

Food Distribution

Vending Machines
Store Distribution



Vending Machines

The use of phrases such as “with Corona” and “the new normal” to describe a post-COVID-19 world has decreased, and it has begun to be accepted that we must coexist with COVID-19. The frozen food market, which has been on the rise due to the increase in people staying at home, is expanding due to the need to save time and labor as well as the advancement of quality and diversification. In addition, the vending machine market, which used to be dominated by major beverage manufacturers, has begun to expand to include individual restaurants and other businesses, as the vending machine’s inherent function of contact-free, non-face-to-face sales has gained recognition and has stimulated business models that involve the sales of not only conventional beverages but also refrigerated and frozen foods. While the market for beverage vending machines continues to decline slightly, the market for food vending machines is expanding. Food retailers and the food and beverage industry, which are suffering from the COVID-19 pandemic, have come to realize vending machines as unattended stores that are open every day and have started to use them as new distribution tools. In particular, frozen foods are attracting attention, and since they have a long shelf life, they can be replenished with flexible frequency regardless of sales volumes, and since there is almost no need to worry about sales loss, they are suitable for sale through vending machines. To meet this demand, Fuji Electric has developed “Frozen Station,” a frozen food vending machine. Our unique and advanced heat insulation technology maximizes interior space in spite of the machine’s small size, allowing room for 84 products, which is the largest capacity in the industry, and with the ability to change the attachments, the machine is flexible in its ability to hold products of various sizes. The new machine has high thermal insulation, which reduces power consumption by 20% compared with our other products, as well as a safety function that stops sales if the internal temperature rises above a specified temperature. In addition, we have prepared an operation system as a support tool for those who are not familiar with the quick and efficient operation of vending machines. We

expect the product to play an important role in energizing the food market and vending machine market.

Store Distribution

Following the United Nations Framework Convention on Climate Change in 1992, the Paris Agreement (COP 21) in 2015 established the target for efforts to suppress the global average temperature increase to 2.0°C or less and 1.5°C or less. In addition, with the adoption of the Sustainable Development Goals (SDGs) at the 2015 UN Summit and the Japanese government’s declaration to become carbon neutral by 2050, efforts to combat global warming are rapidly increasing. In response to these changes in the environment, retailers have set medium- and long-term goals and are working to reduce CO₂ emissions as their top priority, with the three pillars of energy creation through solar power generation, increasing the use of renewable energy, and energy conservation (energy saving). Since power consumption of showcases and other freezing and refrigeration equipment in convenience stores accounts for about 50% of the total power consumption of the entire store, energy conservation for this equipment is an urgent requirement. Fuji Electric has developed a control technology which enables energy saving for showcases through the optimized operation of outdoor cooling units. By more precisely measuring the cooling conditions inside the case and controlling the pressure of the outdoor cooling unit based on this data, we have established a control technology that optimizes the evaporation temperature and flexibly responds to environmental changes, reducing power consumption by approximately 20% compared with conventional systems.

In many countries around the world, the use of coinage made from a combination of multiple materials is expanding to prevent forgery more effectively. Fuji Electric has developed an automatic change dispenser and a coin mechanism for the new 500-yen coins issued in November 2021. We implemented a new identification algorithm to improve identification performance.

In the future, we will continue to respond to our

customers' needs for labor and labor saving as well as social needs such as energy saving and carbon neutrality, and will strive to develop products to remain as a

pioneering company in the retail and distribution industry.

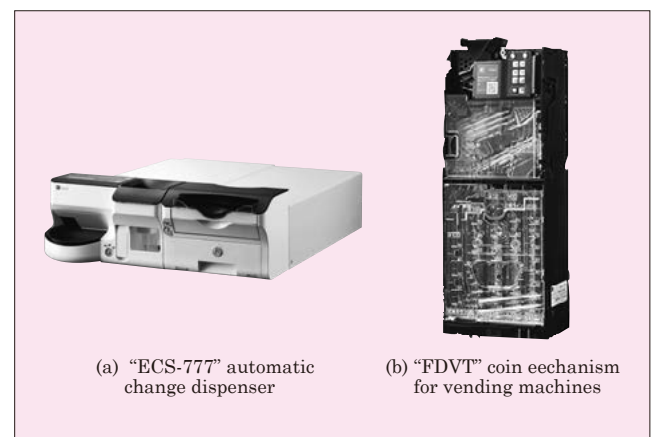
Vending Machines

1 Recoinage Support for Automatic Change Dispensers

On November 1, 2021, the new 500-yen coins began to circulate in the market. Fuji Electric offers automatic change dispensers for POS cash registers that process deposits and withdrawals and coin mechanisms for vending machines. We have remodeled the conventional products to handle the new 500-yen coins. The main features are as follows:

- (1) The new products deliver higher identification accuracy than ever by identifying the typical material feature of the new coin, which is a bicolor clad (two-color, three-layer) coin.
- (2) A new algorithm allows those products in the market to handle the new coin by modifying their software alone, which provides more economical solution to customers.
- (3) The setting on whether to accept or prohibit the use of the old 500-yen coins is optional, enhancing operational flexibility.

Fig.1 Product appearance

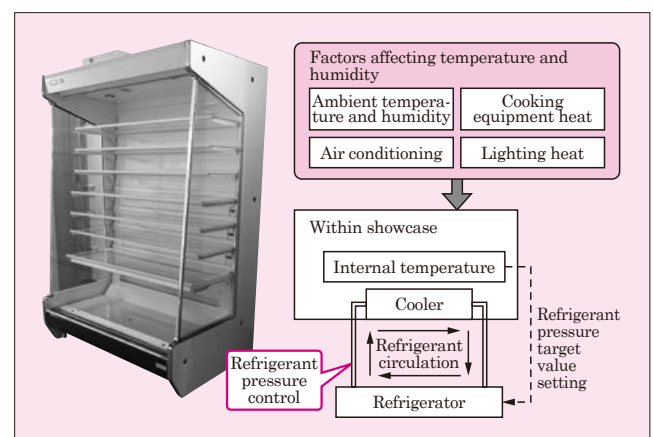


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1 Showcase Control Technology for Energy Saving

Fuji Electric has developed the new showcase control technology for better energy saving by detecting internal temperature to operate outdoor cooling units optimally. Conventional showcases control refrigerant pressure in the refrigeration unit within a certain range, which stabilizes refrigerant evaporation temperature in the refrigerant circuit, thereby maintaining constant temperature. This control system cannot respond to changes in temperature or humidity inside the store, resulting in unnecessary energy consumption due to overcooling. The new technology determines the target refrigerant pressure according to the temperature inside the showcase and command the target value to the cooling unit for efficient performance. In this way, excess or deficient refrigeration capacity due to changes in temperature and humidity in the store can be finely compensated, consuming 20% less energy than the conventional model. We will continue to pursue energy conservation performance and promote the development of environmentally friendly products in the future.

Fig.2 Product appearance and control overview





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