www.ypp.co.kr

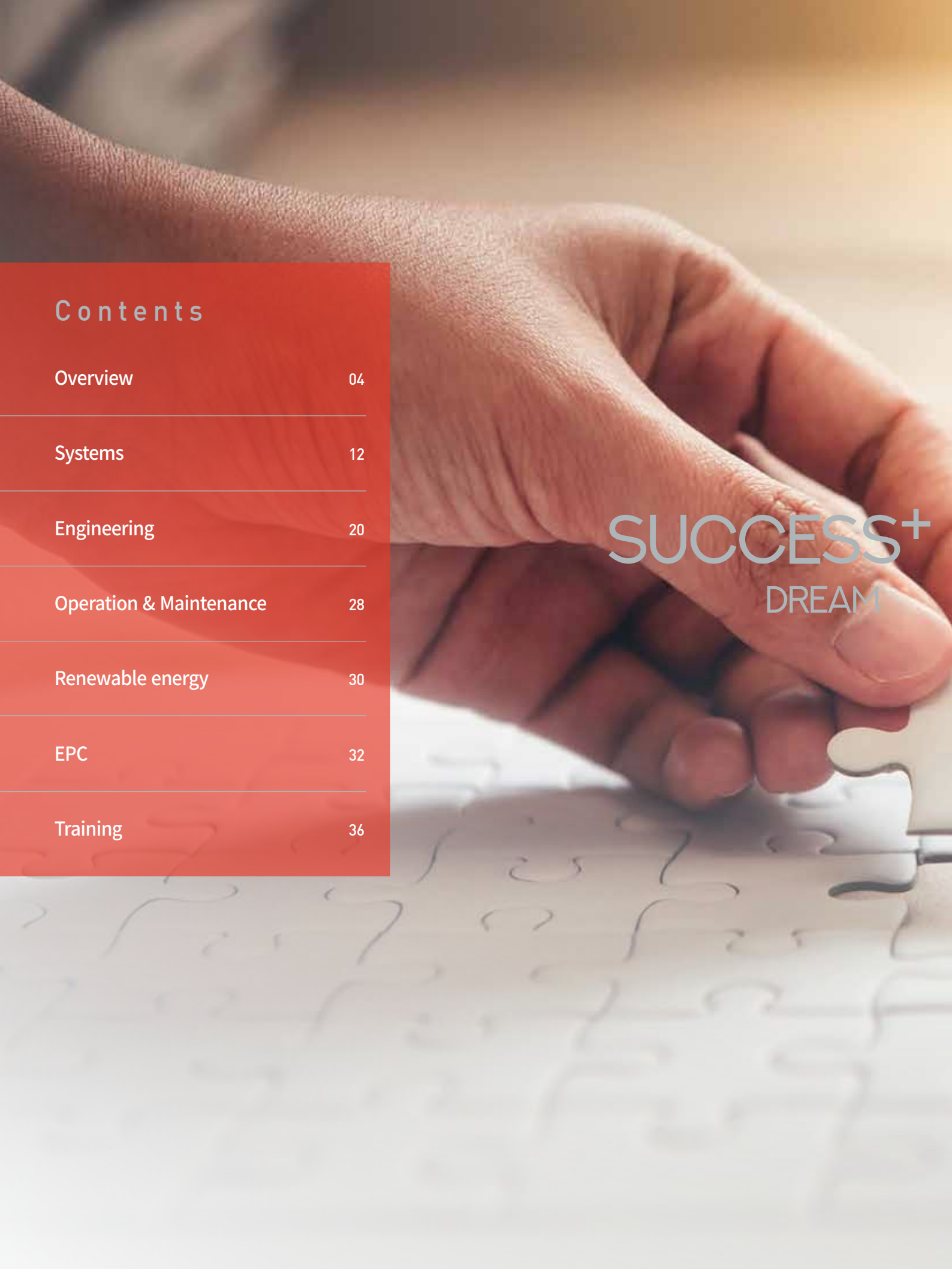
YPP

Your Permanent Partner!

A leading power solution company with
Technology, Commitment and Sustainability





Contents

YPP cares greatly about creating success for our customers.

Our customers are respectable companies who strive to create values with clear social and future-oriented goals. YPP strongly focuses on contributing to our customers by helping them achieve their goals. We believe that our best effort in what we do is the most effective way to contribute to our customers and society as a whole.

Hence, YPP constantly strives to develop the best products and services for customers, always listen to our customers, and continuously adapt to volatile environment. We also provide our customers with education and training to energize the best technical talents, contributing to technological enhancement of the nation.

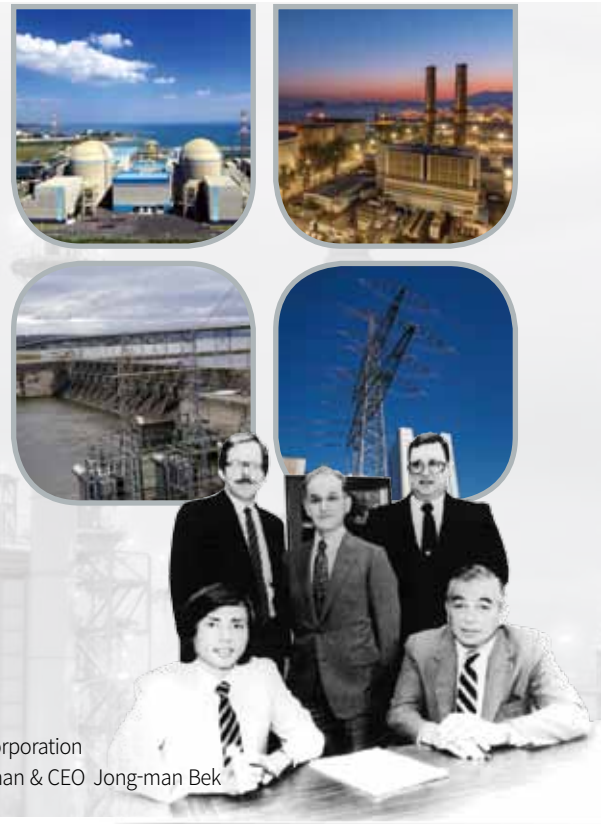
With humility and responsibility, YPP will continue to do our best in creating superior value and will always commit to be your trustworthy partner.

YPP Corporation

Chairman & CEO Jong-man Bek

We push the boundaries of technology to achieve technical excellence of our society.

YPP, started as Yeongpung Corporation in 1982, has focused on electrical equipment and engineering systems for over 40 years. Based on our accumulated know-how and technology, we are leading forward to become a global brand.



YPP Corporation
Chairman & CEO Jong-man Bek

Global energy company by 2025

Major History

1982
- Established Yeongpung Products Inc. (CEO Jong-man Bek)
- GENERAL ELECTRIC Partner

1996
- ISO9001 Certification (KQA-96048)

2001
- AMETEK Partner

2002
- Developed an ECMS for thermal power plants
- Supplied ECMS to Saudi Arabia (5 Power plants)
- Developed 154kV/345kV/765kV Power facility protection system

2005
- ISO14001 Certification (C.I.L: CI/9195E)

2006
- Developed a triple first-class digital protection relay panel for nuclear power plants

2007
- Selected as an INNO-BIZ company

2008
- Opening of the Relay School

2011
- Selected the 100 strongest SMEs by the Blue House
- Developed UPS (Uninterruptible Power Supply)
- Signed an educational agreement with KPX / KEPIC for the PSAC

※SME : Small and Medium Enterprises

Old office

YPP

Leads the Korean power system industry as an energy company that provides the best total system solutions, from single components to enterprise-wide electrical facility protection systems.

Date of establishment
January 1, 1982

Management
Chairman & CEO Jong-man Bek

Address
Samsung IT Harrington Tower 4F, 41, Digital-ro 9-gil, Geumcheon-gu, Seoul (60-48 Gasan-dong)

New office

2012
- Opening of the PSAC
- CE Certification for integrated generator diagnosis system (Hardware sector)

2013
- Awarded the "10 Million USD Export Tower" on the 50th Trade Day

2014
- Developed a triple digital protection relay (TRIUMP™)

2016
- OHSAS 18001 Certification
- Developed the IGDS (Intelligent General Diagnosis System)

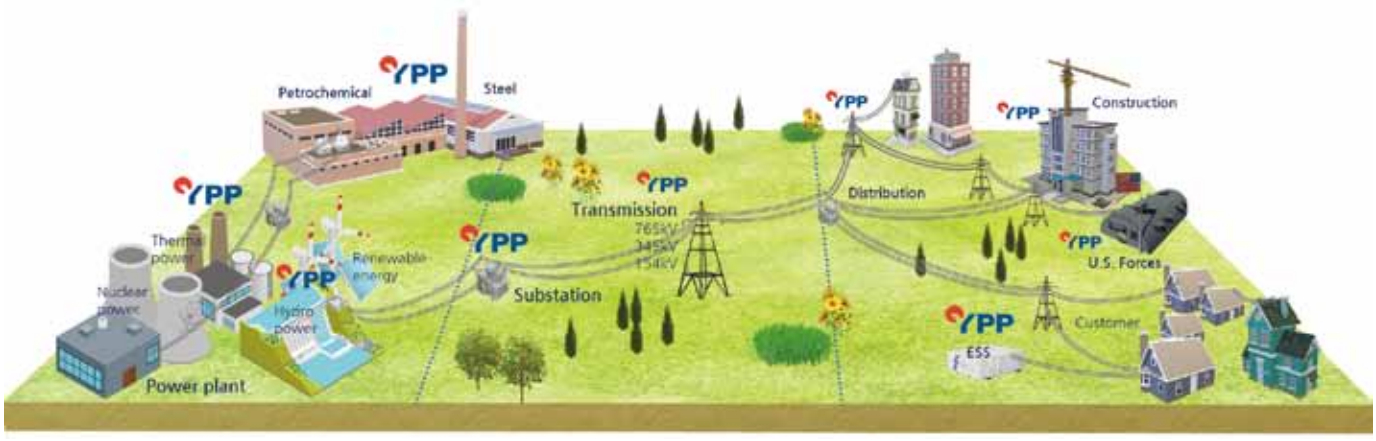
2017
- Developed integrated intelligent monitoring & diagnosis system for the power system
- Schneider Electric Partner

2018
- Class Q Certification (KEPIC-EN)
- iS5communication Partner
- Framatome Partner

2019
- GE HYDRO channel Partner

2020~
- R&D agreement with KHNP - 'Development of smart relay for fault protection of important H/V motors'
- Substation total diagnostic system (KEPCO)
- CGID : Commercial grade dedication(KHNP) [Q-Class]
- Transportation of spent fuel in PWR(Pressureizer Water Reactors) (KHNP) [Q-Class]
- Transportation and dry storage of spent fuel in HWR(Heavy Water Reactors)(KHNP) [Q-Class]

Providing comprehensive energy solution



System

- Power protection system
- Facility diagnosis system
- Plant control system

Engineering

- Electrical design
- Instrumentation design
  Power system consulting
- CGID(Commercial Grade Item Dedication)

Operation & Maintenance

- Generator Circuit Breaker
- Digital protection relay
- UPS(Uninterruptible Power Supply) / BC(Battery Charger)
- AVR(Automatic Voltage Regulator)
- ESS(Energy Storage System)
- PLC(Programmable Logic Controller)
- Hydro equipment

New Renewable Energy

- Hydro power plant
- Solar Power Station
- ESS(Energy Storage System)
  - Peak cut
  - Load management
  - Renewable power generation sales
  - Emergency power supply


Nuclear power / plant monitoring and control


Power system consulting & Engineering


Digital protection relay


Hydro power plant


Electrical equipment control and monitoring system


Plant & Electrical system design


Generator Circuit Breaker(GCB)


Renewable Energy

Products

- Digital protection relay
- Triple Redundant Protection System(TRIUMP™)
- Power converter(UPS, Battery charger, PCS)
- Substation preventive diagnosis system
- Power monitoring control(ECMS, PMS, PLC)
- Fault recorder
- Industrial Network Devices

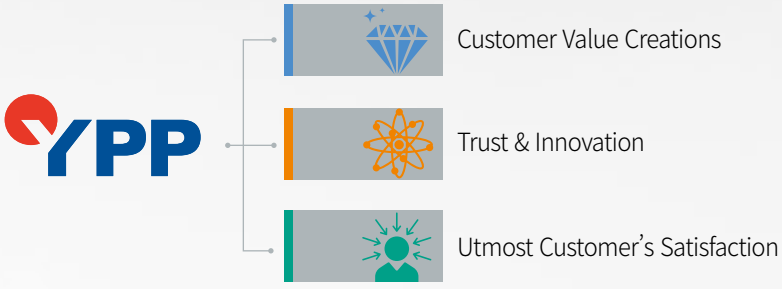
Training

- Relay School
- Power System Advanced Course


YPP Training

Creating greater customer value with strong commitment

Organizational Culture



Vision & Core Values

Mission

Your Permanent Partner!

Customer satisfaction achieved by leading technologies and commitment

Vision

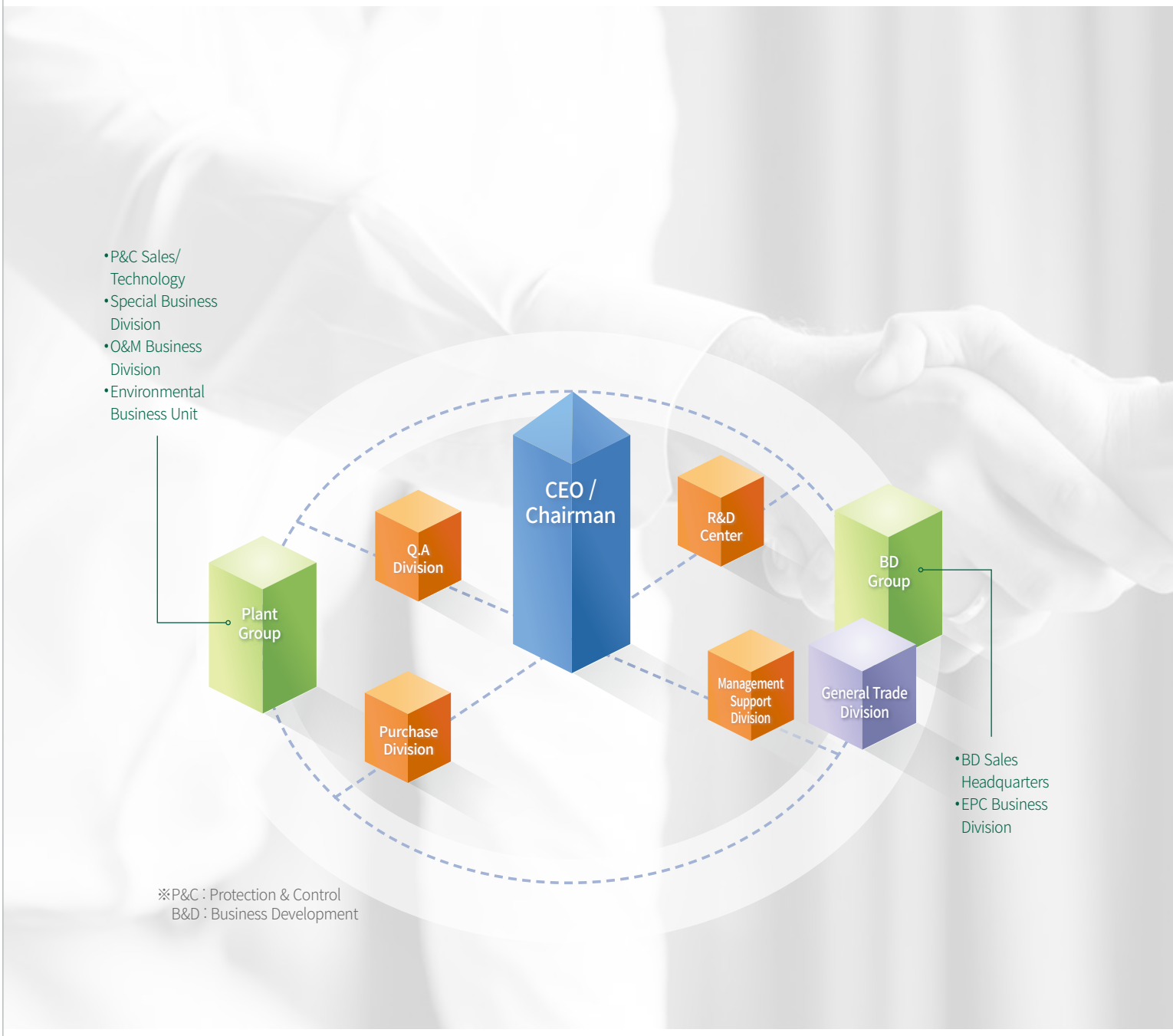
An energy solution company contribution to society with technology

A total energy solution group pursuing the highest level of employee value proposition (EVP) in Korea

Value

Ownership	community spirit	Change	CSR	Customer satisfaction
Responsibility	Cooperation	Innovation	Corporate Social Responsibility	Professionalism

Organization



Customers & Partners

Global Partners

GE Renewable Energy
AMETEK
EMERSON
Grid Solutions
iS5 COMMUNICATIONS
framatome

Main Customers

Public enterprises

KPX KOREA POWER EXCHANGE
KEPCO KOREA ELECTRIC POWER CORPORATION
KOREA HYDRO & NUCLEAR POWER CO., LTD
KOEN KOREA SOUTH-EAST POWER CO.
KOREA SOUTHERN POWER CO.,LTD.
KOREA EAST-WEST POWER CO.,LTD.
KOREA WESTERN POWER CO., Ltd.
KOMIPO
KEPCO E&C
KESCO KOREA ELECTRICAL SAFETY CORPORATION
K water
KOREA DISTRICT HEATING CORP.
ETRI Electronics and Telecommunications Research Institute
KORAIL KOREA RAILROAD
KNOC KOREA NATIONAL OIL CORPORATION

Domestic companies

SAMSUNG
posco
LOTTE
LG
LS
GS
SK
DOOSAN
HYOSUNG
Hanwha
stx
DAELIM
Halla 주|한라
HDC 현대산업개발
Hyundai Oilbank
eTEC 이테크건설

Foreign companies

AMETEK
ABB
MITSUI E&S
USFK
NKE
JPS
JOMEL
FORZA

Government-contributed research institutes

KERI 한국전기연구원 KOREA ELECTROTECHNOLOGY RESEARCH INSTITUTE
KINS 한국원자력안전기술원 KOREA INSTITUTE OF NUCLEAR SAFETY
NFRI
국방과학연구소 Agency for Defense Development
KAERI 한국원자력연구원 Korea Atomic Energy Research Institute

Non Profit Organizations

KEA 대한전기협회 KOREA ELECTRIC ASSOCIATION
원전현장인력양성원
한국발전교육원

Quality & Productivity

License

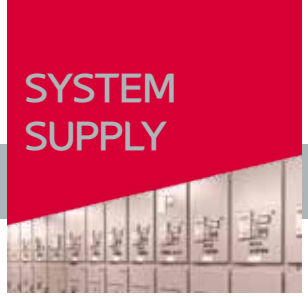
year	Contents
1994	Certificate of company affiliated research institute
1996	KS Q ISO 9001:2015/ISO 9001:2015
2003	Engineering business registration (Korea Engineering & Consulting Association)
2005	Electrical construction business registration
2008	KS I ISO 14001:2015/ISO 14001:2015
2014	Certificate of Main-Biz (Ministry of SMEs and Startups)
2015	Information & communication works registration
2016	OHSAS 18001:2007
2017	Mechanical equipment construction business registration
2021	KS Q ISO 45001:2018/ ISO 45001:2018

Patent

Number	Contents
10-1031652	Apparatus for checking shorted-turn for generator rotor windings
10-1075448	Sealing device for extracting
10-1235849	A phase controlled rectifier system and method using thereof
10-1249884	Uninterruptible power supply system and parallel operating method
10-1299610	Adaptive estimation method of local source impedance for double-circuit transmission line systems
10-1386250	Data analysis system for auto configured function of sensor interface board
10-0987756	Korean photo-voltaic tracking system
10-1510210	Partial discharge monitoring system and method thereof
10-1574528	Diagnostic monitoring system for power equipment
10-1552852	Triple redundant digital protective relay and operating method thereof
10-1726938	Current transformer saturation detection apparatus and medium of recording computer program for implementing current transformer saturation detection method
10-1977165	System and method for controlling ESS for emergency power source, and a recording medium having computing readable program for executing the method
10-2193912	The method and partial discharge signal detection device of power facility

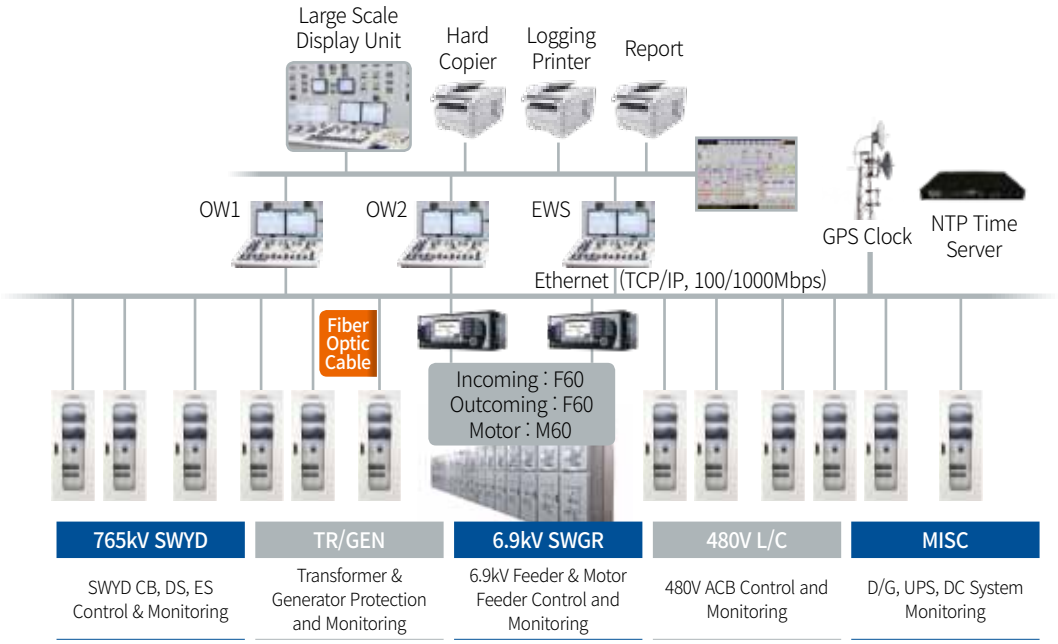
Qualifications

Certified by	Item Description	Field
Korea Electric Power Co.	Substation total diagnostic system	Substation
Korea South-East Power Co.	Electric Equipment Control & Monitoring System	Combined Cycle & Thermal Power Plant
		Construction (Electricity)
Korea Southern Power Co.	PLC Based Aux. Equipment Control System	Construction (Electricity)
Korea East-West Power Co.	Distributed Control System	Combined Cycle & Thermal Power Plant
Korea Western Power Co.	Protection Relay_ECMS Maintenance Qualification	Combined Cycle & Thermal Power Plant (Production, Maintenance)
	Protection Relay_First Grade Protection Relay Maintenance Qualification	
Korea Midland Power Co.	Protection Relay_Second Grade Protection Relay Maintenance Qualification	
	PLC_Hardware Maintenance Qualification	
	PLC_Card Maintenance Qualification	
	DCS_Hardware Maintenance Qualification	
Korea Hydro & Nuclear Power Co.	Power Supply System for Security System [A-Class]	Nuclear power
	KEPIC-EN Qualification of manufacture of Class 1E Local control panel [Q-Class]	
	Fault Recorder [S-Class]	
	Switchyard Bus & Tie Line Protection Panel(765KV) [A-Class]	
	Switchyard Bus & Tie Line Protection Panel(345KV) [A-Class]	
	Power Supply System for Security System [S-Class]	
	Test Service for Electrical Equipment Protection System in Nuclear Power Plants [Q-Class]	
	Generator Circuit Breaker Maintenance [A-Class]	
	Aux/Local Control Panel [Q-Class]	
	HVAC Control [A-Class]	
	Electronic Module -Including PLC Module [A-Class]	
	Generator Circuit Breaker [A-Class]	
	CGID (Commercial grade dedication) [Q-Class]	
	Transportation of spent fuel in PWR(Pressureizer Water Reactors) [Q-Class]	
	Transportation and dry Storage of spent fuel in HWR(Heavy Water Reactors) [Q-Class]	
	Electrical equipment & Monitoring System [A-Class]	
	Main Electrical Board & Protection Relay Panel [A-Class]	Nuclear & Hydro power
	DCS & PLC [A-Class]	
	DCS & PLC Hydro power first class protection relay test [A-Class]	
	Electrical Control & Relay Panel [A-Class]	
	First grade protection relay test for nuclear and hydro power plants [A-Class]	
KEPCO Engineering & Construction Co.	Nuclear I&C design for Architect Engineering (A/E)	Nuclear power
	Nuclear I&C design for System Design (S/D)	



ECMS

Electrical Equipment Control and Monitoring System



Overview

Electric equipment protection, monitoring, preventive diagnosis, and control system based on the latest digital technology

It is an automated system to protect, monitor, and control the power system based on advanced technology-centered digital protection relays and network technology. It provides convenient operation, maintenance, and inspection of electric equipment in power plants and enables safe failure recovery as well as accident prevention.

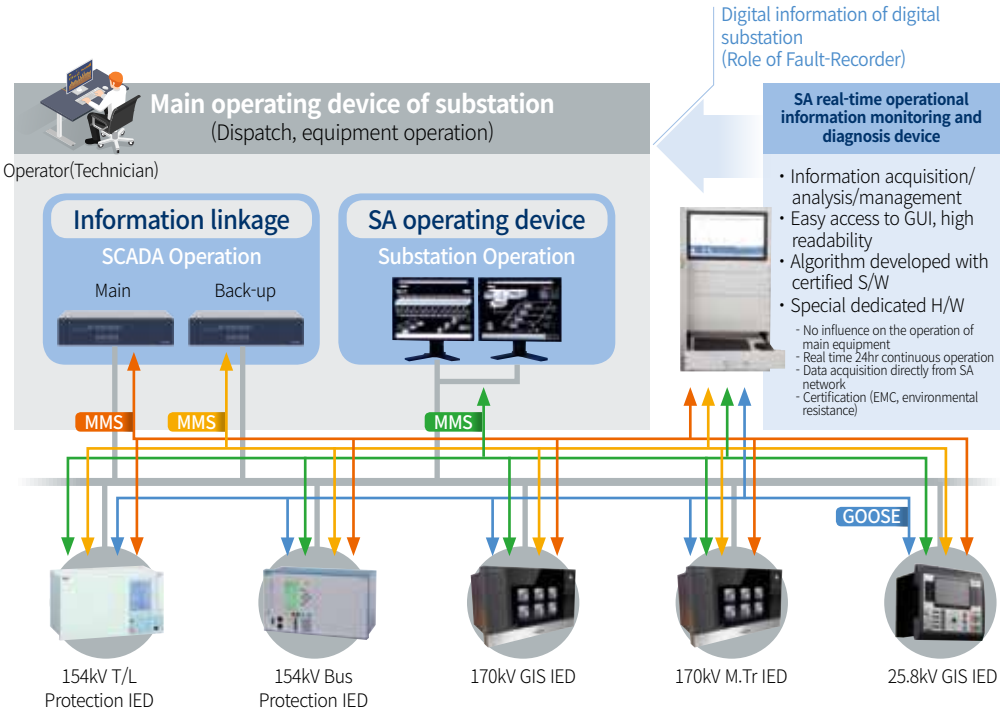
Features

- Improved reliability of protective device
  - Use of digital protection relay
- Equipment integration and simplification
  - Protective equipment + Measuring equipment + Control equipment + Monitoring equipment
  - MEB, TD, RTU, Meter, H/W Cable, F/R
- Remote monitoring and operation
- Shortened construction period
  - Easy installation and wiring due to equipment integration and cable reduction
  - Simple and quick interface between equipment
- Easy operation and maintenance
  - Integrated protection, control, measurement, monitoring and management
  - Significant reduction in inspection and adjustment work
- Accident prevention and rapid recovery
  - Self-diagnosis, fault record and event record analysis, OSC record analysis
  - Emergency action by failure section, fault area, and fault type
- Statistical data acquisition
  - Operation logs and reports : daily report, monthly report, annual report

Applications

- Thermal power plants, combined-cycle power plants, co-generation plants, nuclear power plants
- Petrochemical, semiconductor, steel, and heavy industry plants, offshore plants
- Intelligent buildings and large industrial complexes
- Renewable energy and micro grids such as complex sports facilities and amusement parks

SA
Substation Automation



Overview

Protection-control-monitoring-prevention-diagnosis-accident analysis

It is a digital substation operating system that visualizes all information of the electrical equipment of substation and transmits it to operators in real time. This substation automation system transmits substation operation information to an external SCADA system and processes control commands from the SCADA system. The SA system acquires and processes measurement/monitoring/control information from the IED inside the substation based on the international standard IEC61850.

Features

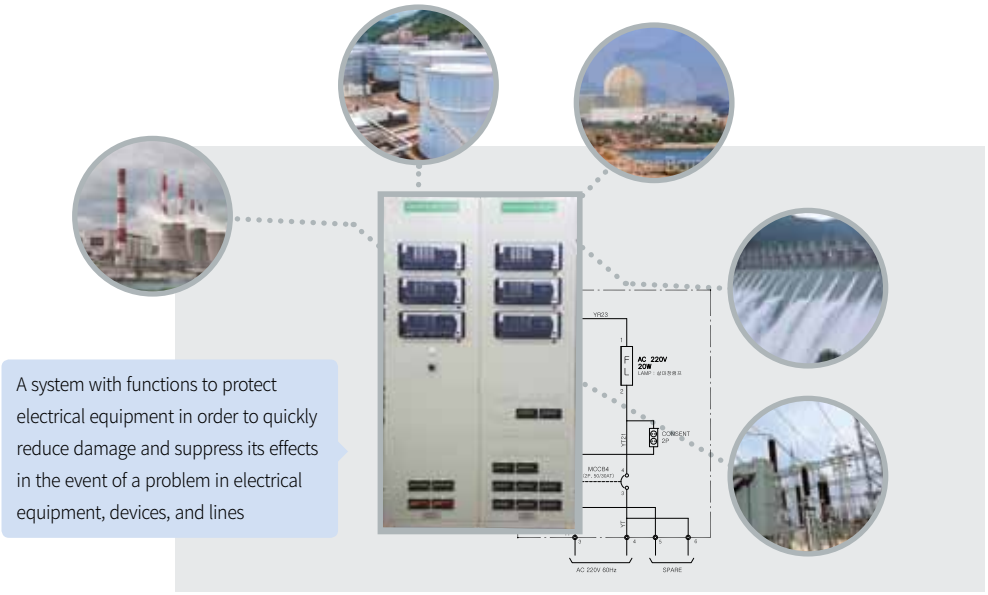
- Information acquisition and control of electrical equipment using IEC61850
- Visually communicating all situations of electrical equipment to operators
- RTU, SCADA linkage using DNP communication protocol
- History management for accident analysis
- Redundant configuration for system stability
- Improved reliability of protective device

Applications

KEPCO's digital substation operating system

Power System Protection

154kV, 345kV, 765kV



A system with functions to protect electrical equipment in order to quickly reduce damage and suppress its effects in the event of a problem in electrical equipment, devices, and lines

Bus protection panel

The bus has a low frequency of failure, but in the event of a failure, its scale and range is very large because the bus is connected to a number of transmission lines, transformers, etc.
Therefore, the bus protection system requires a highly stable relay method in terms of its roles and reliability

Transformer protection panel

Power transformers transmits power by step-up the voltage of the generator to increase power transmission efficiency, and supply power to the receiving end by step -down the voltage from the transimission lines.
In addition, it is an expensive power system facility that determines the stability that is supplied to the receiving end through a 'step down' process of lowering the voltage from the transmission.

Power transmission line protection panel

Transmission lines are installed in a wider area than other electrical equipment, so they are easily affected by external natural conditions and have a very high frequency of failure. Therefore, the transmission line protection panel must be able to quickly and accurately remove the failure of the transmission line and operate with sufficient cooperation with other protection relay devices.

SPP : Special Protection Panel

SPP is designed to prevent failures in electrical equipment from affecting the entire power system. It calculates the maximum current for continuous power supply in a stable system, and senses excessive instability of the power generation stage and voltage instability of the load stage.

Circuit breaker operation failure protection panel

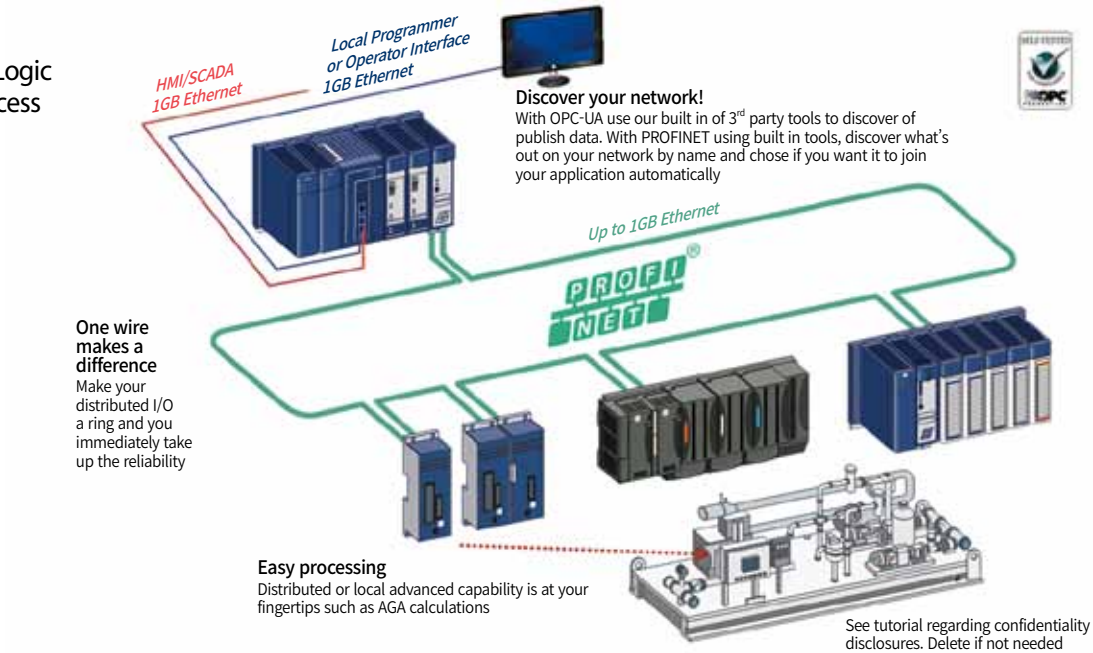
The power system consists of a main protection system and a backup protection system for use in the event of system failure, to stably and quickly separate the failure part; however, if the circuit breaker is inoperable and it is not possible to separate the part in which failure has occurred, a circuit breaker adjacent to the inoperative circuit breaker should trip and rectify the failure.

Fault recording panel

The fault recoding panel is used to record and analyze any abnormalities occurring in the power system and to analyze the cause of faults and the operating status of the system, ensuring accident detection and stability and reliability of the power system operation function at the power transmission/reception end.

PLC

Programmable Logic Controller & Process Automation



RX3i CPL410 Controller

Overview

PLC (Programmable Logic Controller) is a device used to control the input/output of a machine to operate according to a certain sequence. This device is to control the operation process from the user input to the result in the user's desired direction. Therefore, a lot of more complex functions can be used more accurately and conveniently through control. With functions such as timers, counting, delays, and calculations, this device is used to control a machine in real time or to operate it according to various desired logics and sequences

Features

- RX3i PLC has more powerful CPU performance than other manufacturers' products.
- Excellent security certification (Achilles Level) for a highly stable and reliable production
- Excellent communication versatility and remote control based on high-speed Ethernet communication
- Various control circuit configurations by an engineering program with a simple interface3

Applications

- Hydro power plant, thermal power plant, cogeneration plant, etc.
- Petrochemical, semiconductor, steel, and heavy industry plants, offshore plants
- Water treatment and wastewater treatment systems

ESD

Emergency Shut Down system

Overview

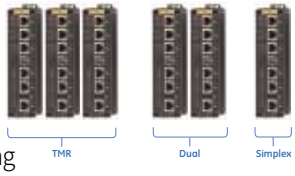
ESD System is a simple and highly reliable system to ensure plant safety, and various ESD levels can be set to ensure user safety and plant integrity.

Features

- A proven and safe solution : Enhanced password system support, Achilles certification–level 1, user and access control, security logs
- Flexibility and reliability
  - Flexible redundancy : Controller, IO & IO Net can be configured as Simplex, Dual or TMR
  - Communications to Basic Process Control System : Network gateways & P2P communication support for control systems such as PLC and DCS
  - Reliability in harsh environments : Support for areas of class 1, division 2 and environments with an ambient temperature from -30 to -65℃ without external cooling system
- Integration with Basic Process Control Systems : Plant control system, HMI, data historians, device management system, and trend tools provided
- Mark VIeS supports evaluation of Safety Instrumented Functions (SIFs), including sensors, logic solvers, and final elements using the exSILentia Safety Lifecycle Management Tool.

Applications

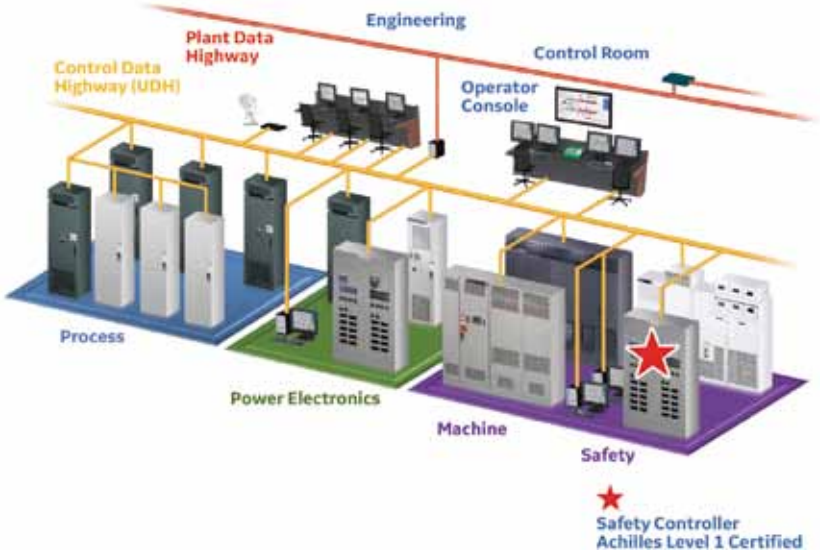
- Oil & Gas
- Power Generation
- Chemical and Process
- Pulp and Paper
- Mining and Minerals Engineering




Simplex Module Configuration (Typical)


TMR Module Configuration (Typical)

Mark VIeS & Achilles Level 1 Certification



Certifications

Safety systems must meet international codes and standards. The proven and certified Mark VIeS safety Management System conforms to a variety of industry standards.

Industry codes and standards

Code – Standard	Mark
CAN/CSA-C22.2 No. 61010-1-12	C US 165588 CE
UL Std. No. 61010-1 (3rd Edition)	
EN 61010-1(3rd edition)	
Achilles Level 1 certification, controller security	wurldtech
DEMKO 12 ATEX, application dependent	Ex
ISO 9000	ISO

Safety system related codes and standards

Code – Standard	Mark
IEC 61850 : 2010 Parts 1-7 through Exida	
EN50420 : 2005 + A1 : 2008 Logic Solver	

UPS
Uninterruptible Power Supply

BC
Battery Charger

Overview

The HR Series UPS is a “Highly Reliable” Uninterruptible Power Supply and was developed to protect equipment from power failures such as power outages, surges and short circuits that cause significant damage to nuclear and plant facilities and equipment.HR Series UPS protects with the best performance not only the power equipment of nuclear and thermal power plants but also the electrical equipment of industrial facilities requiring ultra-high reliability, such as petrochemical and steel plants.

Features

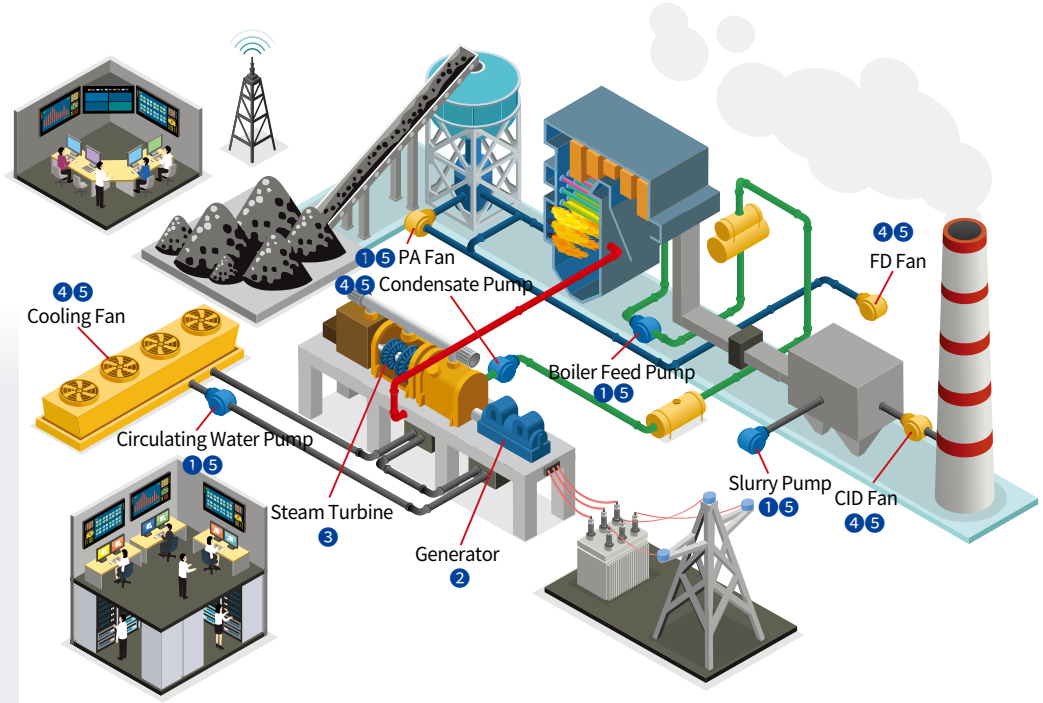
- High performance DSP ALL digital control
- High reliability, high performance SCR rectification control and PWM IGBT rectification control
- Large screen touch-type color TFT LCD and Windows OS
- Convenient user interface
- Guidance during operation and stop operation
- Programmable output dry-contact alarm signal
- Diagnosis (fault waveform, status record) and analysis (fault data CSV file storage) function
- Parallel operation function
- Multilingual support (Korean / English)
- Communication function: RS485, TCP/IP, USB

Applications

- Nuclear power plants, Thermal power plants, Combined-cycle power plants, Hydro power plants, Pumped-storage power plants
- Petrochemical, semiconductor, steel, and heavy industry plants, offshore plants

IGDS

Intelligent General Diagnosis System



❶ IGDS–P(Pump)
Pump Intelligent General Diagnosis System(Pump Vibration, Pump Operation Data)

❷ IGDS–G(Generator)
Generator Intelligent General Diagnosis System(Generator Vibration, Partial Discharge, Shorted Turn)

❸ IGDS-T(Turbine)
Turbine Intelligent General Diagnosis System(Turbine Vibration, Turbine, Operation Data)

❹ IGDS–F(Fan)
Fan Intelligent General Diagnosis System(Fan Vibration, Fan Operation Data)

❺ IGDS–M(Motor)
High Voltage Motor Intelligent General Diagnosis System(Partial Discharge, Current, Vibration)

❻ IGDS-tS
Substation Intelligent General Diagnosis System

❼ IGDS-tG
GIS Intelligent General Diagnosis System

❽ IGDS-tM
Transformers Intelligent General Diagnosis System

Overview

Automated system for protection, monitoring and control of the power system of power plants based on state-of-the-art digital protection relay and network technologies. The system minimizes the impact by quickly separating the faulty system, and it prevents accidents and enables fast and safe fault recovery.

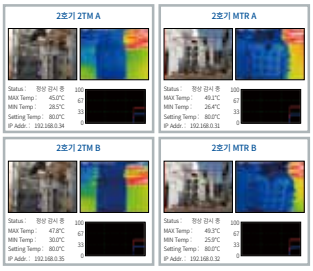
Features

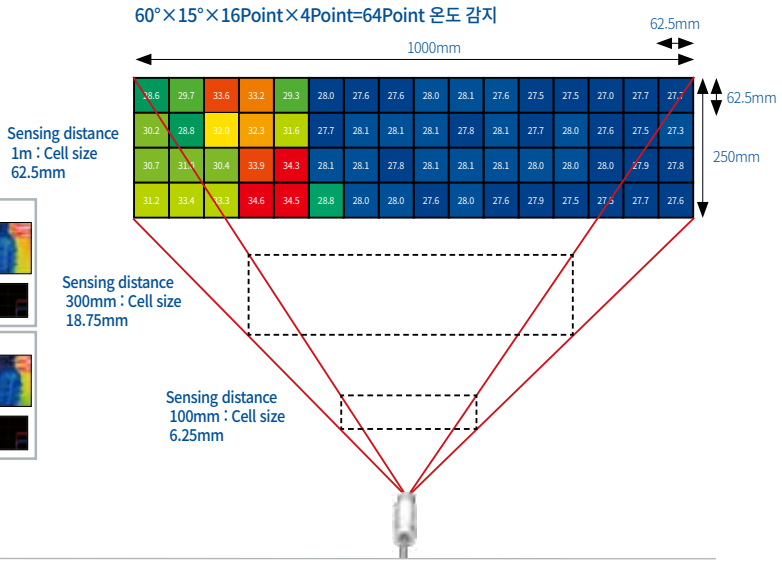
- Real-time monitoring of all data and alarms in the event of problems
- Providing notification when problems occur
- Measurement history management and report printing
- Real-time monitoring screen and professional analysis graph
- Customized diagnosis system according to field situations
- Certification of KEPRI's performance test qualification
- Provides a deep learning-based diagnosis judgment algorithm and an update function
- Securing compatibility of heterogeneous communication (IEC61850 & DNP1.0)

Applications

- Comprehensive management of generator preventive diagnosis facilities(Vibration, Partial discharge, Shorted-turn)
- High voltage motor diagnostic system(Partial discharge, Electric current, Vibration)
- Comprehensive management diagnosis system linked to operation data (OPC interface)
- Diagnosis system of Industrial facility management (Diagnostic sensor interface such as temperature, pressure, flow, etc.)
- Integrated diagnosis of substation facilities
- GIS partial discharge diagnosis, Diagnosis of the characteristics of circuit breaker operation
- Diagnosis of partial discharge of transformer, Oil-in-gas analysis, OLTC diagnosis, Bushing Diagnosis

Temperature Condition Monitoring System





Overview

- Composed of overheat detection unit (non-contact infrared image sensor), monitoring unit, HMI program
- On-site and remote temperature monitoring of major parts of high-voltage equipment
- Collecting initial temperature rise information to prevent accidents in advance

Features

- Preventive diagnosis by monitoring power facilities in advance to check the internal temperature condition
- Monitoring the temperature of main connections (bus bars) such as switchgear and transformer
- Overheat detection system of circuit breaker contacts

Applications

- Solar power plants, wind farms, substations, factories
- Thermal power plants, combined-cycle power plants, cogeneration plants, nuclear power plants, etc.
- ESS room (Container internal temperature monitoring), cable temperature monitoring
- Temperature monitoring of IPB, SWGR, GIS, bushing, transformers, battery rooms, cables, etc.

Model	TSAS III	TSAS IV	TSAS II
Resolution	80(D)×60(L) = 4,800Pixels	120(D)×160(L) = 19,200 Pixels	16(D)×4(L) = 64 Pixels
Measurement Temperature Range	-10 ~ 350°C		-20 ~ 300°C
Operating temperature range	-10 ~ 60°C		-20 ~ 70°C
Accuracy	±2% or ±2°C of Measured value		±2% or ±2°C of Measured value
Scanning speed	9 Hz		0.5~8 Hz
Field of view	55°×45°		60°×15°(Standard)
Input voltage	18~32 VDC		8~32 VDC
Size	Sensor head : 20mm(D)×50mm(L) Controller : 88mm×69mm×33mm Sensor head cable : Standard 3M, Max 10M		Sensor head : 14mm(D)×32mm(L) Controller : 88mm×69mm×33mm Sensor head cable : Standard 3M
Material	Aluminum / Stainless steel		Aluminum / Stainless steel
Output	RS485 S-BUS 19,200~115.2K, 0-5V		RS485 Modbus, 4-20mA, 0-5V, //S-BUS, K-Type Thermocouple
Enclosure rating	IP65(NEMA-4)		IP65(NEMA-4)



Electrical design for Plants

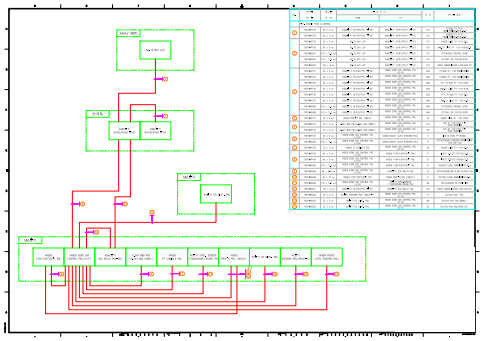
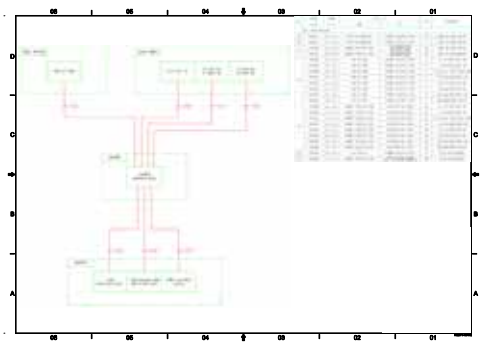
Overview

Electrical design works include power system design, control circuit design, cabling design and power supply protection circuit design as well as electrical construction drawing associated with them so that various facilities and equipment of the power plant operate normally.

Features

- Power supply system design
  - Single line diagram
  - Schematic & Logic Diagram
- Electric control circuit design
  - Electrical connection/wiring diagram design
- Electrical construction design
  - Cable block diagram
  - Cable routing schedule

Electrical design for plants

Applications

Nuclear power plants, thermal power plants, combined-cycle power plants, hydro power plants, pumped-storage power plants

Instrumentation design for plants

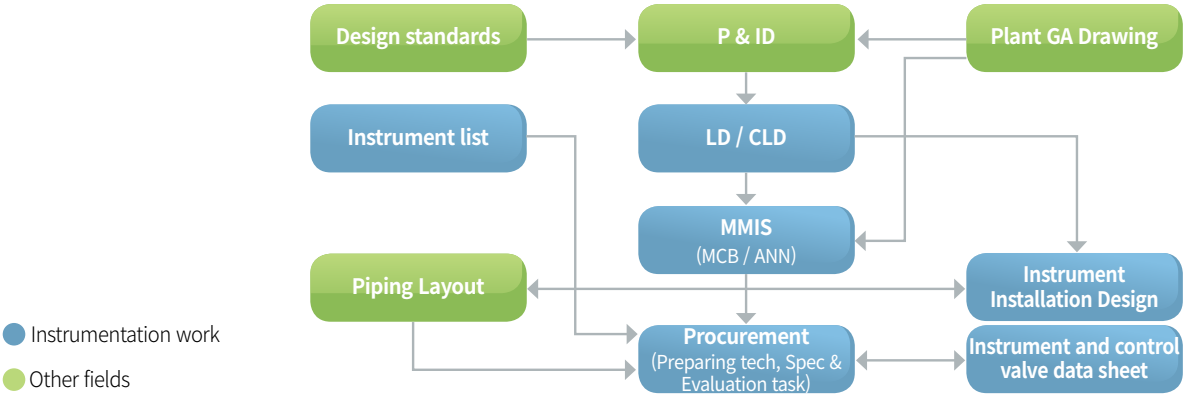
Overview

- Keep optimal status of power plant by effective plant control
- Quickly back to normal status of power plant during/after plant accident
- Protection, control, monitoring and MMIS/HFE system design

Main design works

- Plant control system design
  - Loop diagram and Control logic diagram
  - Develop the procurement spec
- Human factor engineering (HFE) design
  - Main control room design
  - Develop evaluation report HFE design
- Instrument physical design
  - Instrument Installation diagram
  - Develop the construction Spec.

Workflow diagram for I&C Design



Applications

Nuclear power plants, Thermal power plants, Combined-cycle power plants, Hydro power plants, Pumped-storage power plants

Power System Consulting

Overview

Consulting and engineering services are to provide customized solutions by using various power system analysis methods and power system analysis tools, for improvement of power system reliability, review of transmission system technology, analysis and diagnosis of power system, design of protection system and corrective calculation, etc. so that customers can build and operate an optimal power system. It has performed technical review and analysis, diagnosis, protection system design and corrective calculation for many industrial plants such as thermal and combined-cycle power plants, and petrochemical and semiconductor plants, contributing to stable power system operation and continuous production by customers.

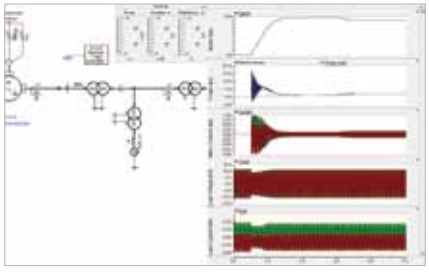
Plant construction feasibility study, plant construction master plan New power system expansion, system operation reliability improvement

① Improvement of power system reliability	② Review of transmission system technology	③ Protection system design and coordination	④ Power system analysis and diagnosis	⑤ Arc flash Hazard analysis
• Single and dual-redundant transmission line analysis • Transformer Parallel Operation Analysis • Auto transfer system	• Power flow analysis • Short circuit analysis • Transient and Dynamic Stability Analysis	• Protection system analysis • Protection Relay setting & coordination • CT/PT Requirement review	• Power flow analysis • Short circuit analysis • Motor starting analysis • Transient and Dynamic Stability Analysis	• Arc flash Hazard analysis • Arc flash energy analysis • Protection relay coordination

etap	PSCAD	PSS®E
1. Power system modeling & Visualization 2. Power flow analysis 3. Short circuit analysis 4. Protection & Coordination 5. Dynamics & Transient	1. Transient analysis 2. Controller design 3. Distributed power mode ling and grid connection	1. Power flow analysis 2. Short circuit analysis 3. Dynamics / Transient stability simulation

1. Improvement of power system reliability

Maximize the reliability and productivity of plant operations by consulting on KEPCO 2-line power transmission system building, bus transfer system building, equipment reinforcement, and improvement of operational plans



Applications

- Customers with a one-line receiving system
- Customers who want a two-line receiving system
- Petrochemical, semiconductor and steel plants
- Nuclear, thermal and combined-cycle power plants

2. Review of transmission system technology

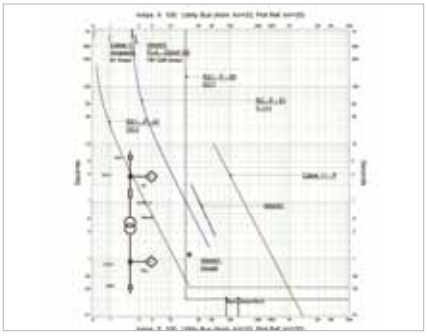
Analyze the impact on the existing system caused by changes in the generator's grid connection and system configuration and to suggest improvement plans according to KEPCO's system operation standards

Applications

- System connection of large capacity, new and renewable energy generators
- New and renewable energy development complex
- Evaluation of the impact of bus separation and new/extended transmission line
- Nuclear, thermal and combined-cycle power plants

3. Protection system design and coordination

Suggest improvement plans for an optimal protection system by reviewing the adequacy of an existing protection system for domestic and foreign power plants

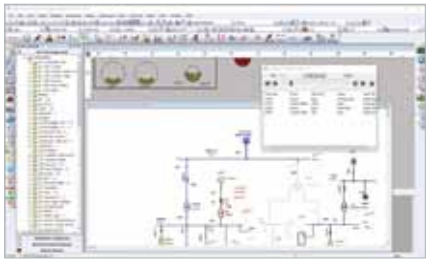


Applications

- Protection of KEPCO's new and renewable energy plant system
- Protection of transmission lines and substations
- Generator, transformer, feeder and motor coordination
- Protection system analysis and protection coordination improvement
- CT/PT trade off study

4. Power system analysis and diagnosis

Analyze the impact on new and existing power equipment caused by changes in power systems, such as construction of an industrial plant, introduction of new electrical equipment such as generators, transformers, and electric motors, and change of KEPCO substations

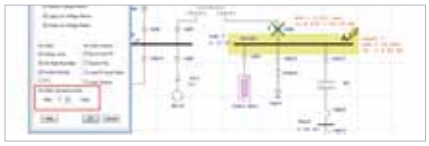


Applications

- Power system analysis of power plants
- Power system analysis of industrial plants
- New building/extension of electrical equipment

5. Arc flash energy analysis

Provide minimum standards for creating work environments and establishing work procedures in order to protect workers from electrical hazards caused by Arc-Flash in power plants and industrial plants at home and abroad Applications



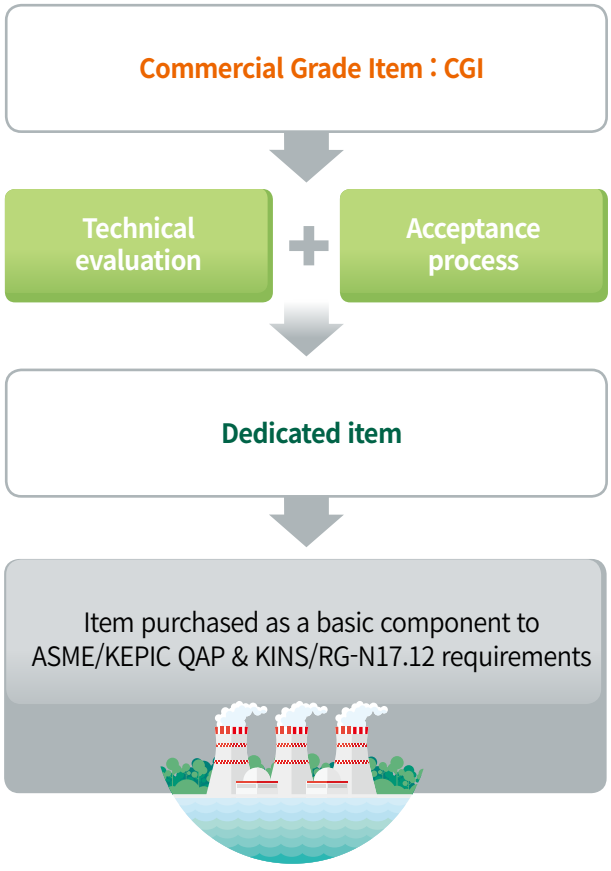
Applications

- Fault current calculation
- Protection relay coordination
- Arc flash energy analysis

Commercial Grade Item Dedication (CGID)

Commercial grade item dedication in accordance with ASME/KEPIC QAP-1, KINS-N17.12, Nuclear Safety and Security Commission Notice 2014-80 and EPRI NP-5652

Commercial-grade dedication is a method(technical evaluation and acceptance process of critical characteristics related to safety) of accepting a commercial-grade item which was not designed and manufactured in accordance with a QA program meeting the requirements of ASME/KEPIC NQA-1 for use as the safety-related item.



Overview

YPP strictly manages nuclear safety-related items according to the NQAP (Nuclear Quality Assurance Program) based on ASME/KEPIC QAP-1, QAP-2. 2.14, KINS/RG-N17.12 and EPRI NP5652. The dedication is carried out by professional engineers and test/inspection personnel certified by rigorous evaluation, and if necessary for commercial-grade item dedication, reverse engineering and equipment qualification are conducted in cooperation with partner companies.

Applications

- Incoming breaker protection relay, GE F60
  - Synchro check, 25F/25M- Under voltage, 27LS/27LU/27LA/27LB- Phase overcurrent, 51
- Non-motor feeder breaker protection relay, GE F60
  - Instantaneous overcurrent, 50
  - Phase overcurrent, 51
  - Ground instantaneous overcurrent, 50G
- Motor feeder breaker protection relay, GE M60
  - Instantaneous overcurrent, 50
  - Phase overcurrent, 51
  - Ground instantaneous overcurrent, 50G
- We will continue to add items in preparation for market demand by discovering commercial grade item manufacturers and suppliers and cooperating with them-Control relay
  - Control switch
  - Limit switch
  - Lamp
  - Circuit breaker
  - Magnetic contact
  - Motor
  - Valve actuator
  - Solenoid valve
  - Signal transducer
  - Indicator
  - Recorder
  - Fuse

Nuclear Radioactive Materials Management

Overview

Development of safe management technique and related facilities of radioactive wastes for minimizing radiation exposure during operation of nuclear power plants.

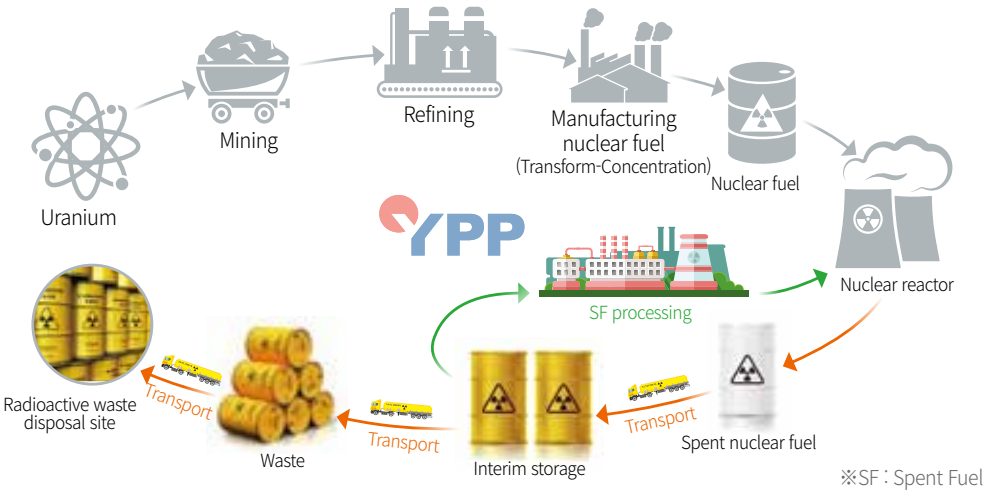
Applications

- Collection, treatment and transport of radioactive waste
- Development of equipment for radiation measurement and nuclide analysis
- Research on the reduction of radioactive waste
- Development of radioactive shielding technology
- Optimization of radiation exposure management
- Decontamination business

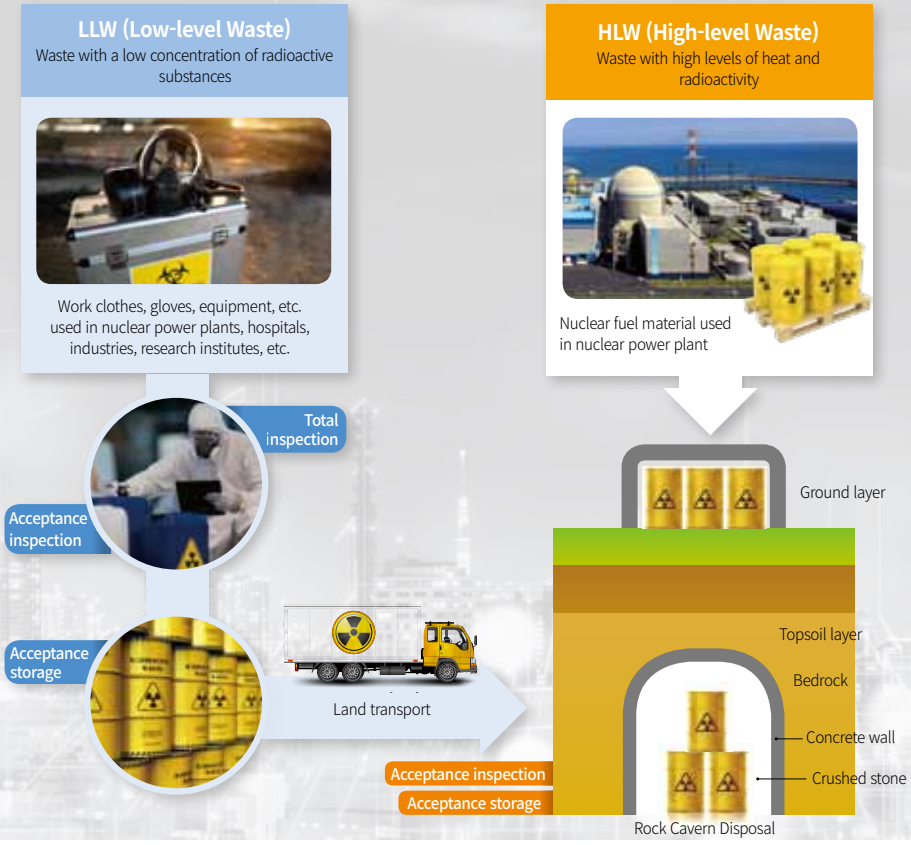
KHNP Qualification

- Transportation of spent fuel in PWR(Pressureizer Water Reactors) [Q-Class]
- Transportation and dry Storage of spent fuel in HWR(Heavy Water Reactors) [Q-Class]

FUEL CYCLE



Treatment method of radioactive waste



Operation & Maintenance

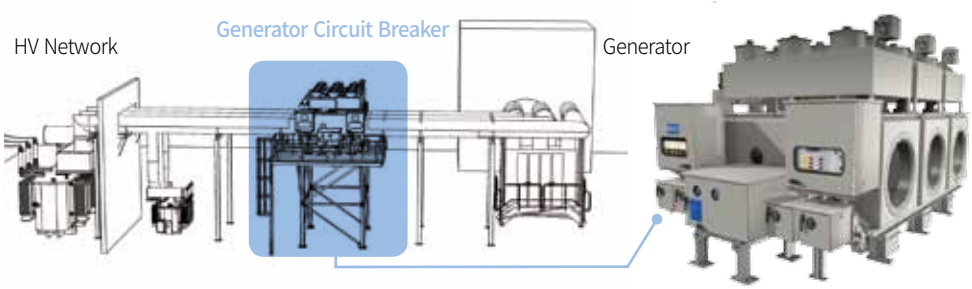
Overview

YPP signed a Channel Partner Agreement with GE to provide total service and technical support such as installation, test, commissioning, inspection (diagnosis), maintenance, and facility improvement (Retrofit) by skilled technicians with rich experience, knowledge and qualifications. Through this, we perform tasks to improve the soundness of facilities and operational reliability.

Applied equipment

- Generator Circuit Breaker (GCB)
- Protection relay
- Uninterruptible Power Supply (UPS)
- Automatic voltage regulator (AVR)
- Others YPP Corporation GE Co. Supply facilities and products (ESS, PLC, Hydro power equipment, etc.)

GCB (Generator Circuit Breaker)



YPP's technical staff qualified to carry out the only GCB overhaul in Korea regularly provide services to improve the reliability of facilities and spare parts for related facilities through regular GCB inspections, maintenance, and technical advice.

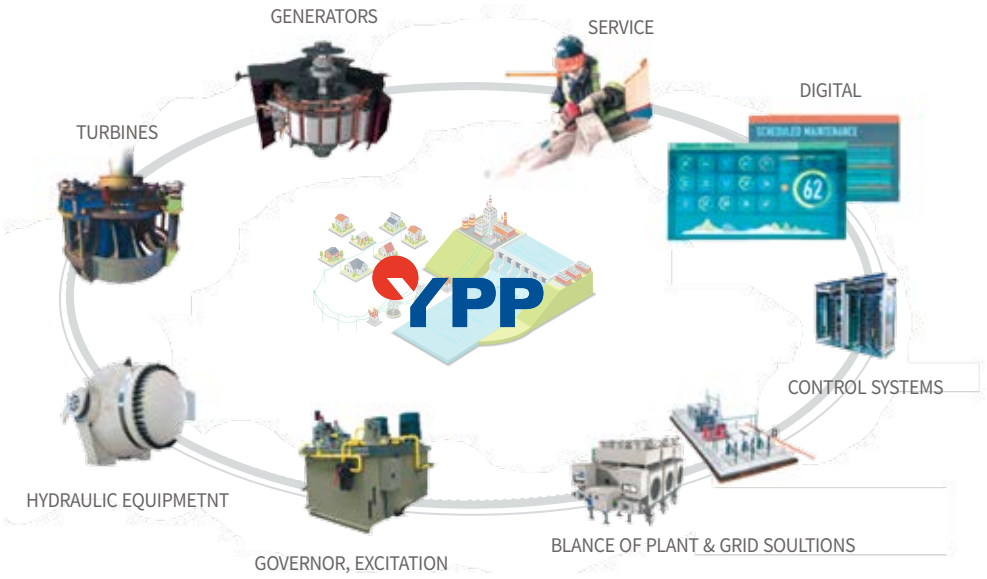
Digital Protection relay

YPP is supplying, installing, and testing high-reliability digital protection relays for GE Universal Relays. In particular, we provide comprehensive solutions through periodic detailed inspections and performance test services for the deterioration phenomenon due to increase in operating years of digital protection relay

Uninterruptible Power Supply(UPS) / Automatic Voltage Regulator(AVR)

YPP is supplying, installing, and testing high-reliability digital protection relays for GE Universal Relays. In particular, we provide comprehensive solutions through periodic detailed inspections and performance test services for the deterioration phenomenon due to increase in operating years of digital protection relay

Hydro Power



Overview

YPP's hydro power plant business includes the supply of spare parts for the major equipment of power plants in operation, equipment improvement, diagnosis of the performance of Hydro power turbines and generators, precision inspection service, large-scale retrofit and construction of new power plants, which are conducted in cooperation with GE Hydro, which has the best comprehensive technology in the world.

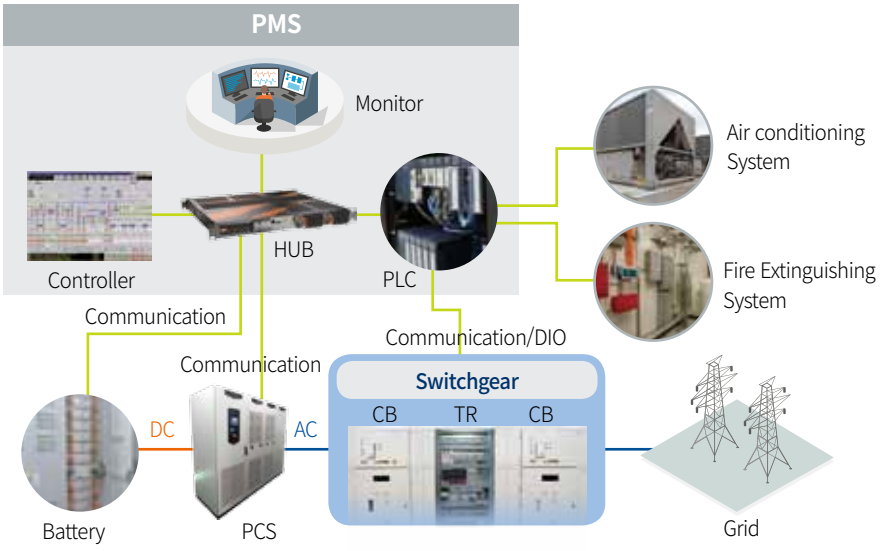
Features

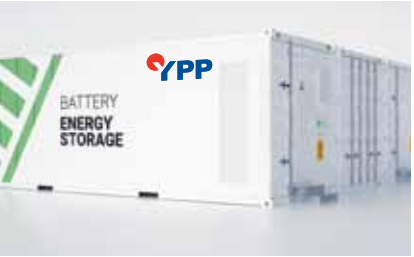
- Spare parts supply, equipment improvement and performance diagnosis service for GE Hydro's main equipment
- Participation in new construction of hydro power plants and modernization of existing facilities (joint participation with GE-Hydro)
- Supply and improvement of electrical and control equipment such as DCS/PLC, ECMS, GCB, UPS for the hydro power plants
- Precision inspection service for GCB, DCS/PLC and major equipment
- AVR, GOV control equipment diagnosis service

History

- **2017.** Qualified by KHNP as a DCS/PLC (Class A) company in the hydro power generation fields
- **2018.** Signed an ECMS supply contract with Samrangjin pumped-storage power plant
- **2019.** Signed ACP (Authorization Channel Partner) agreement with GE-Hydro
- **2019.** Provided GOV, AVR diagnosis service for Yecheon & Yangyang pumped-storage power plants (in cooperation with GE Hydro)
- **2020.** Participated in the main equipment modernization project for Cheongpyeong pumped-storage power plant (Jointly work with GE-Hydro)

ESS
Energy Storage System





Overview

Power grids realize stable power supply by optimally balancing supply and demand. But as the use of solar/wind power and other renewable energy sources, which have unstable output, continues to increase, power supply to the entire grid could become unstable.

To overcome such challenges, we need technology that “Energy stores electrical power.” By storing electrical energy in energy storage systems, electrical load is equalized, promoting the efficient and enhance power quality use of energy.

And ESS helps to effectively use and manage your energy that leads to the reduction of the electricity bill.

Features

YPP undertakes various activities in the Energy Storage System business ranging from supplying systems to maintenance and consulting business.
YPP has based on our abundant business experiences and product reliability, has strengths in the renewable energy business and contributes to maximizing customer value and creating new future value for the electric power

Usage

Peak control, Power distribution, Frequency regulation, Renewable connection, Emergency power

Material and equipment supply and construction for facilities / buildings

USFK

Overview

Supply of machinery and construction equipment such as Daikin McQuay, Carrier, Centria, Armstrong, Ceco Door, etc.

Applications

Main products : Chiller, Cooling Tower AHU, Wall Panel, Interior and Exterior Materials for Construction

Main performance

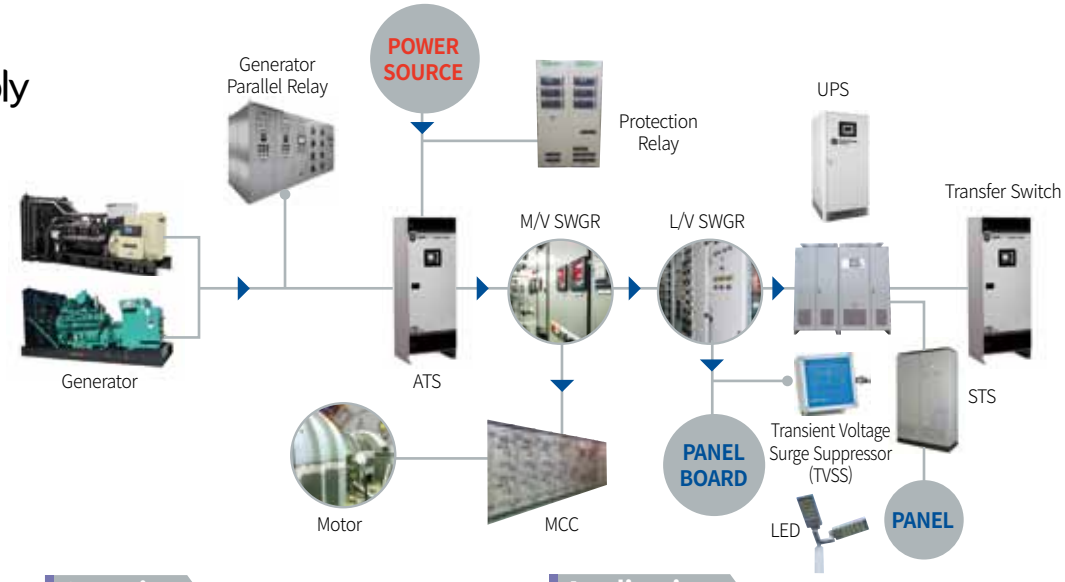
- Pyeongtaek US military base site construction and public infrastructure construction (SK E&C)
- Supply of exterior materials for PACEL-2B2 construction (Seohee)
- Facility construction for FED Pyeongtaek thermal support vehicle maintenance factory (Hyundai AMCO)
- PLC system of military intelligence brigade headquarters (Kima)
- Supply of exterior materials for EUSA vehicle maintenance facility (VMF4) in Pyeongtaek (Daewoo E&C)
- Facility construction for FED Pyeongtaek thermal support vehicle maintenance factory (Hyundai AMCO) (Ssangyong E&C)
- Supply of exterior materials for Osan Air Force Hospital extension / maintenance site (Seohee)
- Supply of exterior materials for KorCom OPS Center (Hyundai E&C)
- Supply of exterior materials for Pyeongtaek family housing (Daewoo E&C)
- Supply of exterior materials for Pyeongtaek singles accommodation (Daewoo E&C)

Channel Partner

DAIKIN McQUAY	Chiller/ AHU / FCU / WSHP
AERCO	Water heater / water boiler
Carrier	Mechanics Off-shore Material
MII Milcon	Mechanics / Architecture Off-shore Material
	Mechanics / Architecture Off-shore Material
PPI	Civil Pipe Local Materials
PAREXUSA	EIFS or External/Interior Off-shore Material
5STAR	Civil Off-shore Material
LG WHISEN	Heating Pump
Armstrong	Flooring / VCT tiles
	Security Door System / Fire Door
	Commercial Sectional Doors / Commercial Rolling Doors
daltile	Tile materials of construction

Material and equipment supply for electricity / power sector

Low Voltage



Overview

Supply of world-renowned electrical/power equipment from GE, ABB, Schneider, Leviton, etc.

Applications

UPS, ATS, LV panel, DC breaker: SWBD, generator

Main performance

- UAE Baraka Nuclear Power Plant : ECMS(Unit 3,4)
- Vietnam Long Son Petrochem Project
- Qatar Al Wakra Stadium
- Angola Complex Building Project
- 108 Vietnam Military Hospital Project
- Vietnam Samsung Display Project

Channel Partner

ABB	UPS / ATS / STS / SPD / TVSS / Dry Transformer
AMETEK	Industrial UPS, Fault Recorder
IS5	Ethernet Switches / Secure Gateways / Device Servers / Media Converters
LEVITON	Lighting Control System / Receptacle / Toggle SW, etc.
ASCO Power Technologies	Load Bank / ATS / STS / SPD / TVSS
Appleton	Explosion Proof Equipment / Hazardous Lighting & Junction Box, etc.
	Generator / Load Bank
Controlled Systems	Frequency Converter / Battery Charger(MIL Standard)
KINOLT	Dynamic UPS / Auxiliaries

Material and equipment supply for electricity / power sector

High Voltage

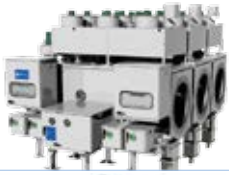
Overview

Provides a highly efficient, stable and sustainable energy supply system with an increase in power generation capacity

Features

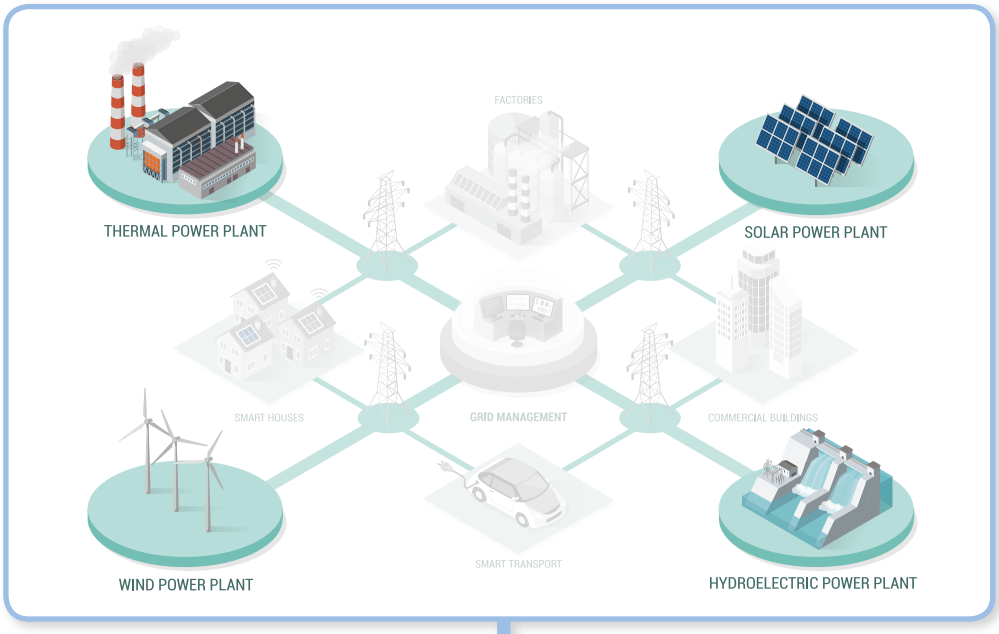
Provides Generator Circuit breaker(GCB), Ultra-high voltage transformer, distributing board, emergency generator, etc. suitable for high-voltage and Ultra-high voltage systems.

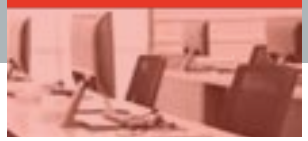
Channel Partner

GE Grid Solutions	Generator Circuit breaker(GCB)	
KOC ELECTRIC	Ultra-high voltage and distribution transformers	
SJ SEOJEON ELECTRIC MACHINERY	HV/MV/LV Switch Board	
AGG Power Solutions	Black start & Emergency Diesel generators	

Generator Circuit Breaker(GCB)

GCB is an effective protection device for generators and transformers, which is located between the generator and the main transformer, and can improve the availability of on-site electrical equipment to enhance protection and improve operational efficiency.



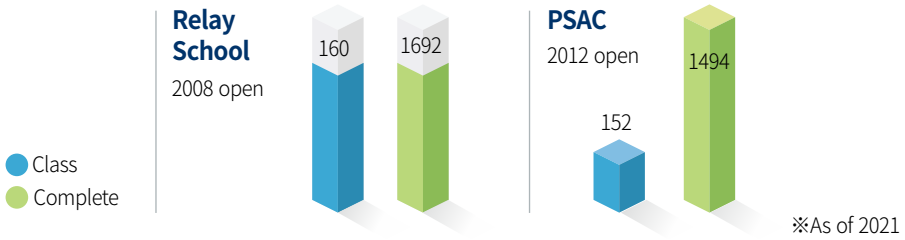


YPP's education & Training program for the advanced power system & energy technologies.

3,186 graduates as of 2021
1,692 from Relay School
1,494 from PSAC

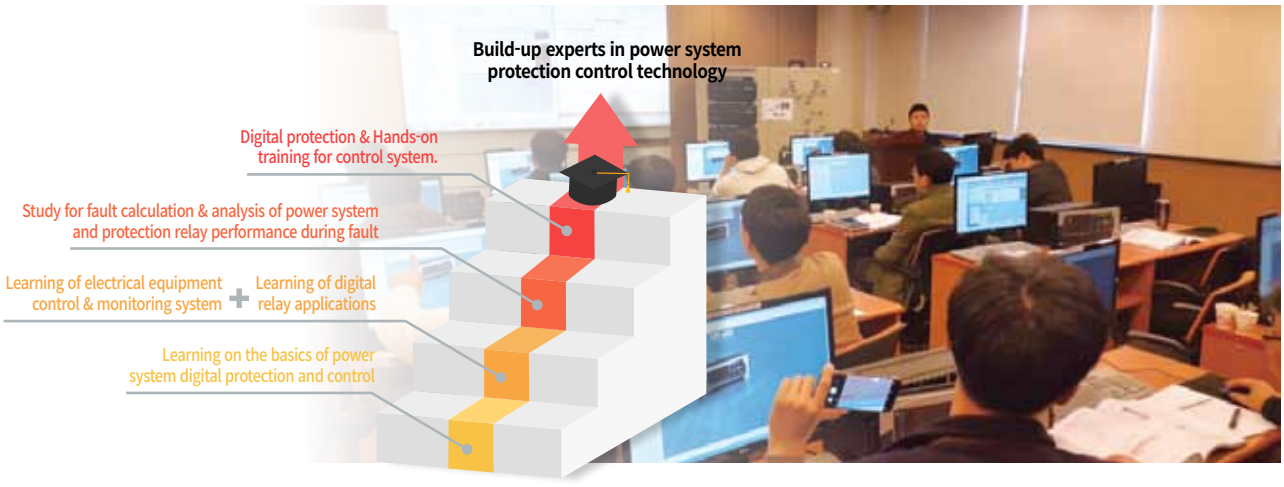
Overview

YPP is committed not only to supplying products and systems, but also to fostering advanced energy engineers to ensure that the supplied systems can perform more reliably and efficiently in the power system.



Relay School

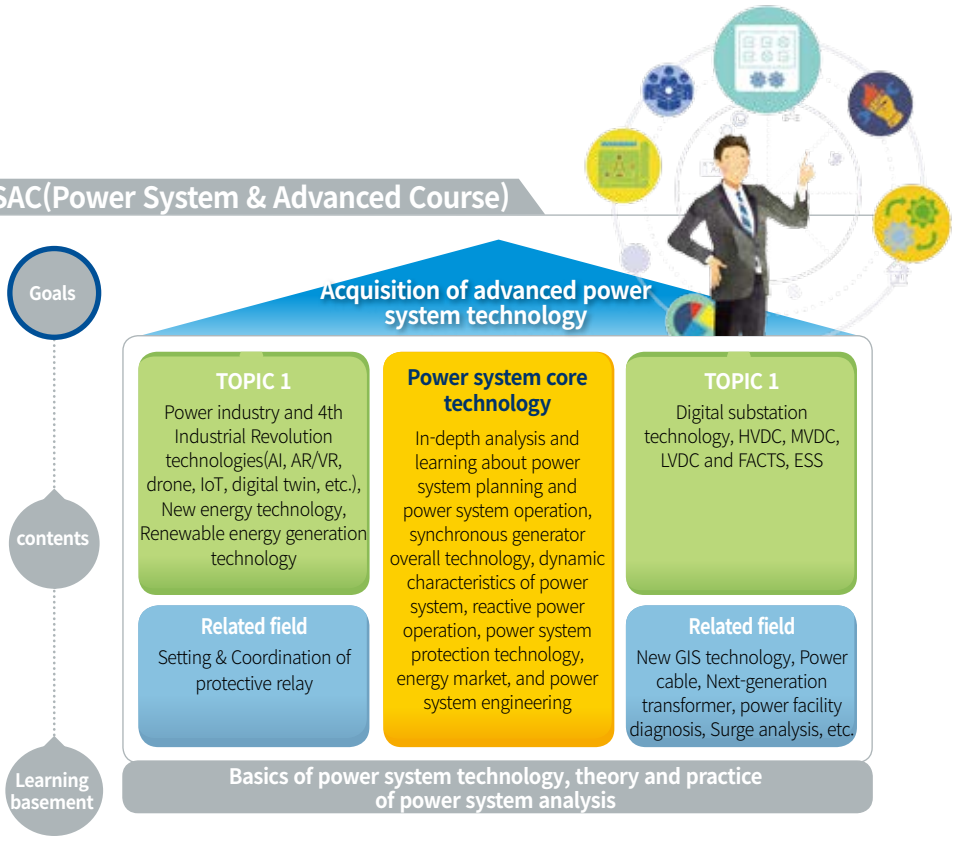
"The best education and training program for digital protection & control"



- Opened in 2008
- Contents of courses: the basic principles, concepts and applications of digital relay, fault calculation & analysis, GE Digital relay practices etc.
- 7 courses two times every year
- Open to all electrical engineers interested in system protection and control, including YPP's customers.
- Lectured by YPP's core technical experts

Course
• Digital relay basic technology
• Digital relay applications
• Power System Fault analysis
• ECMS Operation
• Digital relay hands-on training
• Smart MCC(MM300)
• Special courses (Ordered by customer)

PSAC(Power System & Advanced Course)



"The best training course of experts for the power system & energy required by energy transition & digital transformation, customized by the green new deal & digital new deal policy"

- First class opened in 2012, with joint planning of KPX, KEPRI, and YPP
- Benchmarked by the GE's PSEC (Power System & Energy Course)
- Lectured by the high class's experts from university, research institute, industry in each subjects
- Both theoretical and practical education at the graduate level
- Open to any engineers with a certain level of experience in industry
- Open every year, 12 weeks-14 courses-133 subjects

Courses
• Power system fundamentals
• Power system analysis & Fault calculations
• Power system protection
• Optimal setting of protective relays and protection coordination
• Synchronous generator
• Power system surge analysis & equipment applications
• Reactive power & voltage control
• Power system dynamics
• HVDC, MVDC, LVDC & FACTS
• Advanced power system operation
• Digital substation
• Power system planning and operation in the energy industry transition
• 4th Industry revolution technologies
• Policy & business model of emerging energy technologies
• Renewable energy system fundamentals & engineering
• Technology and business model for ESS

YPP ARCEN TOWER

24, Gasan digital 2-ro, Geumcheon-gu, Seoul, Korea

YPP

drives to provides premium electrical equipment solutions.

From supplying components and systems to providing high-quality system engineering and consulting,
YPP will push the boundaries to deliver best results for our customers.


EYPP

YPP

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Naju Innovation Industrial Complex (Plan)

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