcase with a Built-in Cooling Unit Equipped with New Cooling Unit Control Capability

Fuji Electric is developing a refrigerated showcase with a built-in cooling unit designed to save energy, thereby meeting the needs of customers who are working toward the realization of a sustainable society. This time, we have developed a refrigerating showcase with a built-in cooling unit that maintains the internal refrigeration temperature range (3°C to 8°C) through a new cooling unit control feature. The main features are as follows:

- (1) Inverter control of compressor rotational speed according to internal temperature changes has reduced power consumption by approximately 22% compared to conventional machines.
- (2) Control of temperature differences between the inlet and outlet of the cooler with an electronic expansion valve improves the heat exchange efficiency, reducing the amount of power consumption by approximately 10% compared to conventional machines.

Fig.2 Refrigerated showcase with a built-in cooling unit





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