

To many foreign visitors, Japan is a futuristic, high-tech country where automation is given free rein. One element of this is the country's 4.2 million vending machines that sell everything from drinks and snacks to umbrellas and natto fermented soybeans. But as cameras, sensors and ethernet modules are becoming cheaper and more widespread, vending machines are evolving and taking on new functions.

The concept of ubiquitous vendors in Japan can be traced to itinerant merchants of the Edo period (1603-1868) who carried medicine, daily necessities and even entire noodle stalls slung on poles over their shoulders. Vending machines today don't walk around on legs, but they are increasingly networked as part of the Internet of Things (IoT), and they're getting smarter.

Some vending machines in Japan now have touchscreens that show imagery of products instead

of plastic models. Equipped with computer-vision systems, they can suggest drinks based on the estimated age and gender of customers.

Coca-Cola (Japan) Company, the local arm of the U.S. drinks giant, has been exploring ways in which vending machines can help the community in the event of powerful earthquakes or other natural disasters. Through IoT networks, the company's vending machines can be remotely commanded to show disaster-related information on their displays as well as dispense products for free in the event of an emergency.

In the aftermath of the 2011 Great East Japan Earthquake, over 400 company vending machines dispensed more than 88,000 drinks for free to people in the affected areas, including stranded commuters in the Tokyo metropolitan area. The bottler has about 8,000 vending machines across Japan that stand ready to help. It's also prepared to use its delivery

trucks to transport emergency relief supplies in the event of a disaster.

"Vending machines are growing beyond their role as sales channels to become a form of social infrastructure with various functions to support people in their daily lives as well as in emergencies," says a spokesperson. "As technology evolves, we are also reducing the environmental footprint of our machines."

One example of that is the bottler's Peak Shift vending machines, which were also inspired by the 2011 quake. The idea is simple: instead of using electricity to refrigerate drinks during the daytime, when electrical grid demand is highest, the machines cool beverages at night. Since drinks remain cool long after refrigeration, the machines reduce daytime power consumption by 95 percent. Some 200,000 such machines have since been installed as of December 2017, and the company aims to have at least half of its

machines using Peak Shift technology by 2020.

There are also vending machines that have been designated so that part of the sales are donated to various organizations and regional sports organizations.

Finally, vending machines are helping make the community more safe and secure. Some companies are experimenting with embedded cameras that can function as security cameras, recording any criminal activity. Another technology being explored is smart tags carried by children—vending machines could communicate with the tags, helping parents monitor the whereabouts of their children. For its part, one company has drivers that keep an eye on the community, reporting suspicious situations or people in trouble to the authorities. It's one more way in which vending machines and the infrastructure that supports them are evolving to become active partners in the daily lives of people in Tokyo.

## Drinks Dispensers that Lend a Helping Hand

Tokyo's vending machines are taking on new roles for safety and security.



As technology advances, Tokyo's vending machines now do everything from selling drinks, to playing support roles during natural disasters.