The high performance prefabricated stores toward a total equipment facility management business

Jiangsu, China

Offering flexible solutions for construction & retail business.

Panasonic developed the high performance prefabricated stores with its technology using building materials with excellent heat retention. Using this technology, Lawson, Inc. opened the new technology “prefabricated store” in Nanjing of Jiangsu Province in China on July 31, 2020.

The first store opened in Nanjing, Jiangsu Province on the 31st, and the company plans on opening another ten stores within the year. Two types of stores have been prepared, with one being a smaller type compared to standard convenience stores (approx. 80 square meters) and the other being a station kiosk-type store.

The number of convenience stores in China is increasing each year, and they are becoming more deeply rooted in consumers’ lives. In order to increase contact with customers, it is possible to utilize these types of store structures and flexibly open stores according to customer demand in locations such as parks, construction sites and parking lots, where opening stores used to be difficult in the past. Besides making it easier to open stores, the construction costs can be reduced by up to 40% than before.

Short construction period, high quality, high performance and reduced construction costs.

A significant reduction in construction period thanks to utilizing industrialized prefabricated housing, energy-saving due to thermal conductivity reduction technology and remote monitoring of refrigeration equipment and zero on-site waste materials with the utilization of mobile and reusable equipment are three effects that can be expected with the high-performance prefabricated stores. In particular, VIP (vacuum insulation panel) materials using the world's leading vacuum insulation technology cultivated through the development of refrigerators were used for the first time in the building materials prefab market.

Until now, building materials were shipped from factories, and it took up to 20 days to construct them on the site. With the prefabricated type, this period can be reduced to one week, and the construction costs can be reduced by up to 40% than before. Furthermore, the stores can be reused even if they close.

Slightly smaller stores than conventional convenience stores

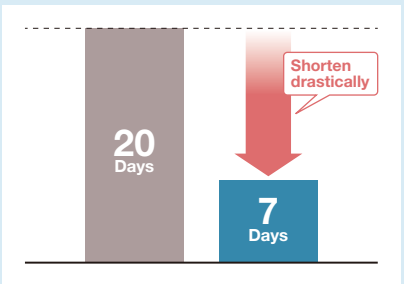
Station kiosk-type store

Characteristics of prefabricated houses

A more energy efficient and comfortable living space than conventional temporary housing is achieved with ventilation, air conditioning, lighting, insulation and energy management systems.

Short construction period

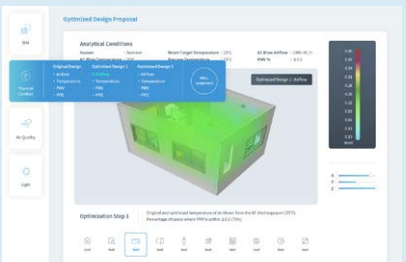
Simple construction and removal of buildings is possible thanks to the prefabricated assembly method.



High quality

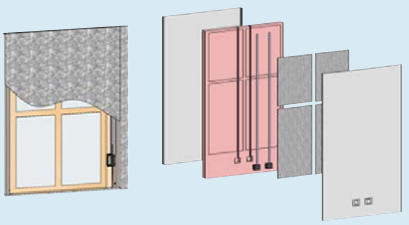
Comfortable space design achieved with the industry-leading BIM* design technology.

*Building Information Modeling



High performance

Panasonic VIP insulation technology has been applied. Panasonic have developed industrial panels with excellent (dismantling/relocation) energy efficiency and durability.



Spatial simulation creating a comfortable convenience store.

In the future, by selecting lighting conditions and materials for inner walls and improving the air conditioning layout, it is possible to further improve the aesthetics and comfort as a convenience store space. Therefore, a simulation was conducted at the Nanjing prefabricated Lawson store to visualize comfort elements such as heating, air quality and lighting. This will lead to better store proposals in the future.

❶ BIM model lighting simulation

Comparisons of the lighting colors inside the Lawson store and the interior wall material selections, as well as external facade lighting and daylight simulations are carried out to produce a lighting plan based on the optimal value for spatial lighting.

❷ BIM model air quality simulation

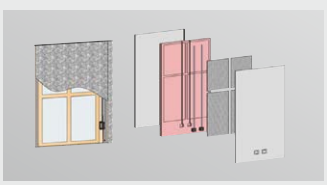
Using Panasonic's health space tool, the air quality is automatically determined based on certain standards. The same number of air conditioners as the current situation is temporarily placed in different locations based on the operation of the convenience store, and the distribution of the thermal comfortable environment is visualized using PMV* under similar air conditioning and cooling conditions. Furthermore, the ratio of comfortable area to total space was evaluated. As a result, in the case of the following "recommended placement", we have confirmed that it is possible to avoid air accumulation caused by the product shelves and make the heat distribution more uniform, and that priority can be given to the comfort of the customer stay area.

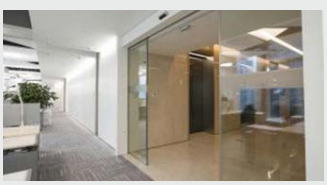
*PMV: Predicted Mean Vote. The sensation of human heat can be evaluated rather than the physical temperature indicator.

Towards a total equipment facility management business.

More than 40 years have passed since Panasonic entered the Chinese market, accounting for 25% of Panasonic's global business scale. Through this collaboration, Panasonic aims to establish a total equipment facility management business, and by providing store-opening solutions with an ultra-short lead-time through prefabricated housing, Panasonic will also aim to create new products, systems and business models such as refrigeration equipment, heating equipment and energy management.

Installed Products


VIP insulation materials


Automatic door

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