

Greater Value Together





I. LSIS Company Overview

- 1) LS Group
- 2) LSIS
- 3) Financial Statement
- 4) Global Presence
- 5) R&D

II. PT&T

- 1) Internal Arc Video
- 2) PT&T Introduction

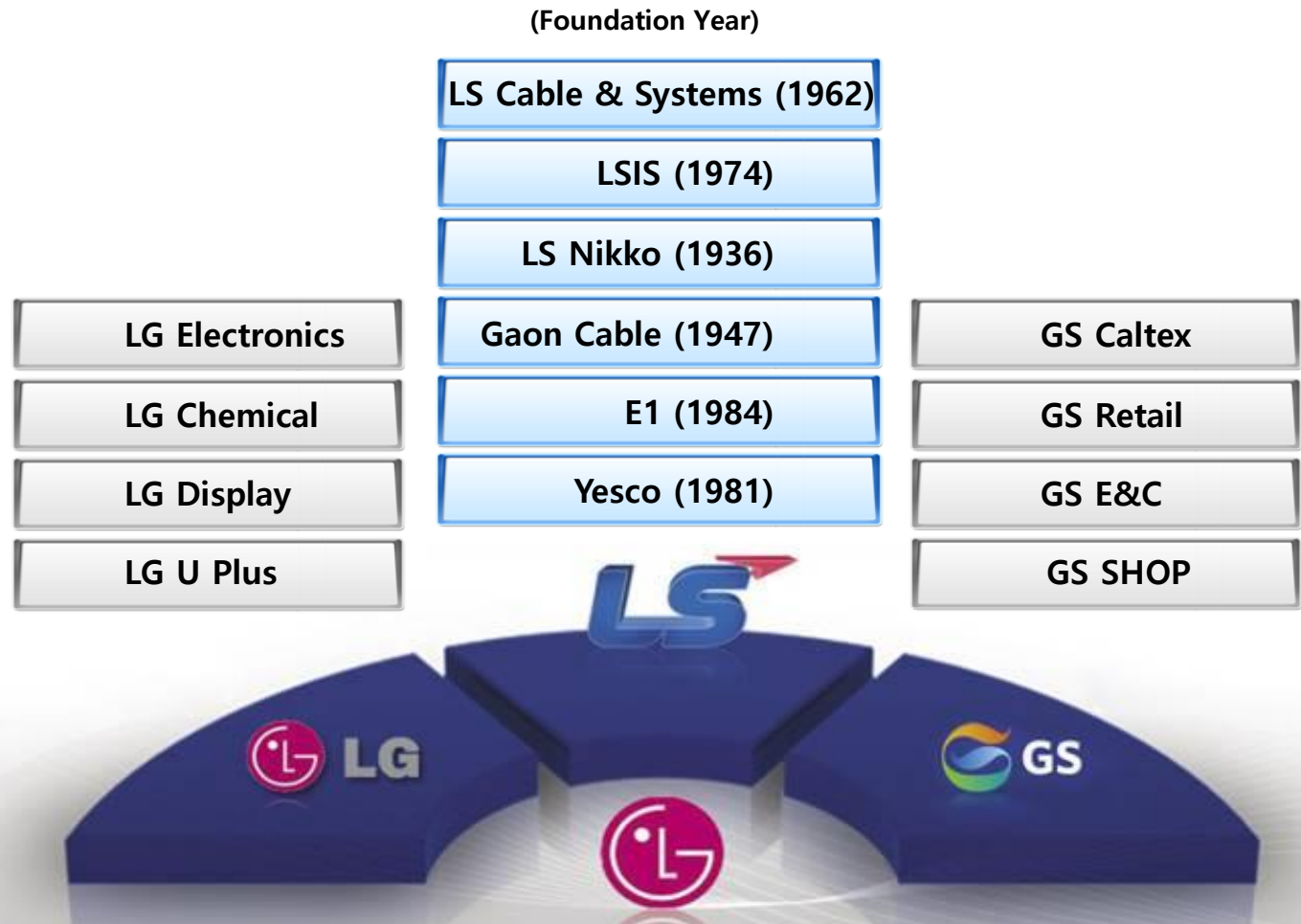
III. Business Introduction

- 1) Business Portfolio
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**Growing into a Top Global Company in the industrial electric,
electronics, materials and energy fields**



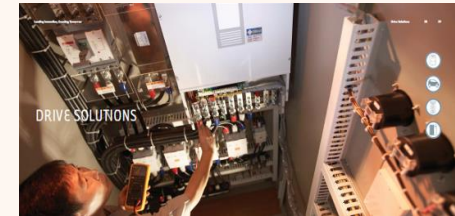
Growing into Global Leaders in the Areas of Industrial Electric,
Electronics, Materials, and Energy by Building an Organic
Cooperative Mechanism

Affiliates

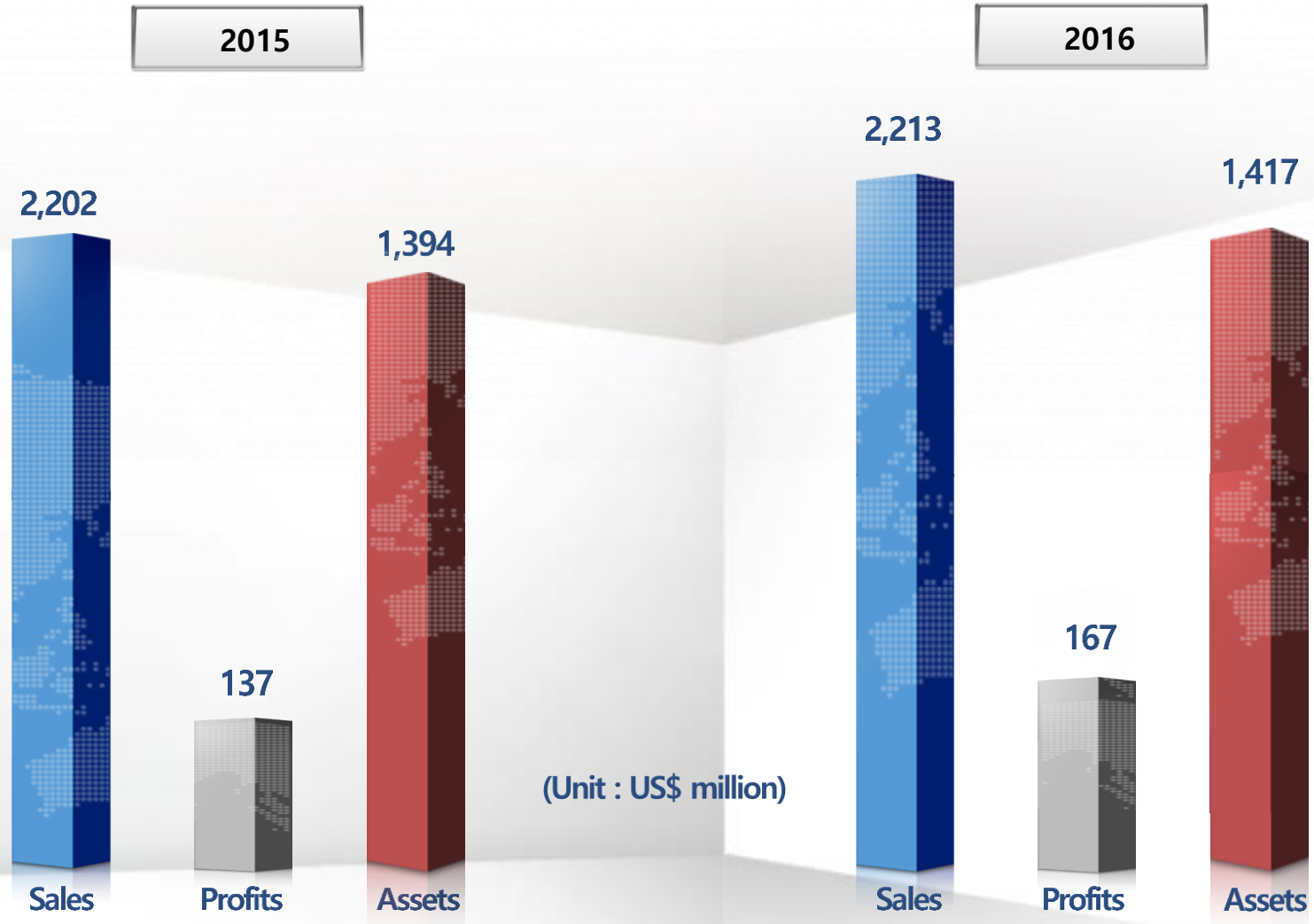


Leader in Power Solutions, Automation & Green Business

- ❖ The Leading Company in the Power Distribution & Automation Industry
- ❖ The first to build a Smart Grid, Green Village and Green Factory
- ❖ Ranked among the World's Top 3 in electric vehicle components including EV-Relays
 - Founded : 1974
 - Sales (2016) : US\$ 2.22 billion
 - Employees : 3,616
 - Headquarters : LS Tower, Anyang-si, Gyeonggi-do, Korea
 - Plants : Cheongju, Cheonan, Busan, Dalian, Wuxi, Hubei, Hanoi
 - Overseas subsidiaries : China, Vietnam, Japan, etc.
(8 manufacturing / reselling subsidiaries in total)
 - Overseas branches : USA, Europe, India, Vietnam, etc.
(10 branches in total)

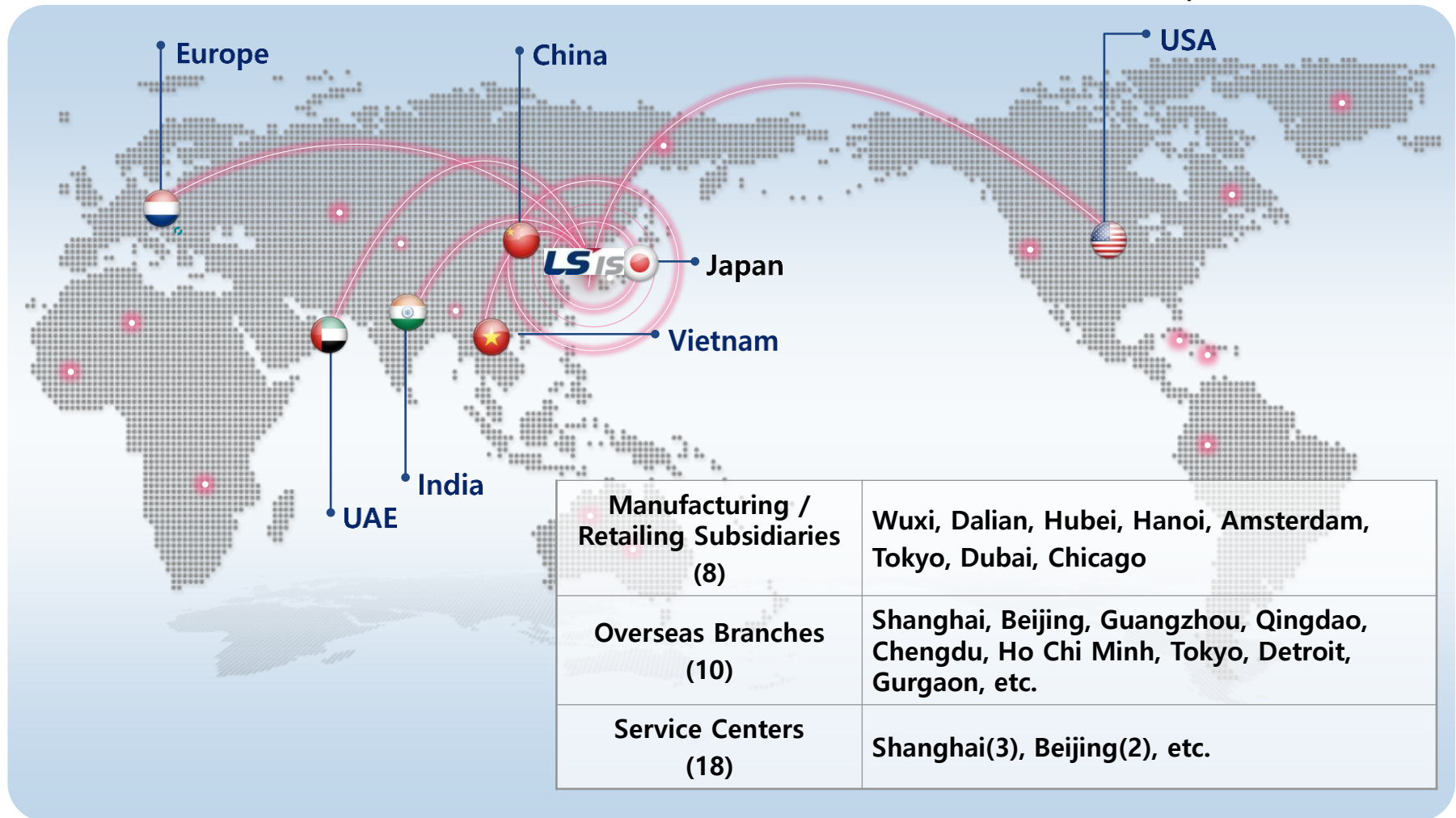


Consistent stable growth



Global expansion through more than 20 overseas branches and subsidiaries

(Updated on 03. 01. 2014)



Hi-tech R&D in Korea and overseas

(Updated on 03. 01. 2014)

- 3 Domestic & 2 Global R&D Centers
- 3 R&D Labs in Anyang Advanced Technology R&D Center
- The only domestic Power Equipment Testing Center

LSIS
VEDIO File



II. PT & T

1) Internal Arc Video

- MCSG for UL certificate
- RMU for KERI certificate

2) Introduction of PT&T



II. Internal Arc Video

KERI (17.5kV 16kA/1s 630A)



II. Power Testing & Technology Institute (PT&T)

LSIS has invested over \$50 million to build own power testing lab, PT&T. PT&T is operating high-power laboratory, high-voltage laboratory, reliability testing laboratory and calibration laboratory to aid technical development in product performance and reliability through its sound technical background and impartial operation in testing and evaluation process.

PT&T, as a KOLAS-accredited testing & calibration laboratory, would continue its contribution to promote technical development and competence of electrical industry. (KEMA, UL, CESI, ASTA - Mutual Certification Agreement Signed)



Standards

IEC60898 / UL1077	Miniature Circuit Breaker
IEC60947-2 / UL489	Molded Case Circuit Breaker
IEC60947-2 / UL1066	Air Circuit Breaker
IEC60947-4 / UL508	Contactors & Overload Relay
IEC60227-100	Vacuum Circuit Breaker
IEC60470	Vacuum Contactors
IEC60282-1	HRC Fuse
IEC60439-1	Motor Control Center
IEC60298	Metal Clad Switchgear

Approval

	CE
	UL, CSA
	BV France
	LRS, Gr. Britain
	NK, Japan
	CCC, China
	SEC, Saudi Arabia

Certifications

	KEMA, Holland
	CESI, Italy
	TUV Rheinland, Germany
	KERI, Korea
	PT&T, LSIS, Korea

II. Power Testing & Technology Institute (PT&T)

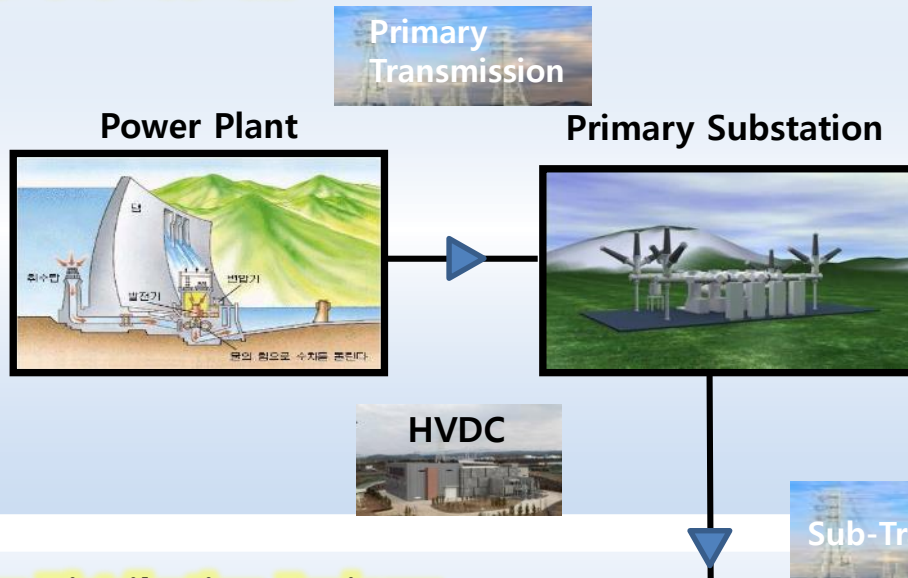


III. Business Introduction

- 1) Business Portfolio
- 2) Main Products

Leading Provider of Total Electric Power, Automation & Green Business Solutions

Power Grid Business

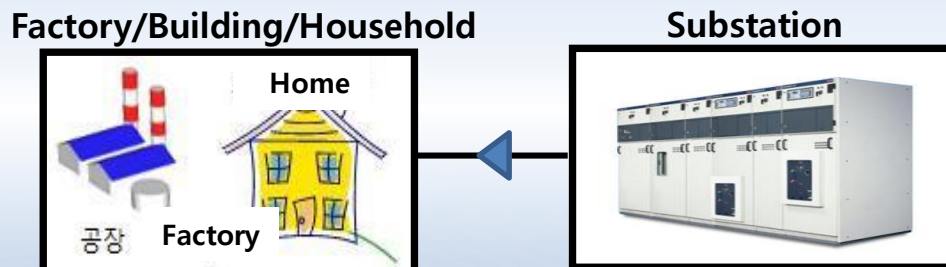


Ultra-high voltage power transmission & distribution system equipment such as gas insulated switchgear (GIS)

< Main Products >

- Gas Insulated Switchgear (GIS)
- Power Transformers
- Remote Monitoring & Diagnosis Equipment
- HVDC

Power Distribution Business



Top low and medium voltage electrical equipment for electricity users

<Main Products>

- Switchgear (SWGR)
- Vacuum Circuit Breakers (VCB)
- Air Circuit Breakers (ACB)
- Molded Case Circuit Breakers (MCCB)
- Magnetic Contactors (MC)0

Automation & Drive Business

Factory / Building
(FA/PA)



Discrete Automation



Process Automation



Building Automation

From simple automation control to large-scale manufacturing facilities and process control, LSIS provides the optimal solutions to diverse industrial fields.

< Main Products >

- Variable Frequency Drive
- PLC (Programmable Logic Controller)
- HMI (Human Machine Interface)
- Servo Drive & Motor
- DCS (Distributed Control System)
- RTU (Remote Terminal Unit)

Convergence Business



Smart Grid



Green Car Solution



Photovoltaic System



Railway System

Power Grid Solution



❖ HVAC (High Voltage Alternative Current)

- Gas Insulated Switchgear
- Power-Transformers

❖ HVDC (High Voltage Direct Current)

- C.Tr (Converter Transformer)
- Thyristor Valve
- Control & Protection

❖ Diagnostic Equipment

- Diagnosis & Overhaul
- Online Monitoring Systems

Gas Insulated Switchgear



- Up to 362kV
- Up to 6,300A
- Up to 63kA

Power-Transformer



- Up to 550kV
- Up to 800MVA
- IEC 60076 / ANSI(IEEE) C57

HVDC (High Voltage Direct Current)



- C.Tr(Converter Transformer)
- Thyristor Valve
- C&P (Control & Protection)

Power Distribution Solution



- ❖ **Switchgear**
 - MV / LV Switchgear
 - Busway
- ❖ **Transformer**
 - Mold Transformers, Oil Transformers
- ❖ **Medium Voltage**
 - Vacuum Circuit Breakers (VCB)
 - Ring Main Units (RMU), Load Break Switches (LBS)
- ❖ **Low Voltage**
 - Air Circuit Breakers (ACB)
 - Molded Case Circuit Breakers (MCCB)
 - Magnetic Contactors (MC)
- ❖ **Measurement / Relay**
 - Smart Meter, Advanced Metering Infrastructure
 - Digital Protection & Measurement Device

SWGR

M-TR

VCB

RMU, LBS

ACB

MCCB

MC & TOR



- 7.2~36kV
- 630~4,000A
- Up to 50kA
- IEC 62271-200

- 3.3~36kV
- Up to 20MVA
- **IEC 60726**

- AC 7.2~40.5kV
- Up to 4,000A
- Up to 50kA
- IEC 62271-100

- 12/17.5/24kV
- 630A
- 21kA (3s)
- IEC62271-1~200

- AC 690V
- Up to 6,300A
- Up to 150kA
- IEC 60947-2

- AC 690V
- Up to 1600A
- Up to 150kA
- IEC 60947-2

- Up to AC 1000V
- Up to 2100A
- UL 508
- IEC 60947-4

Automation Devices & Solutions



- ❖ Variable Frequency Drive
- ❖ PLC (Programmable Logic Controller)
- ❖ HMI (Human Machine Interface)
- ❖ Power Semiconductor Modules
- ❖ Automation Systems : DCS, PLC, RTU
 - Water Treatment Control
 - Power Plant Control
 - Remote Terminal Unit

Drive Solutions

Automation Solutions

Power Semiconductors

VFD (LV)



VFD (MV)



- 1Ø 240V:0.1~3hp
- 3Ø 240V:0.1~100hp
- 3Ø 480V:0.5~700hp
- 3Ø 600V:7.5~150hp
- V/F, Sensorless Vector control

- 3/4/6/10 kV
- 200kVA ~11,000kVA
- Sensorless Vector control

PLC



- Redundancy & high performance
- Distributed I/O
- Ladder & IEC language

HMI



- 5~15" touch screen
- 16,777,216 TFT colors
- Offline program simulation

DCS/RTU



- MASTER P-3000
- MASTER P-5000
- MASTER RTU

PSC module



- IGBT Module
- MOSFET Module
- Diode Module

Smart Green Business : Photovoltaic System



- ❖ **Photovoltaic Systems**
 - MW-Level Power Plant
 - Residential
 - Floating PV System
- ❖ **Photovoltaic Modules**
 - Mono/Multi Si
 - PID Free Function
 - Floating System PV Module
- ❖ **Photovoltaic Inverters**
 - Residential
 - Commercial
 - Utility Scale
- ❖ **Monitoring Systems**
 - Monitoring Unit
 - Measuring Unit
- ❖ **EES (Electrical Energy Storage)**



- MV-Level Power Plant
- Residential
- Floating PV System



- Mono / Multi Si
- PID FREE function
- Floating Module



- Residential
- Commercial
- Utility Scale



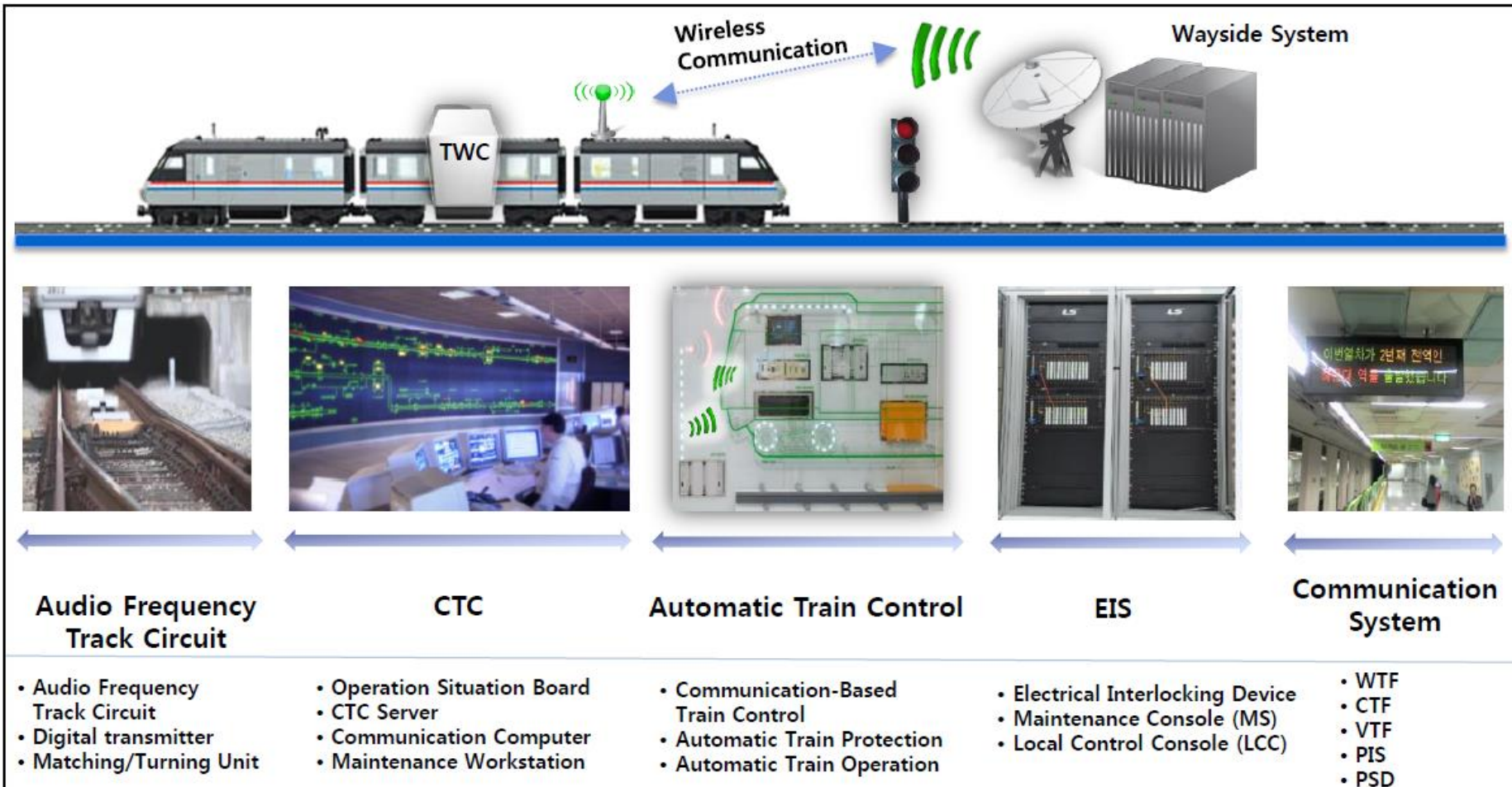
- HEMS (Home Energy Management System)



- Peak Shifting
- UPS mode
- 6.3kWh to 12.6kWh batteries

Smart Green Business : Railway System

- ❖ We develop and produce comprehensive railroad signal control (communication) systems and engineering technologies which incorporate various types of signal communication equipment suited to the characteristics of railroads for the effective handling of command control, train operation intervals, train routes, operational security and information equipment.



III. Major Reference list

245kV AIS Substation Mannar PJT (2019)

Country	Sri Lanka
Products	P-TR(220/33kV 45MVA) * 1SET GIS(36kV 2000A 25kA) * 1BAY SCADA SYSTEM * 7BAY
Note	Supply, Erection & Commissioning Under Construction (U/C)



III. Major Reference list

72.5kV GIS Substation Extension PJT (2018)

Country	Egypt
Products	GIS(72.5kV 2500A 31.5kA) * 7BAY
Note	Supply, Erection & Commissioning Under Construction (U/C)



III. Major Reference list

SEMV Ph-2 PJT (2017)

Country	Vietnam
Products	MV SWGR * 10PNL TRP * 8PNL Mold TR * 8SET LV SWGR * 25PNL MCC * 8PNL
Note	Modern & professional fire alarm project, for entire of Samsung Thai Nguyen factory



III. Major Reference list

132kV 8 GIS / 33kV 24 GIS Substaion PJT (2016 U/C, National Investment Commission)

Country	IRAQ
Products	132kV 8 GIS & 33kV 24 GIS Substation T/K Power TR: 145kV 90MVA * 12SET Power TR: 36kV 31.5MVA * 48SET GIS 132kV 3150A, 40kA * 38BAY GIS 33kV 1250A 31.5KA * 164BAY SGWR 11kV 2500A (50kA/0.5s) * 504PNL
Note	LSIS received a contract from the Iraqi government for a construction project that included four 132kV / 33kV GIS (gas insulated switchgear) substations. LSIS has signed a final agreement to prove the strong confidence of the Middle East market. The deal, which is worth \$ 45.8 million, is the largest single transaction under LS.





Thank You!