About the Chief Electrical Engineer system

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Seminar – 15 and 16 October 2025

Company introduction

- The Electrical Safety Inspection Associations are the ten General Incorporated Foundations operating in Japan under the mission of contributing to local communities through electrical safety.
- The Forum of Electrical Safety Inspection Associations is a national federation of all the Electrical Safety Inspection Associations in Japan.

★Forum of Electrical Safety Inspection Associations
Date of establishment: August 26, 1966
Number of employees: 4
Content of the business:
- Holding meetings for information exchange
- Collection of information on the systems and technologies
- Offering opinions to the national government and relevant organizations

★Electrical Safety Inspection Associations (FY2024)
Number of business sites: 321
Number of employees: about 12,000
Number of customers: about 370,000
(share: about 40%)
Number of surveys conducted for homes, etc.: about 14,000,000

Contents

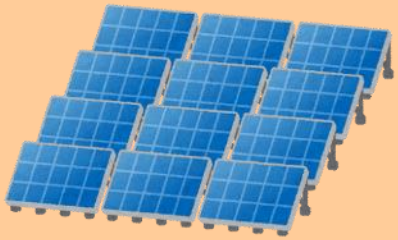
1. About electric facilities

Electric Facilities for Business Use

Electric facilities to be used for electricity business

Power generation stations, substations, transmission lines, distribution lines, etc. of electric power companies

Electric Facilities for Private Use



Factories, buildings, power generation stations, etc. that receive power at 600V or more

Electric Facilities for General Use

600V or less

Less than 10kW

Ordinary homes, shops, low output power generation equipment, etc.

1. (1) Regulatory control

Design — **Building Standard Act**

There is no regulatory control concerning the design of electrical equipment.

Construction — **Electrical Construction Business Act**

Purpose: To assure safety of Electric Facilities for General Use and Electric Facilities for Private Use (less than 500kW)
Content: To regulate the registration and operations of electrical construction business operators.

Construction — **Electricians Act**

Purpose: To contribute to the prevention of occurrence of a disaster caused by a defect in electrical construction (less than 500kW)
Content: To specify the qualifications and obligations of those engaged in electrical construction work.

Completion inspection Maintenance and management — **Electricity Business Act**

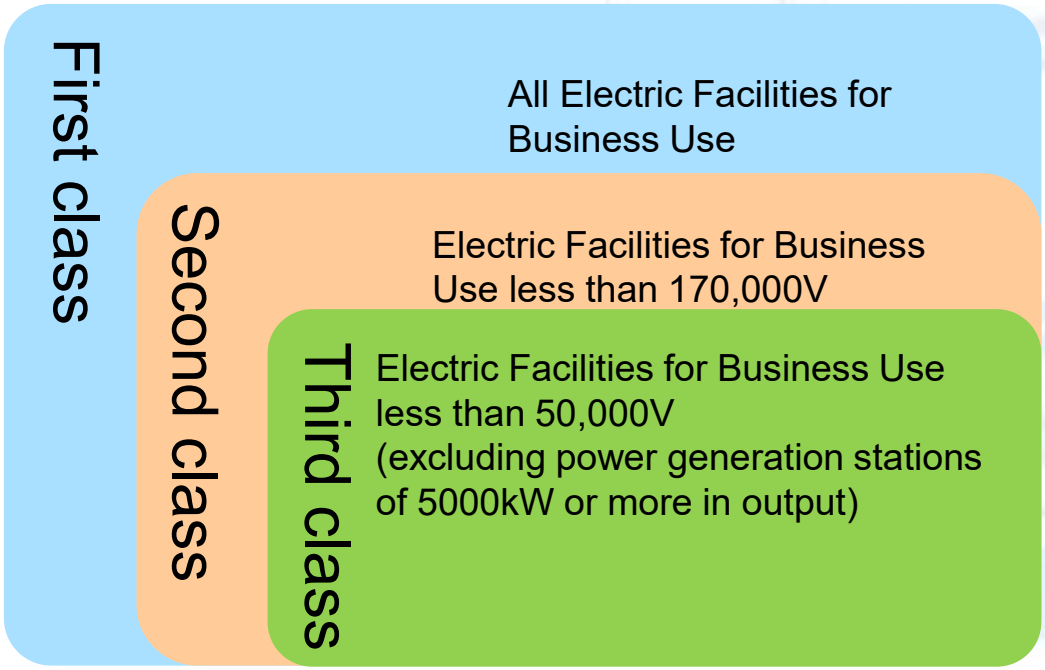
Purpose: To protect the profits of electricity users and to seek the development of electricity business.
Content: To specify the construction, maintenance, and operation of electric facilities.
(obligations to comply with technical standards, obligations to appoint a Chief Electrical Engineer, notification of a construction plan)

1. (2) Maintenance and management system

	Maintenance and management		
Voltage class	Extra high voltage More than 7kV	High voltage More than 600V to 7kV	Low voltage 600V or less
Maintenance and management operator	Owner or Administrator	To be outsourced to the owner or Electrical Safety Inspection Association, etc.	To be outsourced by the power transmission and distribution business operator to an inspection company
Regulatory control	★Electricity Business Act★ Appointment of a Chief Electrical Engineer, compliance with technical standards, notification of a construction plan, notification of safety rules		★Electricity Business Act★ Inspection of compliance with technical standards (once every 4 years)
Qualification system	Chief Electrical Engineer * Subject in this presentation		Persons who have finished courses of electrical engineering, and the like

2. About the Chief Electrical Engineer system

Qualification type: national qualification
Year of start of accreditation : 1965
Accreditation body: Ministry of Economy, Trade and Industry
Governing laws and ordinances: Electricity Business Act (1964), Ministerial Ordinances
Requirements for accreditation: To be obtained by passing the national examination (qualification rate: 17%) or to be obtained by accreditation *
Type of accreditation:



* In the case of 3rd class which is a typical example of obtaining by accreditation

After earning necessary credits in an accreditation school specified by the Ministry of Economy, Trade and Industry, the requirement for actual work experience must be met.

(Number of years of actual work experience according to academic background)
・Graduation from college, graduation from graduate school, or above: at least one year
・Graduation from community college: at least two years
・Graduation from high school: at least three years

2. (1) Comparison between appointment and outsourcing

- The Electricity Business Act requires that a Chief Electrical Engineer be appointed within the company, but the appointment may be outsourced to an external corporation or individual only when the business site has been approved by the Ministry of Economy, Trade and Industry regarding such outsourcing.
- Due to the difficulty of securing a human resource of the Chief Electrical Engineer within the company, and due to personnel cost for employment, about 90% of the companies outsource the appointment.

Appointment

10%

◎ Number of years of actual work experience: Not required
◎ Work: As a general rule, the Engineer shall be permanently stationed in the workplace.
◎ Number of business sites of which the Engineer can be in charge: Within 6 places (under conditions such as within the same company or within business sites in the same premises)

Outsourcing (approval by the national government required)

90%

◎ Number of years of actual work experience: First class 3 years, Second class 4 years, Third class 5 years (the number of years can be shortened by attending classroom lectures and practical work lectures)
◎ Work: Arrival at the business site within 2 hours
◎ Number of business sites of which the Engineer can be in charge: 60 - 80 places, depending on the size of the business site
◎ Frequency of inspection:

Inspection during the construction period	Once a week
Completion test	At the time of installation of equipment
Monthly inspection (without power outage)	Monthly, bimonthly, every 3 months, every 6 months * The frequency varies with each piece of equipment.
Yearly inspection (with power outage)	At least once a year * Power outage of once every 3 years, depending on the equipment conditions

2. (2) Example of education for the Engineer at the Electrical Safety Inspection Association, -1-

1st year

●OJT at site
To improve communication capabilities with customers, the Engineer conducts inspection work on Electrical Facilities for General Use in homes and shops, etc.

About 200 days ×7 hours/day = 1,400 hours

2nd year

●Collective training
Classroom lectures and practical work concerning completion tests, maintenance inspection
Classroom lectures and practical work concerning response to an electrical accident
Acquiring skills to climbing electric poles

About 20 days ×7 hours/day = 140 hours

●OJT at site
Experience completion inspection, maintenance inspection, and response to an electrical accident

About 200 days ×7 hours/day = 1,400 hours

3rd year

●Collective training
Classroom lectures and practical work concerning completion tests, maintenance inspection
Acquire knowledge about energy saving and power generation equipment

About 20 days ×7 hours/day = 140 hours

●OJT at site
Experience completion inspection, maintenance inspection, and response to an electrical accident

About 200 days ×7 hours/day = 1,400 hours

About 4,500 hours

2. (2) Example of education for the Engineer at the Electrical Safety Inspection Association, -2-

OJT

●Learn skills from senior staffers through actual work.

Collective training

●Set a subject, and learn skills from lecturers in a training facility.

3. About electrical equipment

The high voltage power receiving equipment “cubicle” introduced in many Electrical Facilities for Private Use in Japan is the one in which various types of equipment are put into one metal-enclosure and it is compact and has excellent performance in terms of "work safety," "inspection efficiency" and "prevention of intrusion by small animals."

Appearance of a cubicle

Inside of the cubicle

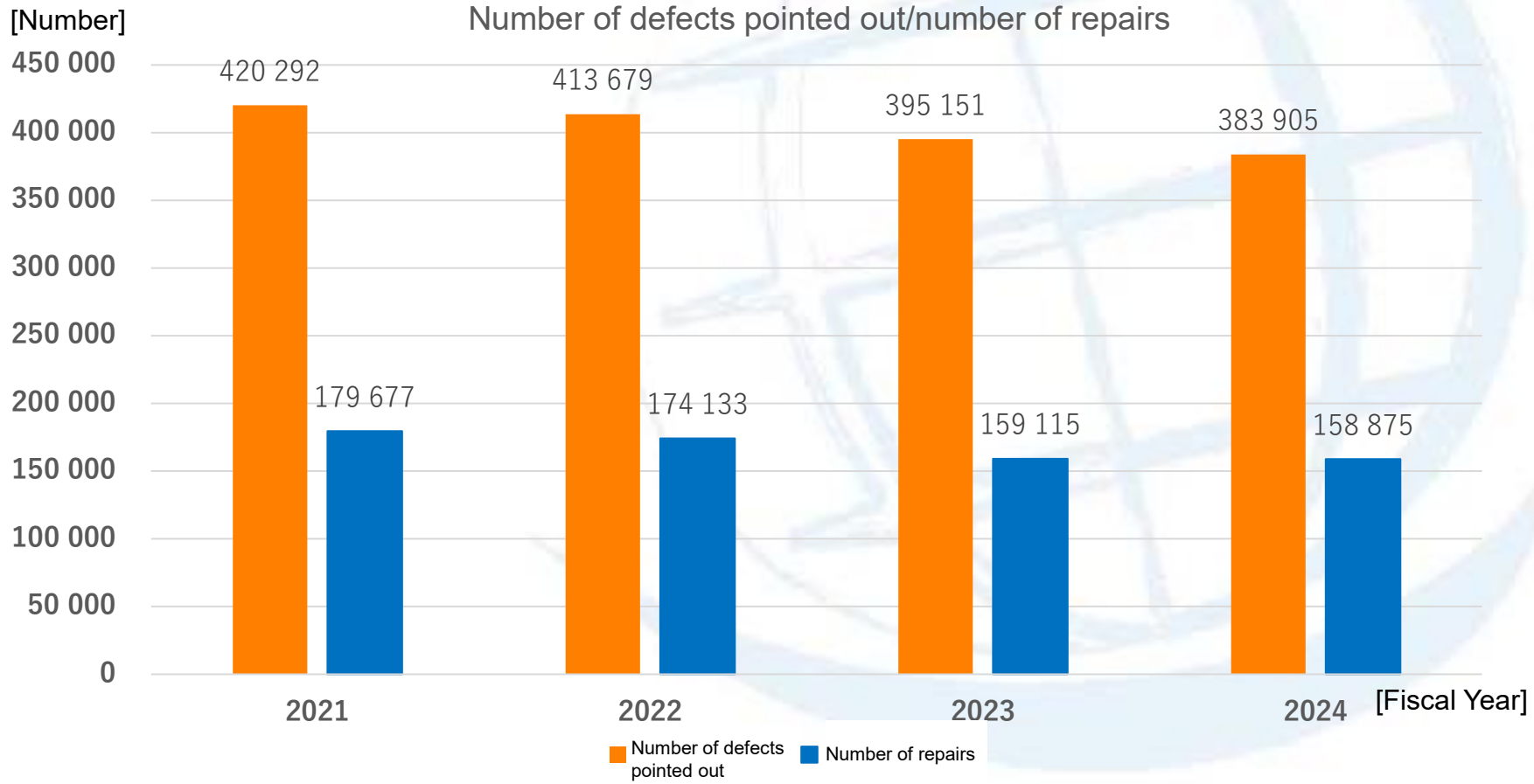
3. (1) Scenes of inspection work

Inspection without power outage

Inspection with power outage

3. (2) Transition of the number of defects pointed out and the number of repairs in the Electrical Safety Inspection Associations

- The repair ratio is about 40%, including minor ones.
- A lot of electrical equipment is completely free from defects, but electrical equipment with defects has multiple defects.



3. (3) Electric fire/electric shock accidents at customers

Number of customers of the Electrical Safety Inspection Associations: about 370,000 (FY2024)

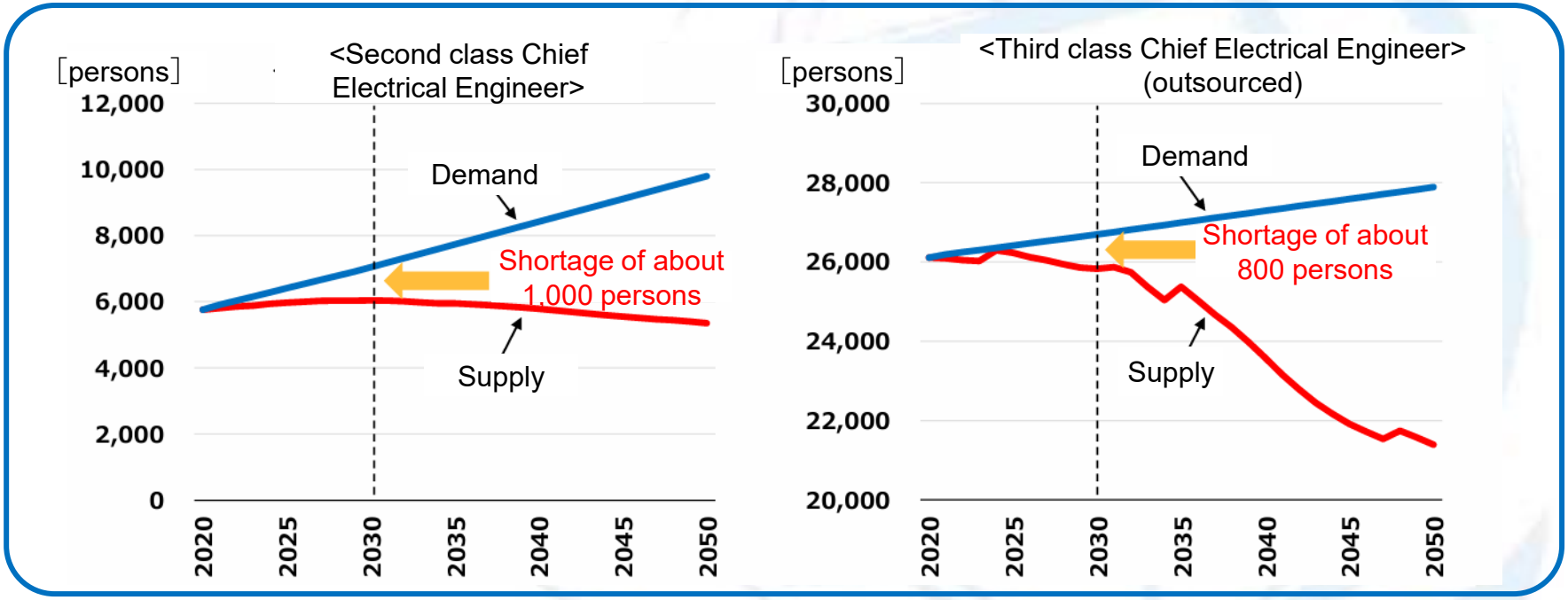
FY2024

Electric fire: 3 cases 0.0008%

Electric shock accident: 0 deaths, 7 injured (including construction service suppliers) 0.0019%

4. Challenges in Japan

Chief Electrical Engineers are becoming in short supply, with higher speed than the transition to aged society with a small number of children.



Excerpt from the material of the Ministry of Economy, Trade and Industry

<Measures to be taken>

Increasing flexibility of the examination system (increasing the number of days of examination, increasing the number of examination sites, etc.)

Drawing attention to the industry's attractive qualities (high income, work-life balance, etc.)

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