Electrical Safety Management System of Republic of KOREA

JUL. 2024

Ministry of Trade, Industry and Energy

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Contents

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Ⅰ. Electrical Safety System of RoK

1. Electrical Safety System of RoK

Electrical Safety Organization

Public

Electric Utility
KEPCO + P.Cs

Power Production, Transmission & Sales

Engineer Mgmt.
한국전기기술인협회 Korea Electric Engineers Association

Education, Mgmt. of Appointment & Dismissal of Electrical Safety Manager

Safety Responsibility
Ministry of Trade, Industry and Energy

Safety Policy, Legislation & Enforcement

Safety Control
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Inspection, Investigation, Promotion, R&D

Product Safety
국가기술표준원

Safety Control on Electric Products

2. Classification of Electric Facility

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Electric Facilities

BUSINESS USE

Generating Mass Energy for Business

PRIVATE USE

Facilities for Factory, Complex & Apartments

GENERAL USE

Facilities for Small House, Building & Office

2. Classification of Electric Facility

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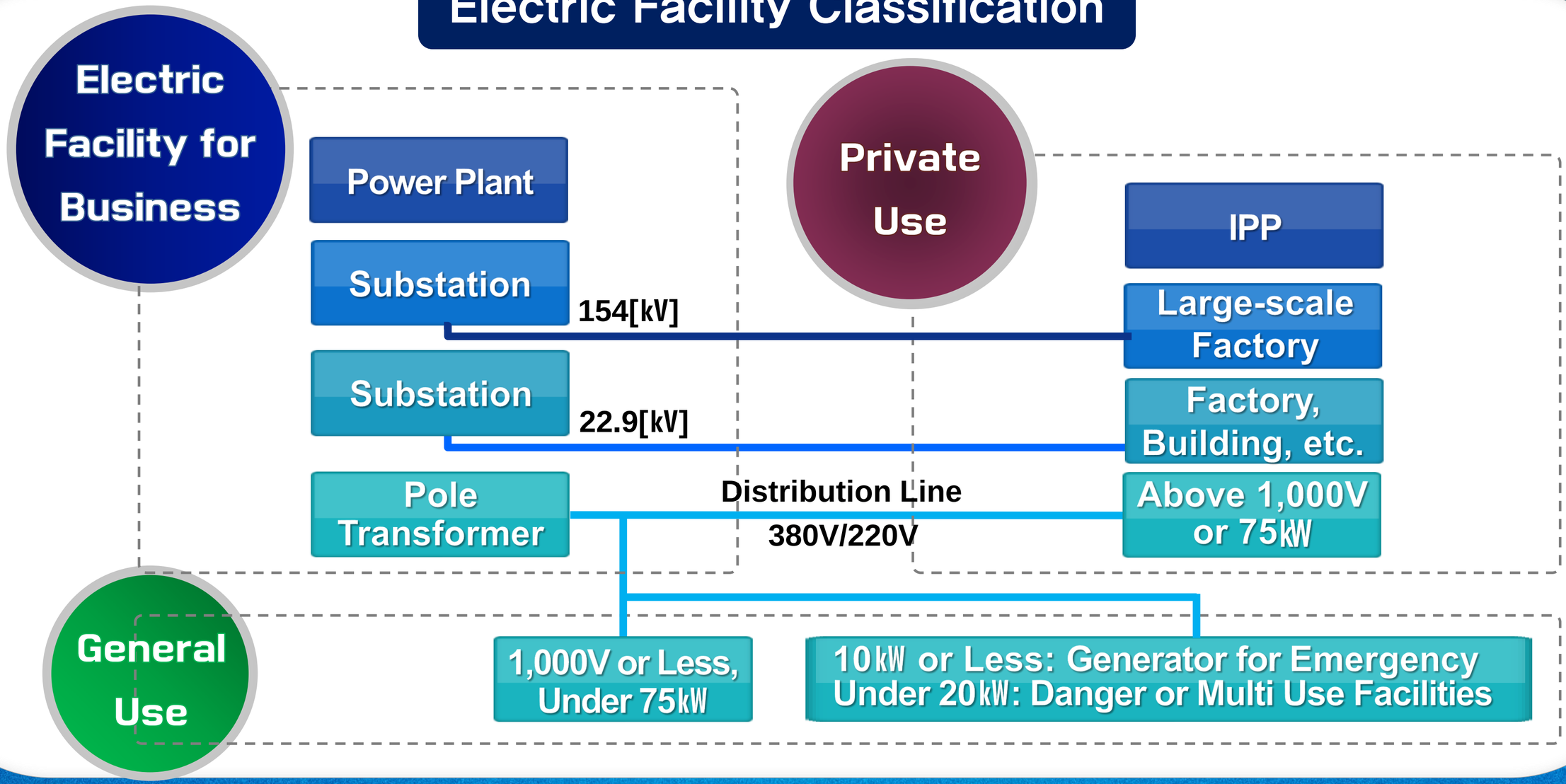
Electric Facility Classification



3. Safety Control on Electric Facility

Control System

Electric Utility For Business	Inspection before Operation	Conformity of Power Plant, Substation, Transformer	KESCO
	Regular Inspection	Inspection every 1 ~ 4 years	KESCO
Private Use (Exceed 1,000V, or over 75kW)	Inspection before Operation	Conformity of Facility	KESCO
	Regular Inspection	Inspection every 1~4 years	
	Safety Management Agent	Check at Appropriate Intervals under a contract with customer	KESCO + Private
General Use (1,000V or Lower, under 75kW)	Check-Up before Use	Check-up the Conformity before Supply	KESCO
	Regular Check-Up	Check-Up for every 1~3 years	KESCO

3. Safety Control on Electric Facility

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Inspection & Check-up?

Inspection

Large Capacity	▪ Facilities with Large Capacity (over 75㎾) → Factory, Building & Power Plant	
Legal Responsibility	▪ Legal Obligation for Inspection on Facility Users → Punishment or Fine on Violation & Illegal Usage	
Cycle by Usage	1 year	ESS over 1㎿ or built inside building
	2 years	Combined Power Plant, Hospital, Hotel, Stage, Large Scale Store
	3 years	Apartment(not single house), Power Substation for Factory
	4 years	Renewable Energy(PV and Wind)

Check-up

Small Capacity	▪ Facilities with Small Capacity (below 75㎾) → House, Store, Lamp & Traffic Light	
Regulation	▪ Regulating its Check-up cycle → Recommendation for Self-Control	
Cycle by Subject	1 year	Facility for Juvenile, Traditional Market, Kindergarten, Accommodation, Lamp etc.,
	2 years	School(Elementary, Middle & High)
	3 years	Single House, Old Apartment(each single house), Small Scale Store

Every Facilities Classified its Safety Grade based on its Conditions

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Ⅱ. Contents of Electrical Safety Mgmt. ACT

1. Electrical Safety Mgmt. ACT

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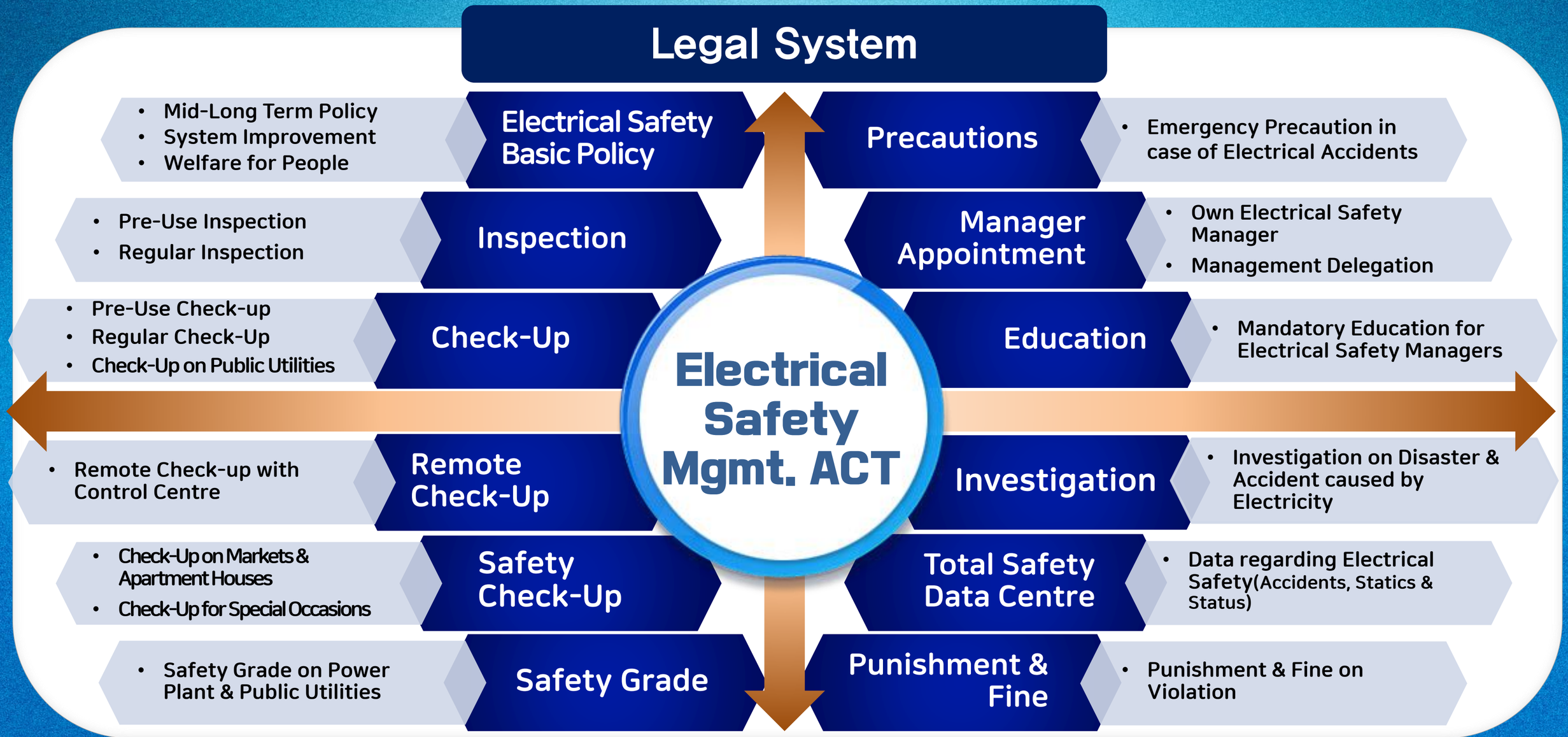

2. Reasons & Lessons of Enactment

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Reasons & Lessons

LAW

To prevent electrical disasters, it is required for **SEPARATE SAFETY REGULATION** independent from the existing Electrical Business ACT

Limits on Safety Management

LIMITS to promote safety management policies by the government because of the law for electrical business owners

Conflicts of Interests

CONFLICTS between social regulations to secure public safety & economic regulation to promote the competition of electricity business

Electrical Safety Management Act
enacted in 2020, enforced since 2021

Lessons

New Legal Basis of Electrical Safety Management System has been arranged to secure People & Properties from Electrical Disasters

3. Main Contents of Electrical Safety Mgmt. ACT

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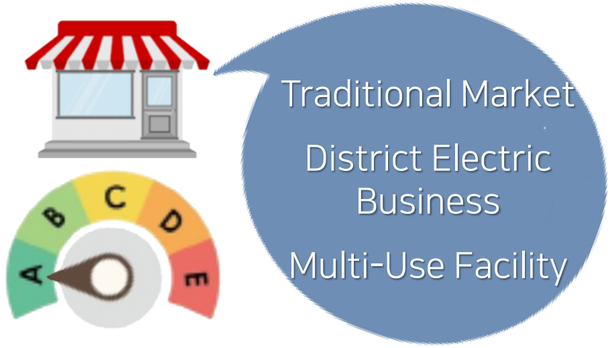
Advance in Energy Safety Management

01 Master Plans for Electrical Safety

Plan for Every 5 years, Advisory Committee

- Mid–to Long–Term Policy, Improvement on Policy, Support for Safety Service

02 Safety Grade



- Management by its Condition(5 Grades)
- Inspection cycle extended by 1 year for Superior(A) Grade

03 Total Information System

Comprehensive Management on Electrical Safety Data

- Result of Inspection or Check–up, Appointment Status of Electrical Safety Manager, Disaster Statics

3. Main Contents of Electrical Safety Mgmt. ACT

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Strengthening to Prevent Electrical Disaster

01 Expansion on Safety Check

Old Apartment

▶ Regular Check-Up for Old Apartment (over 25 years)

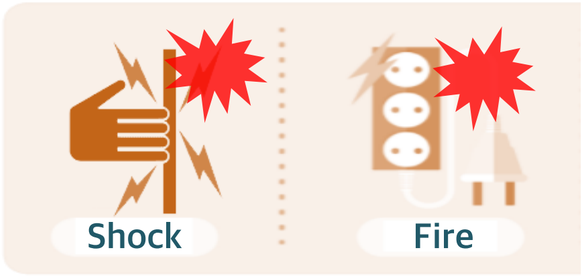
Accommodation in Rural Area, EVCI

▶ Obligation of Inspection before its Operation

Renewable Energy

▶ Inspection on Structure & System by its Energy Source

02 Emergency Safety Measure



▶ Emergency Check-up for Facilities with Possibilities of Electrical Disaster

* Repair, Move, Demolition & Suspension

3. Main Contents of Electrical Safety Mgmt. ACT

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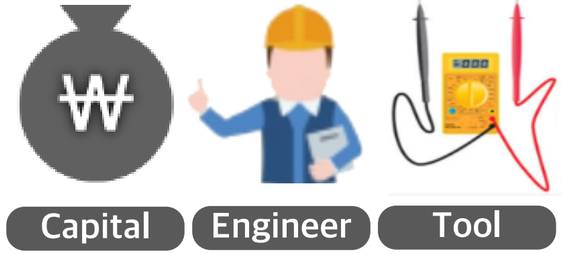
Improvement on Expertise & Business Condition

01 Managers' Expertise

New Registration Standards for 'Facility Mgmt. Business'



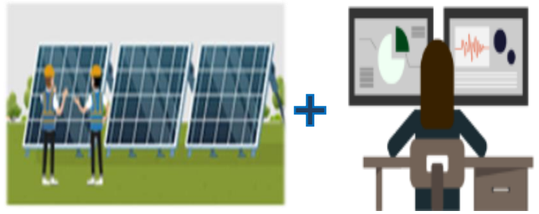
- Expertise for Electrical Safety Mgmt. Business

Obligation on Education for 'Electrical Contractor'

- Electrical Accident Prevention in Construction Site

02 Business Condition

Expansion of Business Sector for Safety Agent



- PV with Remote Monitor & Control (Up to 3MW)

Improvement on Safety Managers' Business Condition

- Standards for Cost
- Prohibition of Disadvantage (Firing)

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Ⅲ. Master Plans for Electrical Safety Mgmt.

1. Master Plans for Electrical Safety Mgmt.

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Introduction

1. BASEMENT

Electrical Safety Management Act Article 5
- Formulation of Master Plans for Electrical Safety Management

2. Main Plans

① Mid-Long Term Plan → ② Policy Improvement → ③ Education, P.R., R&D → ④ Welfare for Vulnerable → ⑤ Other Matters to Improve

Formulated by Energy Committee with Consultation - Deliberation - Public Hearings

Total Plan	Legal Plan	Integrated Strategy
The Plans cover From Residential to Generators Pan-Governmental Master Plans	The Plans Formulated Every 5 years based on the ACT	Integrated Strategy for Developing Electrical Safety Mgmt. System

2. Mission & Objectives

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Promotion

Mission & Objectives — **Safe Society** by Electrical Safety Mgmt. System with **"DNDN"**

D(Develop) 발전하는	N(CleaN) 깨끗한	D(Drive) 견인하는	N(joiN) 동참하는
Developing System	**Boosting Energy Transition**	**Responding to Environment**	**Cultivating Safety Culture**
1. Preventive Safety Mgmt.	**2. Advancement on RE Safety Mgmt.**	**3. Digitalization on Electrical Safety**	**4. Making Mature Safety Culture**
• Establishing the Basement • Eliminating the Blind Spots • Quality Control on Mgmt.	• Safety System for RE • Customized RE Safety by Source • Adaption for Climate Change	• Management System with AI • Digital Safety Tech • Expanding R&D Field	• Educating HR and Capacity • Active Safety Mgmt. • Multifaceted Culture

4 Major Projects & 12 Assignments

3. Eliminating the Safety Blind Site

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Plan

Objectives — **Eliminating the Safety Blind Site**

① Residential Facilities

- **(Old Apartment)** Safety Check when **“Selling” or “Renting” the Realty** – Mandated
- **(Apartment)** Safety Check on **“Old Transformer”** & Supporting its Substitution

② Safety Welfare Service

- **(Disabled)** Improvement on Multi-Use Facilities
- **(Emergency)** Expanding the Emergency Service
  * ex. Disabled, Veterans & Livelihood Recipient

③ Factories & Large-Scale Venue

- **(Precise Inspection)** Considering the Precise Inspection for Large Capacity Facilities

④ EVCI

- Preventive Safety Mgmt. on EVCI
- Arranging Safety Policy with its Characters and Locations
  * ex. Underground, CHA-DEMO, DC-Combo

4. Master Plans for Electrical Safety Mgmt.

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Plan

Objectives: Improvement on Mgmt. Quality & Rationalization

① Improving Service Quality

- **(Q.C) "Assessment"** for Safety Mgmt. Agents
  * Assessment Information Disclosed on Internet
- **(Review)** Mandatory Review on **"Safety Regulation"** when Inspecting the facilities

② Efficiency & Rationalization

- **(Efficiency)** Scope of Safety Mgmt. Agency by the Capacity or Character of Facilities
- **(Rationalization)** Adapting the Environment of New & Renewable Energy Source

Objectives: Establishing the Safety System for RE Facilities

① RE Management System

- **(Coordinating the Function)** For the Safety of RE Facilities, the Coordination between Institutes

② Safety Mgmt. for Life Cycle

- **(Customization)** Introducing the Standards & Regulations for RE and Power Grid System

  * Introducing the Regulations for H2, Floating Wind Turbine, Fuel-Cell & etc.

5. Master Plans for Electrical Safety Mgmt.

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Plan

Objectives: Adaptability on Climate Change

1. Prevention	2. Disaster Response	3. Response System	4. Response Capacity
• Disaster Prevention System for Climate Change • Special Safety Check & Risk Assessment • Customized Safety Activities by Vulnerable Season	• Improvement on Report & Investigation System for Major Disaster • 'Electrical Accident Committee'	• Emergency System with Cooperation between Organizations (Fire-Police-Military-Government)	• Discovering Risk from Climate Change • Safety Standards based on Climate Change • Risk Response Manual by Stages

Objectives: Digitalization on Electrical Safety

1. Intellectual System	2. Smart Safety Mgmt.	3. Digital Safety Tech
▪ Expansion of the Scope of Remote Control ▪ Connection between AMI and BEMS ▪ Integrated System	▪ Always-on Monitor System ▪ Condition Based Risk Management(CBRM) for Transformer-Distribution	▪ Big-Data with Platform ▪ Risk Prediction System ▪ Real-time Mgmt. System

6. Constructing R&D and Demonstration Infra

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Plan

Objectives — Constructing R&D and Demonstration Infrastructure

① Electrical Disaster

- Test & Certificate Infra for Discovering the Cause of Electrical Disaster
- Expanding the Scope of Investigate from Facilities to “Appliances”

② Demonstration Field

- Capacity Test & Safety Tech for Transmission & Distribution
- Integrated Demonstration for Electrical Installation feat. KEPCO

③ ESS Assessment Centre

- The First ESS Assessment Centre with RE Facilities (PV-ESS-Fuel cell)
- Developing and Demonstrating Standards

④ Electrical Safety R&D

- Investment on Electrical Safety R&D
  * ex. Roadmap & Strategies

7. Master Plans for Electrical Safety Mgmt.

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Plan

Educating Professionals (Public Officials & Managers)

- (Officials) Improvement on Understanding & Professional Education
- (Managers) Contents for RE Facility Capacity

Programs for Electrical Safety Youth

- (Highschool) Job Experience for Special or Meister High schools
- (University) Credits for All Students who major in Electricity

Building Convergence Education Infra

- Education with AR, VR and Digital

Mobile App for Self Safety Diagnosis

- To Prevent Electrical Accident, Self Safety Diagnosis Tool Habituated

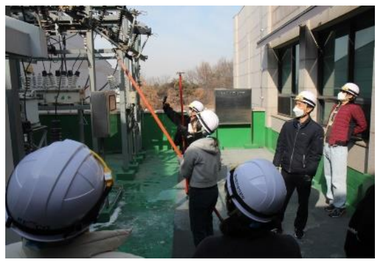
On-Site Device Calibration Service

- Precise Calibration Service for Electrical Safety Management

Officials

Future HRD

Specialized Education Program



8. Master Plans for Electrical Safety Mgmt.

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Plan

International Cooperation for Future Growth

- (Developing Countries) ODA Program with Knowledge Sharing
- (Developed Countries) Adapting Advanced Tech & Exchange

Local Electrical Safety Cluster

- Customized Safety Consulting Providing to Local Industries Such as Bio, Semi-Conductor, Atomic, Chemical, Military

Safety Grade(A to E) with Insurance

- Safety Grade with Insurance reflecting the Age of Facilities

Improving the Statics of Electrical Disaster

- (AS-IS) Statics with Visitation → (To-Be) Common Admin Info System

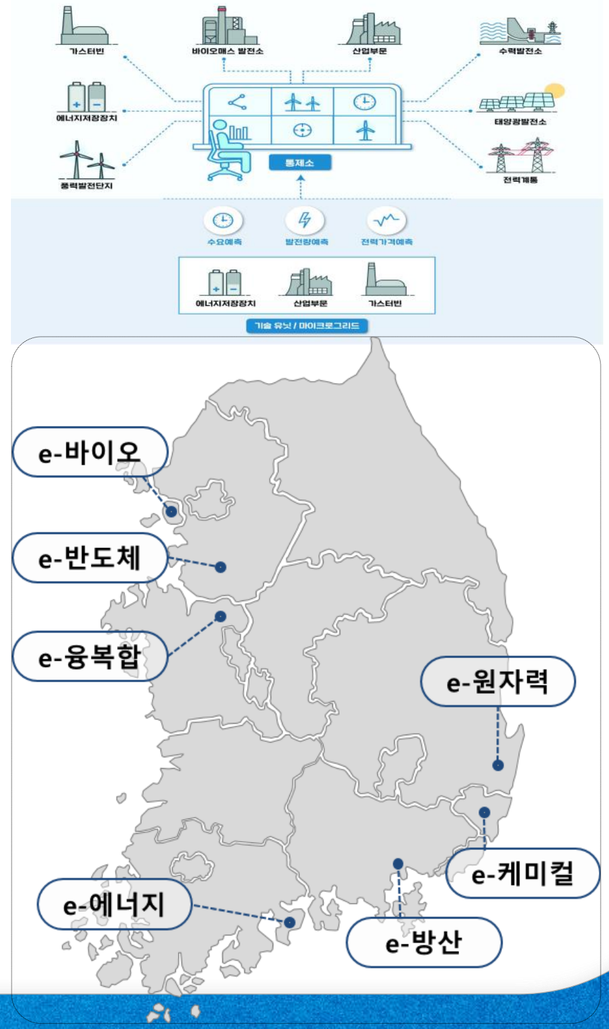
감전사고 내역 요청
(전기안전공사 → 행안부)
- 행정정보공동이용시스템 활용
  (당해연도 감전사고 현황 자료 요청)

➡

감전사고 자료 요청
(행안부 → 경찰청 · 보건복지부)
- (경찰청) 감전사고로 인한 변사 처리기록부 일부 자료
- (보건복지부) 감전사고로 인한 입원환자(1일이상) 자료

➡

감전사고 통계 생산
(행안부 → 전기안전공사)
- 행안부 자료를 가공하여 감전 사고 통계 생산
  * 감전사고 예방대책 활용 등



9. Cultivating Safety Culture

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Plan

Objectives — Cultivating Safety Culture with Multi-Dimension

Raising Consciousness

- Developing Contents for Ages such as Infants, Children & Youth
  * (Online) TV, Radio, Internet
  * (Offline) Leaflet, Books

Diffusing Culture

- Cultivating & Diffusing the Safety Culture with Different Events
  * (Musical) For Infants & Students
  * (Experience) VR Experience

Safety Settlement

- Expanding the Scope of P.R.
  * Online Live Broadcast
  * Co-Work with Cities & Counties

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Ⅲ. Future Concepts of Electrical Safety Management

Future of Electrical Safety

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Future Concept

		Present(As-Is)	Future(To-Be)
01 Safety Mgmt.	Policy Basement	• Legal Complexity & Ambiguity	• Establishing Safety-Centered Policy
	Promotion System	• Top-Down Style by Government	• Co-Work with Private & 2-Way Style
	Mgmt. Style	• Face-to-Face Check Style	• Comprehensive Mgmt. based on ICT
02 Safety Industry	Industry Development	• Slow Growth of Safety Industry	• Industry Promotion & Specialized Companies
	H.R. Development	• Lack of H.R.M System	• Enhanced Basic Ability & Expertise
	Tech Basement	• Lack of Safety Tech	• Building Infra for Future Technology
03 Safety Culture	Expansion	• Low Sensibility on Safety	• Cultivating Safety Culture
	P.R. Style	• Cramming P.R by Government	• Civil Participation & 2-Way Communication


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Thank You