



LS Railway Traction Power System


CONTENTS

- 01 Overview of the Railway Traction Power System
- 02 AC Railway Traction Power System
- 03 DC Railway Traction Power System
- 04 Business Sites
- 05 Product Quality Management
- 06 Domestic and International Supply References
- 07 Closing

1-1. What is the railway traction power system?



- A system to supply the power needed for railway operation and stations

-  AC AC system applied to high-speed rails and general railways

-  DC DC system for urban railways and light railways



1-2. Features of LS ELECTRIC's railway traction power system



LS ELECTRIC considers the product and system safety to be the highest priority from the product planning stage to the final production stage.



LS ELECTRIC offers an extensive product lineup from low-voltage to high-voltage models and IT solutions like SCADA and diagnosis system.



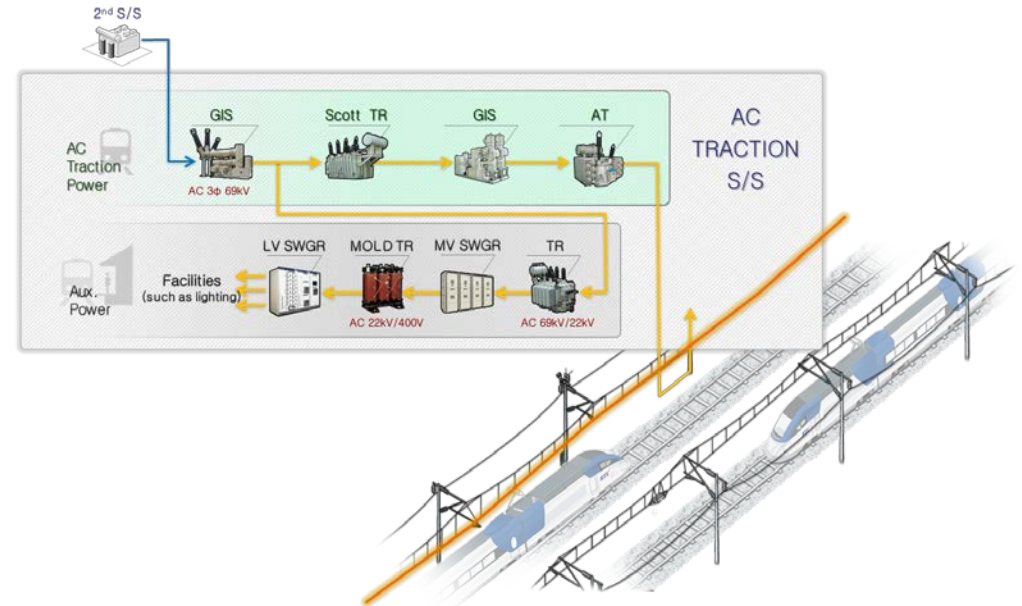
LS ELECTRIC's top experts are ready to meet customers' needs.

2-1. Product Configuration of the AC Railway Traction Power System



- Use: High-speed railways and long-distance railways
- System features: AC 25kV single-phase (Korea)

Schematic Diagram of the AC Railway Traction Power System



2-2. LS ELECTRIC's Product Lineup

Low-Voltage



MCCB/ELCB



Contactor



ACB



Relay



Low-voltage switchgears

Medium-Voltage



VCB



LBS



ALTS



VCS

High-voltage switchgears



RMU



APS



Distribution transformer

High-Voltage



High-voltage GIS



High-voltage transformer/Scott transformer

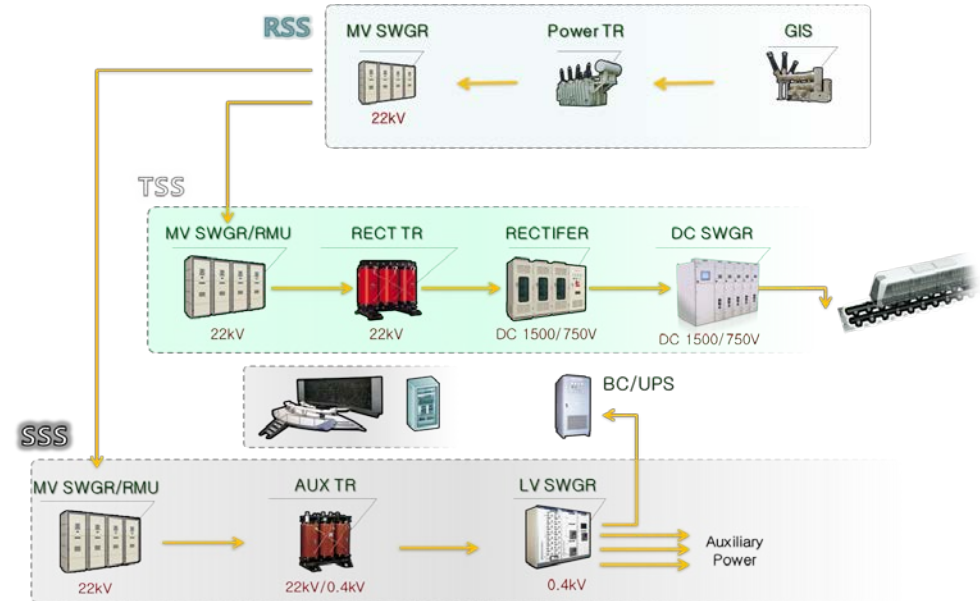
3-1. Product Configuration of the DC Railway Traction Power System

- Use: Short routes of urban railway
- System features: DC 750V/1599V system (Korea)

3-2. LS ELECTRIC's Product Lineup



Schematic Diagram of the DC Railway Traction Power System



DC Switchgears / Power Devices



DC Rectifier



Rectifier Transformer



Office

LS Anyang Tower and LS Yongsan Tower, where LS ELECTRIC's head offices are located, house the power device, system, and automation system business divisions.

LS Yongsan Tower



LS Anyang Tower



R&D Center

LS ELECTRIC's R&D Center is the technology leader in the power and automation industries, and PT&T is an independent testing body.

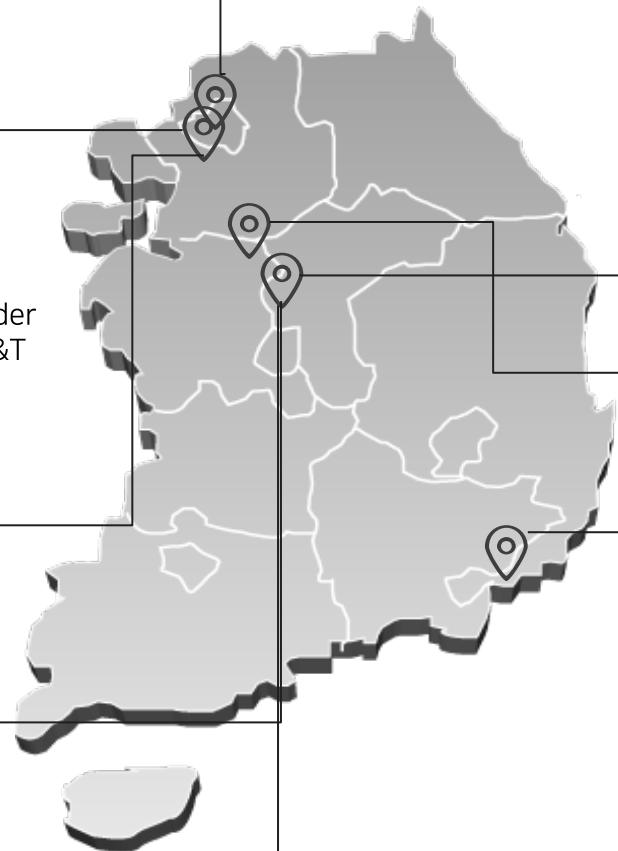
Global R&D Campus



Power R&D Center



Power Testing & Technology Institute (PT&T)



Factory

LS ELECTRIC provides world-class solutions through its top-tier production bases.

Cheongju 1&2 Sites



*Low-voltage
High-voltage
Switchgears
High-voltage GIS*

Cheonan



*New &
renewable
energy
Automation*

Busan



*High-voltage
transformer*



Development Quality

Definition

R&D Technology/Personnel
To inspect the current situation and establish and execute the improvement plan to secure technologies in steps

Description

- ❖ **Step-by-step management activities and technical guidance**
 - Linking business and technology strategies to execution by examining the technology/personnel level and managing fostering/securing strategies
- ❖ **Technology guidance**
 - Systematic management and acquisition of enterprise-wide technologies to strengthen the global-level competitiveness
 - Establishing strategies and presenting consistency to supplement the needed technologies
 - Fostering technical capability and career management of R&D personnel



Part Quality

Definition

To supervise, evaluate, and foster key suppliers to ensure production stability and part quality

Description

- ❖ **Process setup**
 - Direct on-site supervision
 - Key process management, time check, and supporting process setup for process quality management such as independent/sequential inspection
- ❖ **Voluntary innovation**
 - Improvement of chronic/inherent quality issues of suppliers
 - Joint innovative activities
- ❖ **System**
 - Quality management scheme
 - Quality assurance agreement
- ❖ **Mindset**
 - Regular meetings



Process Quality

Definition

To expand "Foolproof" to all assembly processes to ensure zero-fault process quality

Description

- ❖ Establishment of process related to "Foolproof" selection criteria and maintenance Setup
- ❖ Introduction of the process to manage master samples for mass production
- ❖ Management of manufacturing/maintenance of master samples of "Foolproof" system for mass production
- ❖ Reflection of checklist for hierarchical process inspection
 - Enhancement of execution capability through validation
- ❖ Improvement of detection of defective parts
 - Improvement of detection and establishment of inspection system with the automatic inspection system
- ❖ **Securing zero-defect process quality**
 - Expansion of error proofing
 - Construction of Industrial 4.0



Customer Quality

Definition

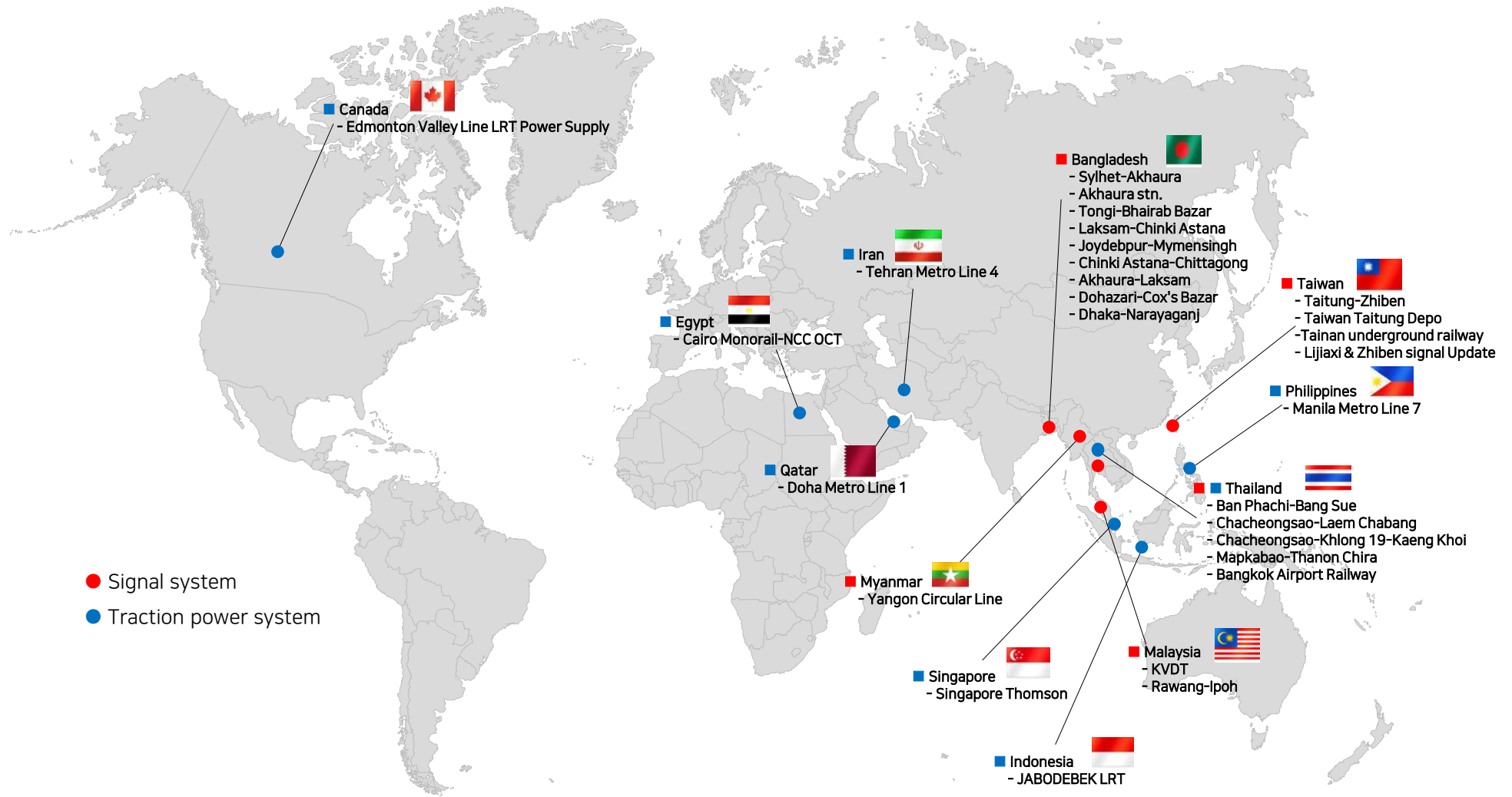
To change the quality system from follow-up to preventive management

Description

- ❖ **Q-Post activities**
 - Investigation of quality experienced by customers and potential complaints about the product and reflection of follow-up to the product
 - Emphasis on sales points with customer-specific technical support
- ❖ **Reliability assurance activities**
 - Securing product reliability through continuous verification and improvement activities of functionality/performance of mass-produced products through reliability assurance and evaluation

* Foolproof: Automatic defect prevention with instruments and machines

Global projects in nine countries



Thank you!
