

# Food and Beverage Distribution



Vending Machines  
Store Distribution

## Outlook

### Vending Machines

When the cap of a beverage bottle served by the subfreezing vending machine is opened, the beverage immediately start freezing in a form similar to sherbet. The refreshing sensations that these products deliver have become the source of their popularity. The sub-freezing vending machine developed by Fuji Electric makes use of a supercooling phenomenon that “freezes through shocking.” To reproduce this phenomenon consistently, it is necessary to cool the beverages in an undisturbed state for a certain period of time. It is the very nature of vending machines that can deliver this environment. This technique enables sales go beyond simply selling products, since consumption is encouraged as a result of the fun experience of seeing a product freeze in front of one’s eye and also enjoying snow-cone like texture in one’s mouth. This can truly be considered a success story in the evolution of the role of vending machines.

In this regard, cup vending machines also play a role for dramatic impact. We have often heard stories about tourists from overseas who were pleasantly surprised by the high-degree of quality and consistency of vending machines that serve a cup of fresh coffee even coming with a lid on top. It seems that those tourists have been surprisingly impressed by the care and concern given to consumers who purchase these types of products. The demand for Japanese style coffee vending machines has been rapidly increasing in China. We have thus started local production in China since 2017. We plan to gradually introduce a new series of models to meet overseas needs.

### Store Distribution

The “Act on Rational Use and Proper Management of Fluorocarbons” enacted on April 1, 2015 demands the strict management of commercial refrigeration and air conditioning equipment. Vending machines and showcases are also subject to this law, and products using fluorocarbons as refrigerants have been designated as “1st category” specified products. The obligations imposed on administrators (owners) of commercial air

conditioners and refrigeration equipment include the following: obligations concerning the installation of equipment, obligations concerning the use of equipment and obligations concerning the disposal of equipment. In particular, obligations concerning the use of equipment specifically stipulate conditions concerning the conduct of equipment inspection, measures for preventing leaks, prohibition on filling unrepaired equipment with refrigerants, and others.

The fluorocarbons subject to the Act on Fluorocarbon Emissions Control are those that exhibit an extremely high greenhouse effect, including those that can and cannot damage the ozone layer. Therefore, commercial refrigeration and air conditioning equipment (fluorocarbon-free equipment) that use refrigerants other than fluorocarbons, such as ammonia (NH<sub>3</sub>), CO<sub>2</sub>, water, air and hydrofluoroolefin (HFO) are not categorized as “1st category” specified products.

The non-leak integrated showcases that Fuji Electric manufactures and sells use HFO-1234yf as the refrigerant. This refrigerant is characterized by a global warming potential (GWP) of less than 1 and is these showcases are not categorized as “1st category” specified product. As a result, the above mentioned management and reporting obligations are not required for them. Furthermore, compared with non-integrated types, integrated types make it easy to determine leak locations and leak amounts and simplify voluntary management measures because no special skills are required. In FY2011, Fuji Electric was the first in the industry to use an HFO refrigerant in vending machines as a measure for protecting the environment (reducing GWP to about 1/1,300). Since then, we have been actively promoting the use of low GWP products. HFO-1234yf is highly compatible with R134a refrigerant used in our vending machines, thus allowing it to take full advantage of the technical innovations developed by Fuji Electric. As a result, the showcases use HFO refrigerants because they can deliver high performance at low cost. We believe that by taking the initiative to solve social problems, we are also ultimately contributing to reducing the workloads of customers who use our

products.

We recognize that labor savings are achieved by not only reducing current workloads but also creating no additional workloads, and we will continue tackling an even greater range of issues.

Labor shortages are becoming a serious issue in the distribution and retail industries in Japan. To con-

tribute to improving the work environment of distribution and retail workplace, Fuji Electric will combine its expertise in IoT, mechatronics and cooling and heating technologies to offer new products and services based on the 3 keywords of convenience, labor savings and energy savings.

## Vending Machines

### 1 “FAT30L6RT8IK” Subfreezing Beverage Vending Machine

Fuji Electric has partnered with Asahi Soft Drinks Co., Ltd. to develop a vending machine that makes it possible to sell beverages cooled down to subfreezing temperatures.

We have initiated this development to create the vending machine based on the concept of “providing consumers with new surprising, fun and delicious products, raise the appeal of vending machines and create business growth.” The main features are as follows:

- (1) The defrosting system applies hot gas defrosting method that utilizes the refrigerant’s condensation heat as means of defrosting the vending machine without affecting the product’s temperature.
- (2) In order to cool products in vending machines to subfreezing temperatures, temperature control is implemented via 3 zones inside the vending machine: a subfreezing temperature zone (for the next product to be sold), preliminary cooling zone, and replenished products cooling zone.

Fig.1 “FAT30L6RT8IK”



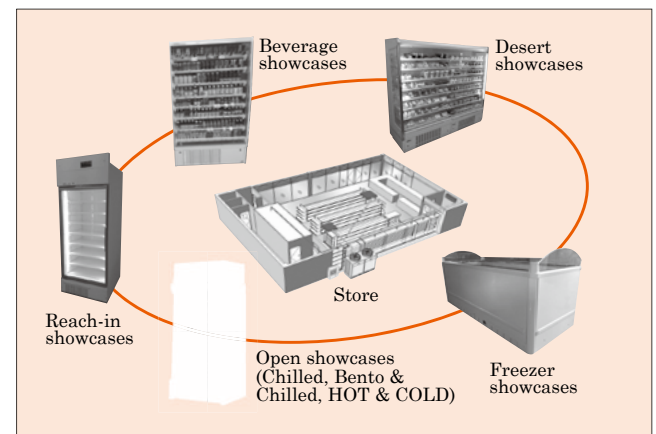
## Store Distribution

### 1 Line-Up Expansion of Non-Leak Integrated Showcase

For the convenience store industry, in which Fuji Electric aims to expand business, we have developed and expanded a series of non-leak integrated showcases for in-house stores with restrictions of constructing stores. The series simplifies installation work by integrating the cooling unit directly inside store showcases. We have expanded the product line-up to 5 models. The main features are as follows:

- (1) External piping and outdoor unit are not required to install.
- (2) Employing the showcase facilitates flexible store layouts and easy layout changes.
- (3) On-site refrigerant filling is not required, reducing the risk of refrigerant leakage.
- (4) Drainage has been eliminated by utilizing a steam-based system that uses the exhaust heat of the cooling unit.

Fig.2 Product line-up





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