

Maintenance and Inspection of Electrical Equipment Used at Convenience Stores

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Introduction

- A typical example of a tertiary industry in Japan are the convenience stores, small supermarkets that operate 24 hours a day, 365 days a year.
- In addition to the sale of food products and other goods, convenience stores also provide printout services on their photocopying machines for movie tickets and government documents, parcel pickup and shipping services, and are also equipped with ATMs that provide banking services such as deposits and withdrawals.
- Furthermore, their functions as parts of our societal infrastructure have also expanded, including how they now function as bases for restoration operations in response to typhoons, torrential rains, and other natural disasters which have become increasingly severe in recent years. The importance of their roles in these areas are expected to increasingly grow going forward.

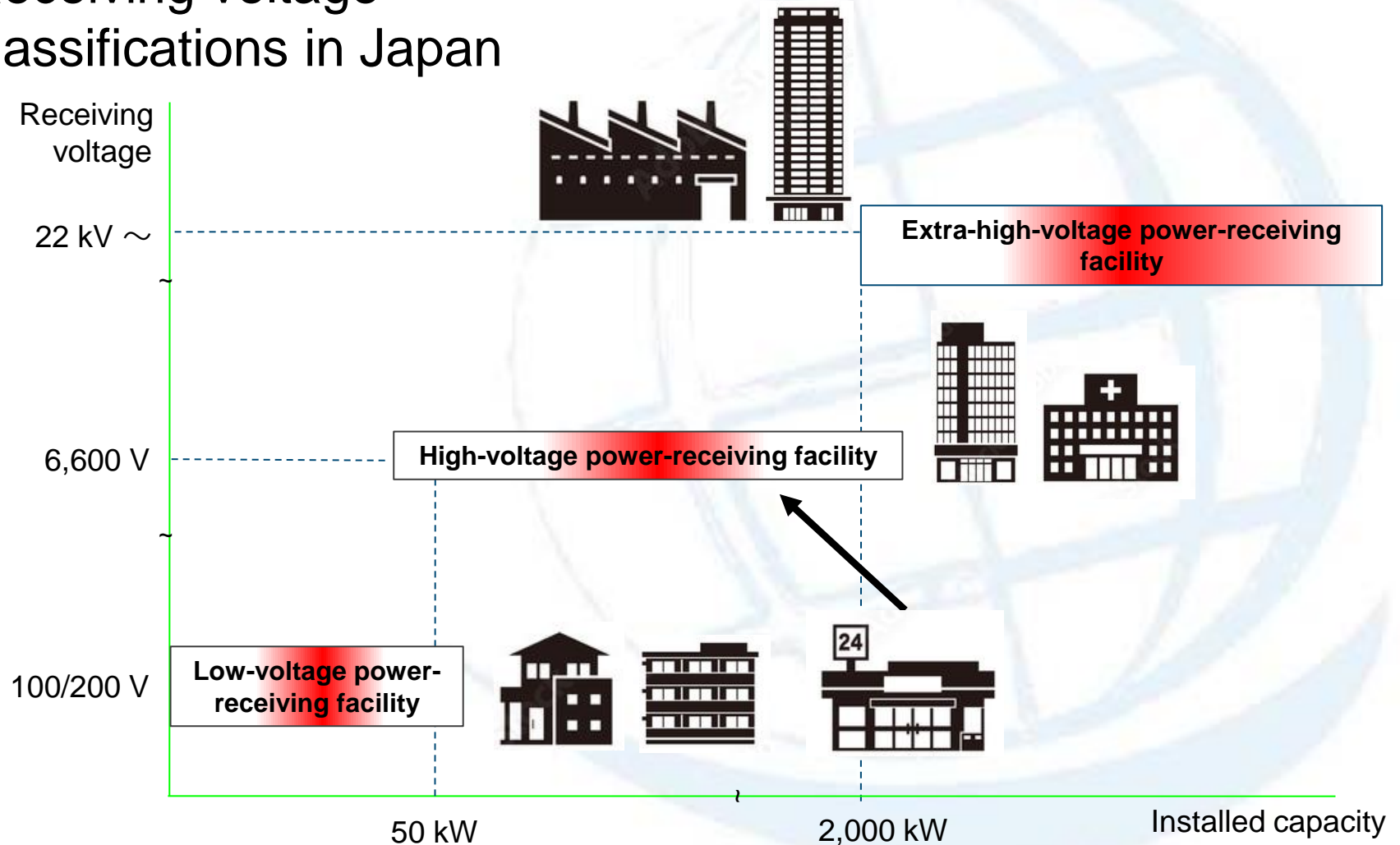
Number of stores and state of affairs of their electrical equipment

- There are approximately 57,000 convenience stores nationwide and this has remained largely unchanged over the past several years.
- These stores now sell an ever diversifying variety of products, such as chilled foods and boxed lunches, which means they are using an increasing number of freezing and refrigeration equipment as well as keep-warm equipment.
- For this reason, more and more stores are switching to high-voltage power supply, which is less expensive than low-voltage power supply used in regular private households which they have been previously using. Meanwhile, the shift to higher voltages requires investment in equipment such as cubicles and periodic inspections by engineers.

Yearly Changes in the Number of Convenience Stores (2018-2022)

Year	Number of stores	YonY increase (%)
2018	56,024	—
2019	57,100	+1.92
2020	56,986	-0.20
2021	56,948	-0.07
2022	56,919	-0.05

Receiving voltage classifications in Japan



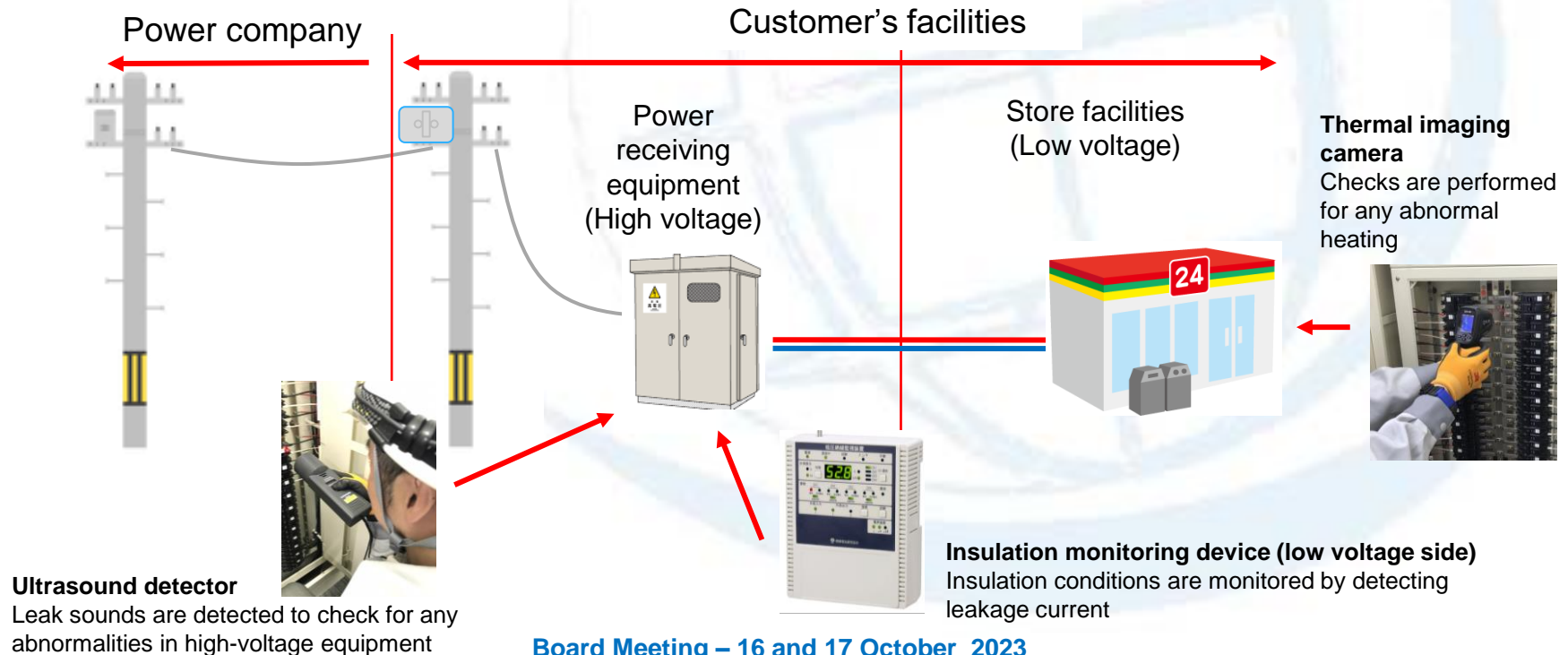
Store receiving high-voltage

- *A pole for receiving power is installed at the back of the site, and this is the demarcation point with the power company.*
- *Cubicles have become very compact and most of them are installed in a corner of a parking lot.*

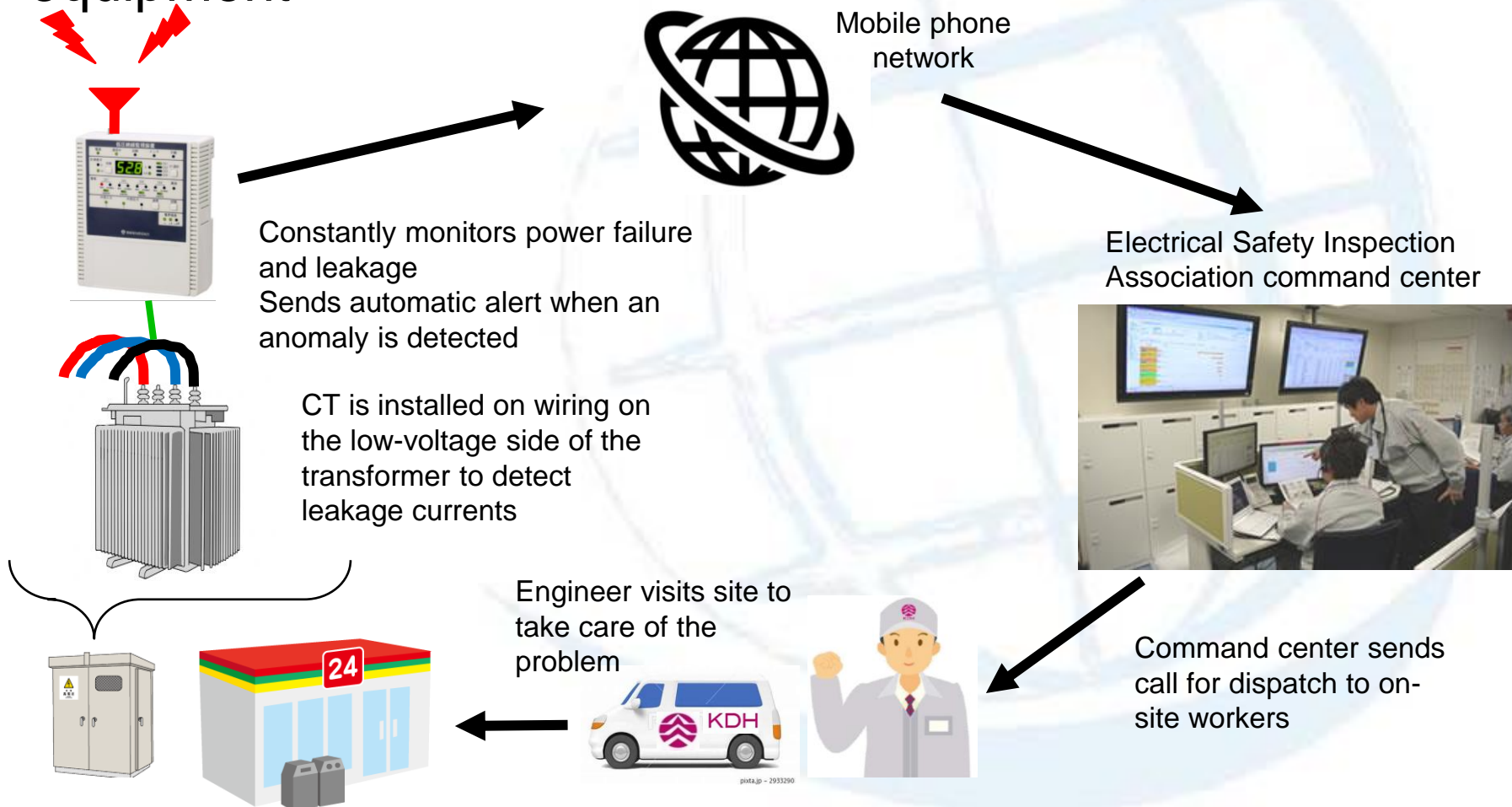


Issues and countermeasures regarding inspections

- Normal inspections are conducted on a three-month cycle, primarily by means of visual inspection. Insulation on the low voltage side is constantly monitored by monitoring equipment.
- Precision inspections with the power shut down are conducted on a three-year cycle during the cooler fall and winter months. Power shutdown times are kept as short as possible in order to maintain the quality of frozen foods and other products.



Monitoring system using low-voltage insulation monitoring equipment



In closing . . .

- Convenience stores never cease to offer new products and services. A wide variety of electrical equipment and Internet communication devices are installed in-store to support these services.
- Although convenience store cubicles are small for a receiving and transforming facility, they receive high-voltage power and are therefore required to undergo periodic inspection by engineers. To provide a stable supply of electric power to ensure that there is no interruption to the provision of the stores' products and services, engineers are always ready to conduct periodic inspections and respond to emergencies.