



Energyus, Digitalizing & Controlling Distributed Energy

Energy Goes Digital
"Intelligent Energy For All of Us"

ENERGYUS Co., Ltd.

Headquarters 77-26, Daegum-ro, Daeso-eup, Eumseong-gun, Chungcheongbuk-do, Korea
Seoul R&D Center 34, Teheran-ro 28-gil, Gangnam-gu, Seoul, Korea 4th floor



CONTENTS

Chapter 01. Company Overview

- Company
- Core Capabilities of Management Team
- Corporate Competency

Chapter 02. Market Insight

- Domestic/ Overseas Market Insight
- VPP(Virtual Power Plant)

Chapter 03. Product Introduction

- Integrated Operation Platform
- VPPC 2 RTU Product Features & Additional Functions
- Case Studies

➤ About Us



ENERGYUS Co., Ltd.

CEO | Jeong Hyeong Jin

CTO | Kim Sang-Sik

Company Name	ENERGYUS CO.,LTD		
Date of Establishment	October 25, 2023		
Revenue	• 2023: \$59,000 • 2024: \$252,000 (Monitoring division: Approx. \$252,000) • 2025: \$754,000 \$59,000 \$252,000 \$754,000 baseline +327% +199% 2023 2024 2025		
Headquarters Location	77-26, Daegeum-ro, Daeso-eup, Eumseong-gun, Chungcheongbuk-do, Korea		
R&D Center	34, Teheran-ro 28-gil, Gangnam-gu, Seoul, Korea4th floor		
Number of Employees	16 personnel		
	• IT Business Division Development of Distributed Energy ICT Platforms and RTU Products	• Procurement Business Division Deployment and Commercialization of BIPV and Distributed Fast Charging Systems	

Connected capacity to date

152.2

MW

Product Installations:

1500+

Units

Online Power Plants:

630+

➤ About Us



MISSION

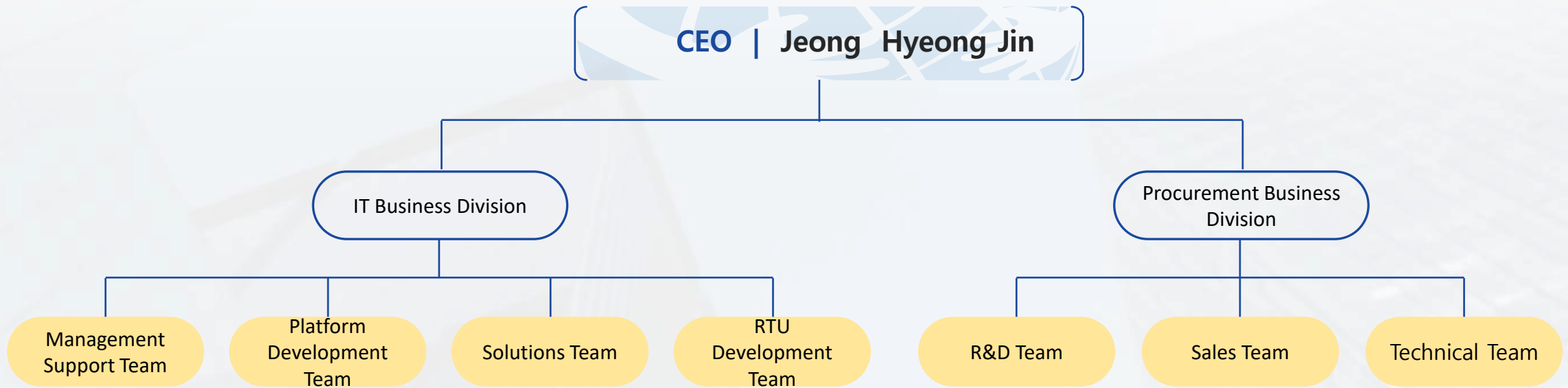
Through innovative energy technology and digital platforms, we enable people to experience the value of energy resources in the easiest and most accessible way.

VISION

By 2030, we will connect more than 10,000 energy resources and grow into a leading VPP operator (Aggregator) representing Korea.

Investment	Seed Investment
R&D Projects	D.Dream Startup Growth Program
	Korea Institute of Energy Technology Evaluation and Planning (KETEP) – Early-stage Climate Tech Startup Package
Participating Research	KEPCO KDN Development support and cooperative operation systems between VPP (Virtual Power Plant) – DSO (Distribution System Operator) – ISO (Independent System Operator)
	Korea Institute of Energy Technology Evaluation and Planning → Participation planned in national policy project for Korean-type repowering standards
Patents	Holds a portfolio of 12 patents , including distributed power control devices and integrated PMS platform
Certifications	Corporate certifications: In-house Research Institute, Venture Company Certification Product certification: KC Certification (EMC)

➤ Organization



➤ Core Capabilities of Management Team

CEO Jeong Hyeong Jin

- Current CEO
- Technology-driven management background
- 10 years of experience in global solar renewable energy companies
- Led system planning and commercialization based on hands-on field experience
- Possesses networks with renewable energy project developers and operators
- Developed communication algorithms for optimized distributed system implementation

CEO's Core Competencies

- ✓ Overall Business Oversight & Roadmap Management
- ✓ Securing Commercialization Funding
- ✓ Managing Development Trends & Business Status
- ✓ Organizational Structuring & Business Operations

CTO Jake Kim

- M.S. in Electrical Engineering
- 18 years of experience in renewable energy platform development
- Full Stack Engineer
- Leads platform advancement

CTO / Head of Technology

- ✓ Advancement of Platform (PMS Platform)
- ✓ Frontend / Backend Development
- ✓ Altium Circuit Development and Productization
- ✓ Firmware or Software Development
- ✓ Establishment of Platform Evaluation Guidelines
- ✓ Overall Development Management and Roadmap Establishment
- ✓ Client / Demand Enterprise Requirements Management

Corporate Competency

Certifications

Category	Organization Name	Certification	Date
Certifications	National Radio Research Agency	KC Certification (RTU V.2.0)	2026.07
Certifications	KBIZ Korea Federation of SMEs	Certificate of Direct Production Ability	2026.07
Certifications	Korea Venture Business Association	Certificate of Venture Enterprise	2026.03
Certifications	Korea Technology Finance Corporation	Corporate Research Institute	2025.08
Certifications	Korea Technology Finance Corporation	Certificate of Recognition for Dedicated R&D Department	2024.06
Certifications	National Radio Research Agency	KC Certification (RTU V.1.0)	2024.02

Government-Funded Projects

Category	Organization Name	Project Name	Project Title	Period
Government-Funded Projects	Korea Water Resources Corporation	Startup Growth Technology Development	Development of integrated distributed renewable energy generation control device	25.10.01~26.02.28
Government-Funded Projects	TIPA	Climate Tech Startup Package	Intelligent ICT-based forecasting accuracy improvement (98%) distributed energy resource management platform	24.08.01~25.07.31

Memberships & Other Achievements

Organization Name	Certification Date	Organization Name	Certification Date
SmartGrid Standardization Forum	2025.4.18	Korea Industrial Technology Association	2026.02.23
Small and Medium Business Confirmation Certificate	2025.06.25	Start-up Business Confirmation Certificate	2023.10.25 ~2026.10.25
Certificate of Technology Escrow	2025.07.25 ~2026.07.24		



Corporate Competency

Design/ Patent

Category	IP Titles	Nation	Certificate Date	Certificate No.
Patent	Hybrid Roof Assembly	Korea	2026.03.09	10-2026-0041420
Patent	Hybrid Roof Assembly and Safety Monitoring Device Comprising the Same	Korea	2026.03.09	10-2026-0041421
Patent	Sandwich-Type Hybrid Roof Assembly	Korea	2026.03.09	10-2026-0041422
Patent	Sandwich-Type Hybrid Roof Assembly and Safety Monitoring Device	Korea	2026.03.09	10-2026-0041423
Patent	Solar Power Generation Device Comprising Hybrid Roof Assembly	Korea	2026.03.09	10-2026-0041424
Patent	Active Solar Power Generation Device and Integrated Monitoring System Comprising the Same	Korea	2026.03.09	10-2026-0041425
Patent	Solar Power Generation Device Comprising Sandwich-Type Hybrid Roof Assembly	Korea	2026.03.09	10-2026-0041426
Patent	Sandwich-Type Active Solar Power Generation Device and Integrated Monitoring System Comprising the Same	Korea	2026.03.09	10-2026-0041427
Patent	Building-Integrated Photovoltaic (BIPV) System with Ventilation Performance and Module Sagging Prevention	Korea	2026.03.09	10-2026-0041428
Patent	Integrated Virtual Power Plant (VPP) Control System for Renewable Distributed Energy	Korea	2025.02.26	10-2025-0025260
Design	Controller for Distributed Generators	Korea	2025.02.07	30-2025-0004564
Patent	Distributed Power Supply Monitoring and Control Device	Korea	2024.03.27	10-2024-0041854
Design	Controller for Distributed Generators	Korea	2024.02.21	30-2024-0006959



➤ Partnership

✓ ICT-based Renewable Distributed Energy Resource Management Platform & RTU



BIPV Roof Solar Manufacturers

- Joint execution of government projects and demonstration programs
- BIPV module supply and technical cooperation
- Business cooperation to expand building-integrated solar applications

Distributors

- Integrated management of RTU communication
- Cooperation in installation and O&M (Operation & Maintenance)
- Local customer acquisition and sales expansion



Inverter Manufacturer

- Joint development of PMS (Power Management System) and EMS (Energy Management System)
- Inverter and ESS (Energy Storage System) integration technology
- System integration and optimization technology development



KEPCO (Korea Electric Power Corporation)

- Grid connection and power market integration cooperation
- Data integration and linkage cooperation

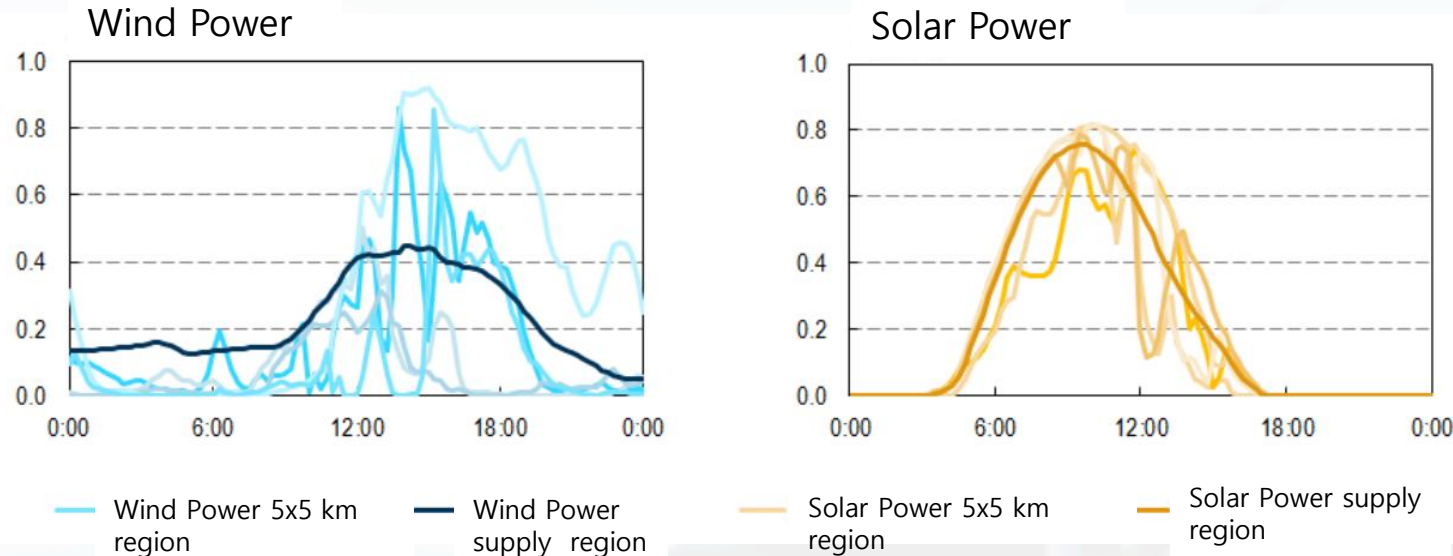
➤ Domestic and Global Market Status & Issues

✓ Need for Forecast-Based Grid Operation Technology in Response to Renewable Energy Expansion

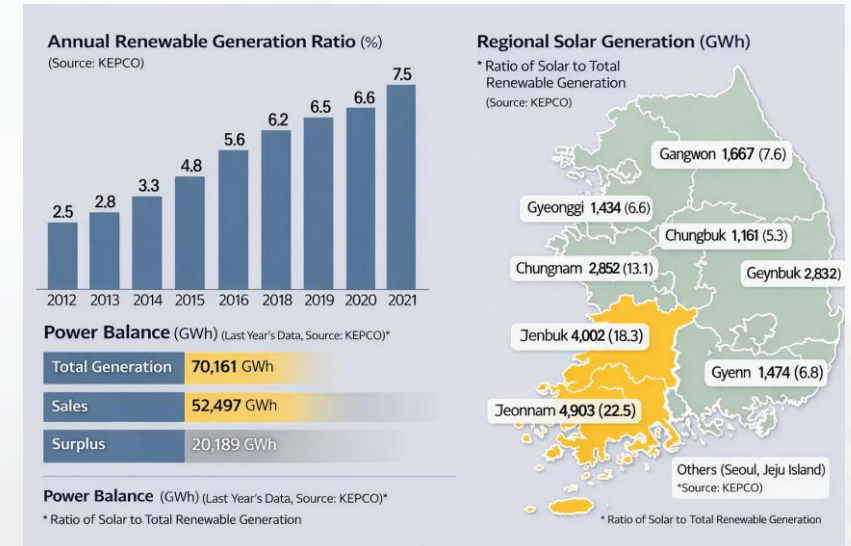
In line with policies expanding renewable energy capacity, AI-based precision forecasting, monitoring, control, and operational technologies are becoming core competitive factors for addressing solar and wind variability and ensuring grid stability.

✓ Economic and Operational Losses Caused by Forecast Failures and Transmission Losses

Power generation forecast failures lead to reduced project profitability and grid instability. Precision forecasting and operational technologies capable of reducing generation forecast error to within $\pm 5\%$ are emerging as key solutions.



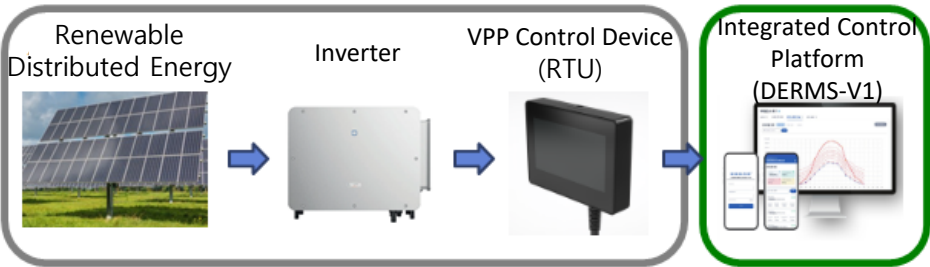
Renewable Energy (Wind & Solar) Output Variability Graph



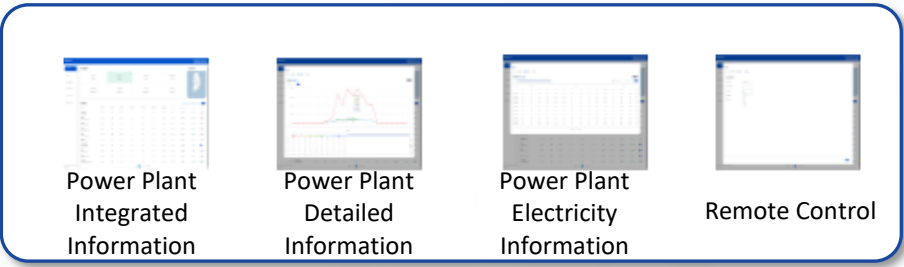
Regional Share of Renewable Energy Generation

➤ Market Ecosystem and Customer Technology Demand Status

✓ Renewable Energy Monitoring Operational System



Distributed Energy Integrated Control Platform Structure



Key Platform Functions

✓ Market Ecosystem and Customer Technology Demand Status

The domestic market is progressing through stages → Public Demonstration → Industrial Complex Expansion → Private Sector Expansion

Solutions for AI forecasting, integrated control, and power market integration are key, making participation in the government's new electricity markets (Power Aggregation / Direct PPA) essential.

No	Customer Type	Technical Demand	Detailed Technical Requirements
1	Power Brokerage Operator	Automated generation planning (forecasting), bidding & settlement platform / RTU monitoring	✓ Real-time monitoring for generation planning (forecasting), bidding, and settlement ✓ Forecast error rate within 8%
2	Direct PPA Supplier	Integrated operation platform (generation & demand monitoring and settlement) / RTU monitoring	✓ Direct PPA transaction linkage, generation & demand monitoring, contract & settlement technology ✓ AMI smart meter real-time linkage: power generation & consumption data collection
3	Power Plant Operator	Integrated operation platform (local or cloud-based monitoring & control) / RTU monitoring	✓ Real-time plant monitoring platform (local or cloud-based) ✓ SCADA linkage, PPC, data visualization, status analysis & control technology
4	O&M Service Provider	Integrated operation platform (monitoring & control), generation-demand engineers matching platform / RTU monitoring	✓ AI-enabled automation and digital twin-based optimization ✓ Real-time response & troubleshooting for plant management

➤ Market Data

Energy Management System (EMS) / IoT Market

Category	Market research Results
Global EMS Market	2025: \$85B →2034: \$191.2B (CAGR 9.43%)
Industrial EMS S/W	2025: \$29.1B →2035: \$44.8B (CAGR 4.4%)
Korea IoT Market	2025: Approx. KRW 38.17 Trillion (IDC Korea)
Source	360 Research Reports / Global Growth Insights / IDC Korea

Energy Storage System (ESS) / IoT Market

Category	Market research Results
Global BIPV	2026: \$1.04B →2035: \$4.05B (CAGR 16.38%)
Asia-Pacific BIPV	CAGR 24% (Highest growth region globally)
Zero Energy Building	2025 Public 500m² / Private 1,000m² → 2030 All new buildings 500m²+
Key Competitive Factors	Durability, Fire Resistance, Structural Safety, Power Generation Efficiency
Source	Business Research Insights / Data Bridge / Solar Today / Industry News

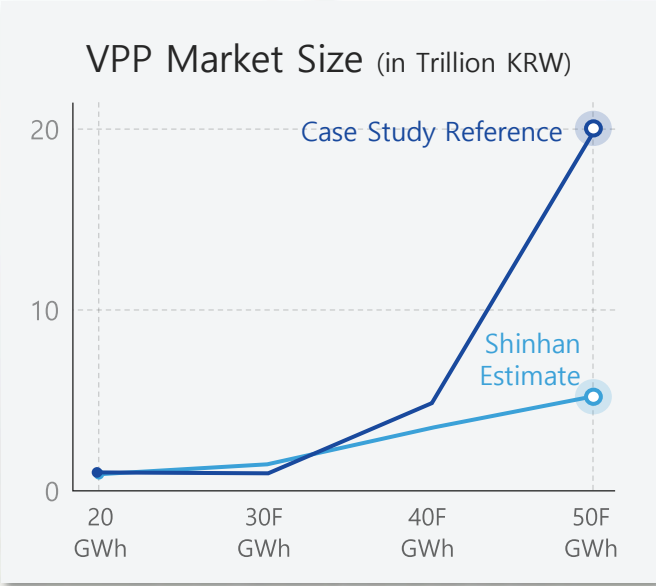
Energy Storage System (ESS) / O&M Market

Category	Market research Results
Global ESS	By 2030: Approx. \$150B (McKinsey), Annual 137GW new additions (BNEF)
Domestic ESS Target	11th Basic Plan for Electricity Supply and Demand: Build 21.5GW by 2038
Solar O&M	Domestic 70% of 25GW (approx. 16GW) O&M demand, Global \$9.4B (2025)
Source	McKinsey / BNEF / KPX / Industry News / Wood Mackenzie

➤ VPP(Virtual Power Plant)

✔ VPP Market Size

- Globally, the VPP market size is projected to grow from KRW 2.24 trillion in 2023 to KRW 9.06 trillion in 2030, representing a Compound Annual Growth Rate (CAGR) of 23.3%.
- Domestically, the market is in its initial entry stage, currently running a pilot project for the VPP real-time bidding system as of 2024. Considering the participating capacity of 390MW, the domestic market size is estimated at approximately KRW 35.3 billion.



➤ VPP(Virtual Power Plant)

✔ Role of Aggregators

Globally, the VPP market size is projected to grow from **USD 1.66 billion** (KRW 2.24 trillion) in 2023 to **USD 6.71 billion** (KRW 9.06 trillion) in 2030, representing a Compound Annual Growth Rate (CAGR) of 23.3%.

Domestically, the market is in its initial entry stage, currently running a pilot project for the VPP real-time bidding system as of 2024. Considering the participating capacity of 390MW, the domestic market size is estimated at approximately **USD 26.15 million** (KRW 35.3 billion).

Year	2020	2030	2040	2050
Cumulative Battery Capacity	17 GWh	585 GWh	2,005 GWh	3,097 GWh
VPP Adoption Rate (%)	15%	50%	70%	80%
VPP Capacity	3 GWh	293	1,404	2,478
Subscription Fee (\$M)	\$19.26	\$2,183.70	\$10,479.26	\$18,499.26
Market Participation (\$M)	\$7.41	\$857.78	\$4,117.04	\$7,267.41
VPP Market Size (Shinhan Estimate) (\$M)	\$26.67	\$3,042.22	\$14,596.30	\$25,767.41
VPP Market Size (Ref. Case Study) (\$M)	—	\$208.15	\$23,850.37	\$114,442.22



➤ Integrated Operations Platform (Monitoring & Control) / RTU Monitoring

As dedicated RTU equipment for monitoring and controlling distributed power resources, this integrated solution displays key power generation data in real time—such as solar inverter output, voltage, and current—going beyond remote monitoring to enable full power plant control.

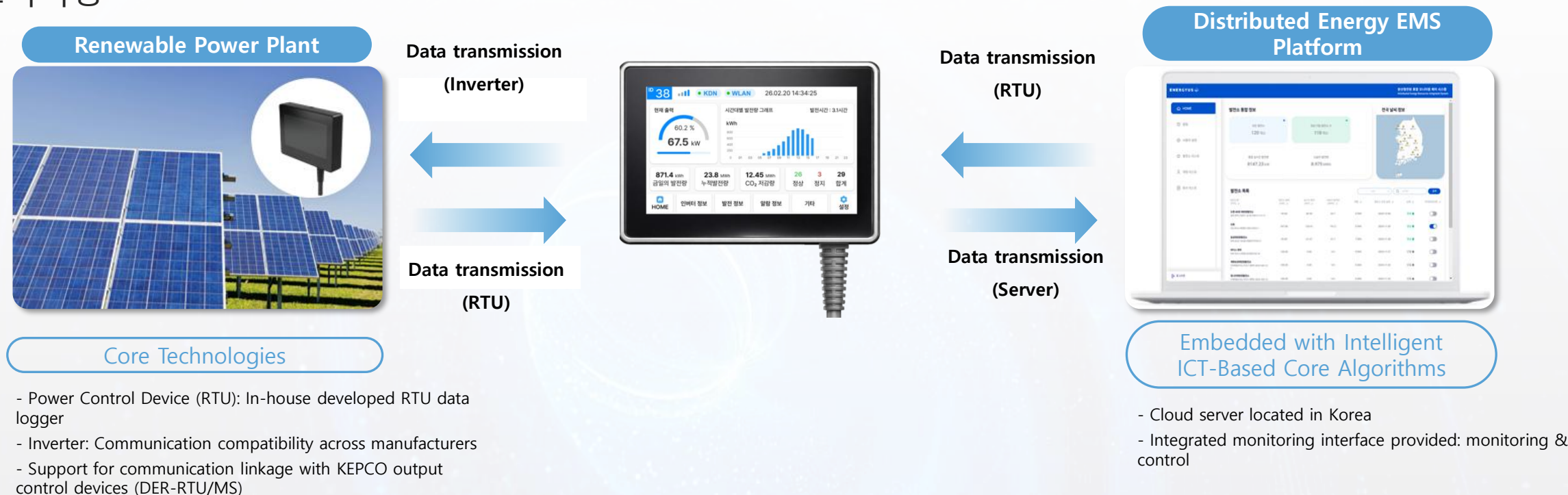


- Integrated control for multiple power plants and inverters
- Real-time monitoring
- Detailed data analysis at the MPPT/string level
- Push notifications for critical alarms
- Alarm history management and fault tracking system
- Power generation revenue forecasting linked in real-time with SMP/REC
- Annual data storage and automated monthly report generation
- Remote control command transmission in emergency situations (within seconds)
- Optimized UI for field maintenance response

Maximizing power plant operational efficiency through a centralized web-based control system

Check power plant status and respond immediately, anytime, anywhere

▶ 통합 운영 플랫폼(감시 및 제어) / RTU 모니터링



✓ Product Advancement Plan(Planned Release / Deployment in the First Half of 2026)

Generation Forecasting AI Technology

Advancement of core algorithm achieving 98% generation forecasting accuracy based on weather and generation data→ Target: January 2026

~27.01

Vision AI Technology

Utilizing CCTV cameras to automatically manage direct and indirect generation risks such as fire, smoke, security issues, shading, and soiling at power plants→ Target: June 2026

26.12

▶ Integrated Operation WEB Platform

HOME

발전소 통합 정보

모든 발전소

637

정상

579

정지

3

점검

8

단절

48

오늘의 발전량

186.47 MWh

통합 실시간 발전량

88.53 MW

누적 발전량

360.336 GWh

총 발전소 용량

153.81 MW

가격동향

2026.08.07(금)

육지

제주

SMP

0 원/kWh

REC

가중치 X 1.0

0 원/REC

거래일

거래량 0

발전소 목록

ALL

검색창

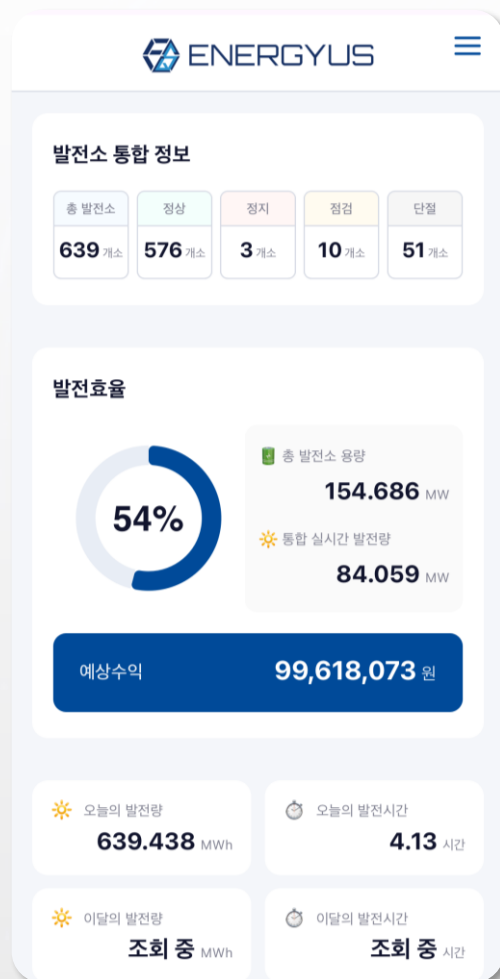
검색

발전소명 (위치 용량)	인버터 상태	통신 상태	실시간 발전량 (kW)	오늘 발전량 (kWh)	오늘 발전시간	어제 발전량 (kWh)	어제 발전시간	누적 발전량 (MWh)	역률	발전소생성일	연계 운전 상태	
[Blurred]	정상	📶	70.31	71.8%	138.3	1.4	3	0	2.54	1	2026-08-06	🔌
[Blurred]	점검	📶	65.12	65.8%	114.2	1.2	554.6	5.6	7.597	1	2026-08-04	🔌
[Blurred]	정상	📶	66.88	67.0%	121.9	1.2	643.6	6.4	10.36	1	2026-07-30	🔌
[Blurred]	정상	📶	68.02	68.1%	120.9	1.2	651.5	6.5	10.542	1	2026-07-30	🔌
[Blurred]	정상	📶	68.46	68.6%	123.3	1.2	646.7	6.5	10.405	1	2026-07-30	🔌
[Blurred]	정상	📶	56.42	71.2%	114.7	1.4	501.6	6.3	4.304	1	2026-07-30	🔌
[Blurred]	정상	📶	53.45	67.5%	111.4	1.4	511.2	6.5	4.388	1	2026-07-30	🔌
[Blurred]	정상	📶	479.24	64.9%	984.7	1.3	4729.1	6.4	109.131	1	2026-07-28	🔌
[Blurred]	정상	📶	0	0.0%	0	0	237	2.4	4.137	0	2026-07-28	🔌
[Blurred]	정상	📶	73.35	73.5%	149.8	1.5	671.5	6.7	5.038	1	2026-07-28	🔌
[Blurred]	정상	📶	73.44	73.6%	146	1.5	660.1	6.6	4.948	1	2026-07-28	🔌
[Blurred]	정상	📶	72.93	73.1%	148.8	1.5	665.3	6.7	4.989	1	2026-07-28	🔌
[Blurred]	정상	📶	73.86	74.0%	145.9	1.5	665	6.7	4.977	1	2026-07-28	🔌

전국 날씨 정보

인천 35°C 서울 34°C 강원 31°C
 경기 33°C 충북 32°C
 세종 32°C 경북 33°C
 충남 32°C 대전 33°C 대구 32°C
 전북 35°C 울산 31°C
 광주 34°C 경남 33°C 부산 32°C
 전남 32°C
 제주 29°C

▶ Integrated Operations App Platform



FREE Real-Time Monitoring

- ① Real-time monitoring is available with RTU installation only, at no additional cost.
- ② No separate cloud usage fees.
- ③ Users can easily check the operational status of power plants through various plant information.
- ④ In case of equipment abnormalities or communication errors, real-time alerts are automatically sent to the plant manager.



FREE Data Analytics & Backup

- ① Data is stored directly in the RTU at no additional cost and can be used for monitoring and analysis.
- ② Equipment generation data and various log information can be stored. (Maximum storage period may vary depending on the operating environment.)
- ③ Highest-level security standards are applied to ensure safe data transmission and storage.

Product Speculation



Outdoor Installation Available
[IP65 Dust & Water Resistance Rating]



Compact Design
[120X90X22.3mm]



Operating Temperature Range
[-20 ~ 50°C]



PCB Protective Coating Applied



Lightweight [0.21kg]

1 Display Specifications

Display Size	4.3inch TFT-LCD
Active Area	95.04 x 53.86mm
Resolution	800 X480
Display Color	24-bit
Viewing Angle	80/80/80/80
Contrast Ratio	1200:1
Backlight Type	LED Type
Luminance	400cd/m2
Backlight Life	Over 30,000 hours

2 Performance & Specifications

Processor	ARM Cortex-A7 Dual-Core 1GHz
Memory	256MB NAND Flash + 128MB DDR3 RAM
RTC	Built-in Real-Time Clock

3 Port Configuration

RS-485 x 4	Inverter, KDN Connection Device, ACB, VCB, Weather Sensors, etc
Ethernet x 1	Network Connection
USB Type C	Firmware Update
Power Port	DC 12V

4 Environmental Specifications

Operating Temperature	-20 ~ 55°C
Operating Humidity	10~90% RH (Non-condensing)
Storage Temperature	-30 ~ 60°C
Storage Humidity	10~90% RH (Non-condensing)
Sine Wave Vibration Test	10 ~ 500Hz, 30m/s ² , 3 cycles/1 hour
UV Protection	ASTM G 154-12a Cycle 1
Cooling Method	Natural Cooling (Passively Cooled)

5 Electrical Specifications

Input Voltage Range	DC5V (Power isolation, Input voltage range 11.5V~12.5V)
Power Consumption	2.1W @ DC12V
Power Interruption Tolerance	<3ms
Insulation Resistance	50MΩ @ 500V DC or more
Dielectric Withstand Test	500VAC 1 min

6 Mechanical / Structural Specifications

PCB Coating	Yes
Dimensions(mm)	120 x 90 x 22.3 mm
Weight	0.21kg

7 Protection & Certifications

Panel Protection Level	IP65, IK08 Compliant
KC Certification	EMC Conformity Assessment

▶ VPPC 2 RTU Product Features

1 Easy Installation

- ✓ The VPPC-KR-V2 automatically recognizes the power plant's inverters. It automatically detects inverter capacity, model, S/N, and the number of installed inverters upon connecting the communication line, requiring no additional setup for the monitoring equipment.
- ✓ Anyone can easily install it.
- ✓ KEPCO KDN integration is also possible immediately regardless of inverter model, simply by connecting an RS-485 communication cable.



Item	Other Companies	VPPC-KR-V2
HMI (Yes/No)	X or Dot-matrix	O (4.3 Touchscreen)
Supported Inverters	10~20	30
Device Setup: Port Configuration	Required	Auto-detection
Device Setup: Inverter Type & Model	Required	Auto-detection
Device Setup: Quantity of Inverters	Required	Auto-detection
KEPCO KDN Integration	Partial (Separate setup required)	O (Simply connect communication line)
On-site Offline Control	X	O

▶ VPPC 2 RTU Product Features

② HMI Display Functionality

Domestic power plant operation regulations and Electrical Safety Corporation inspection standards

Domestic power plant operation regulations and Electrical Safety Corporation inspection standards



The VPPC-KR-V2 can implement custom monitoring and control items on the HMI display according to user requests.



Main Screen



Capable of implementing all data and all control items provided by the inverter.



Inverter Control



Enables direct ON-SITE monitoring and control of multiple inverters using a single device through display operation at the power plant site.



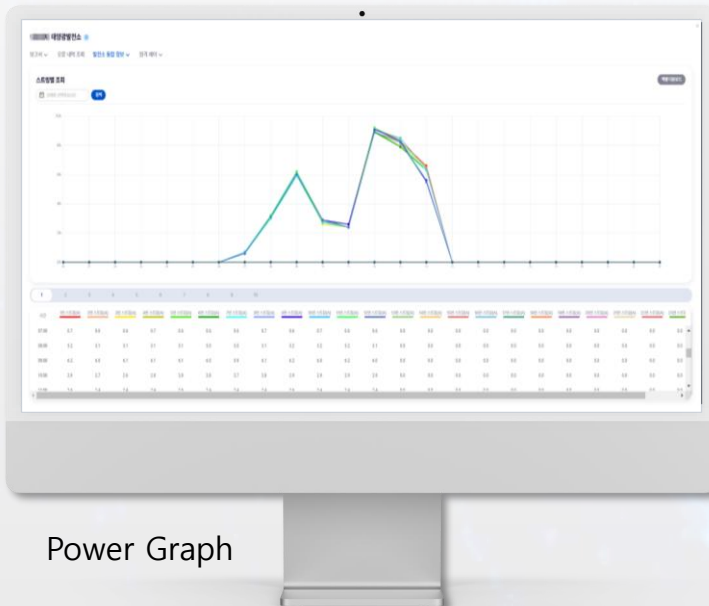
HMI Inverter Monitoring

VPIC 2 RTU Product Features

3 Power Plant Monitoring (Data Collection)



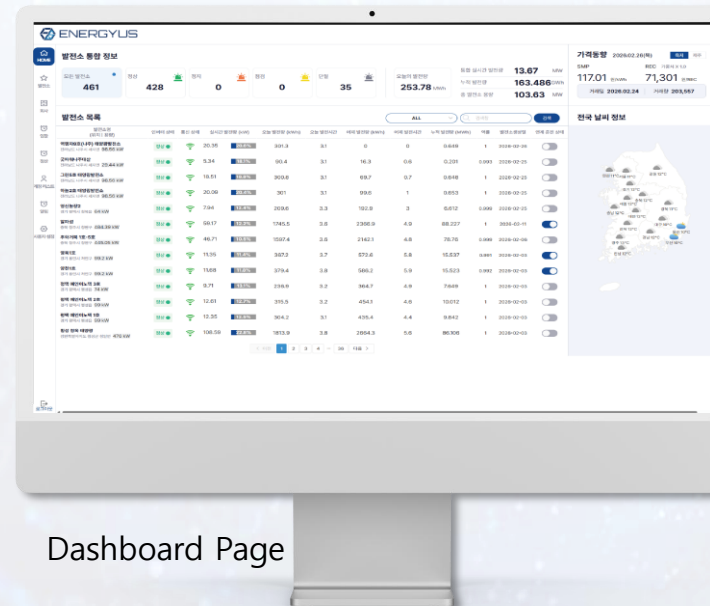
The VPIC-KR-V2 collects real-time data from solar power plants, including power generation, operating status, revenue, and weather information.



Power Graph



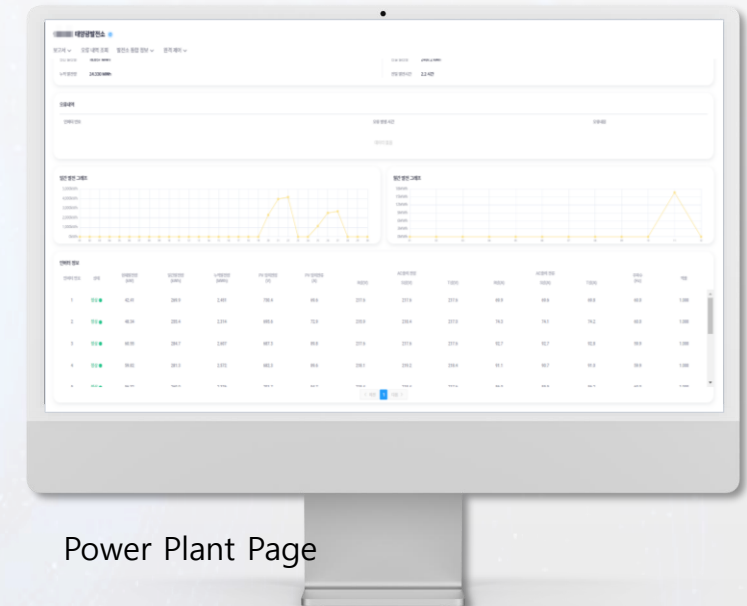
Supports various protocols (e.g., Modbus, IEC 61850) to integrate with diverse power plant equipment (KEPCO grid interconnection equipment, inverters, VCB circuit breakers, weather sensors, etc.).



Dashboard Page



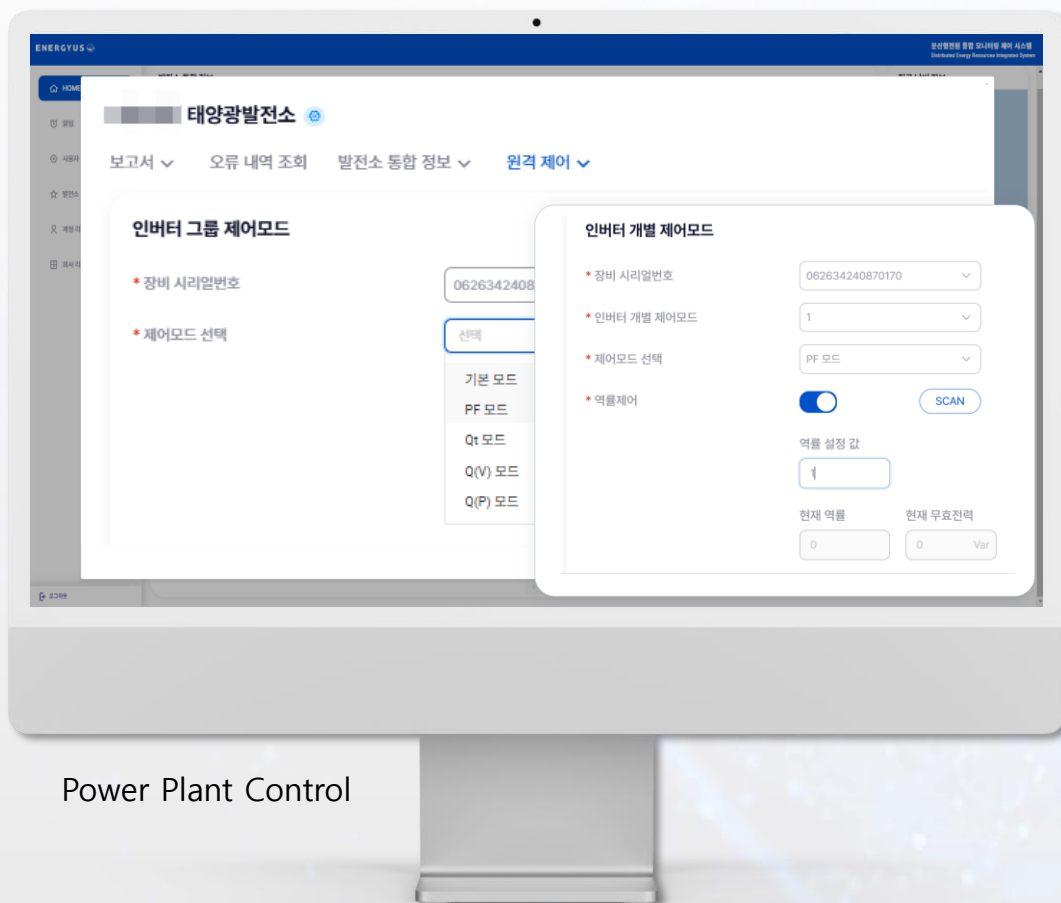
Enables power plant information retrieval across multiple plants nationwide through unified single or multiple accounts, using account/plant-level permission settings and grouping features.



Power Plant Page

▶ VPPC 2 RTU Product Features

4 Power Plant Control



Power Plant Control

- ✓ Provides a remote control service for non-resident safety managers utilizing this remote control technology.
- ✓ Provides remote control functionality for key power plant parameters such as active power, power factor, reactive power, start, and stop.
 - Enables immediate remote disconnection of power plant output in the event of natural disasters such as fires, heavy rain, or typhoons.
 - Minimizes damage and protects power plant facilities through power output disconnection.

Preemptively cutting off power during summer heavy rain or lightning warnings to protect the facility.
- ✓ Configurable power control modes tailored to grid requirements.

Customizable configuration according to specific KEPCO requirements for each power plant.

▶ VPPC 2 RTU Product Features

⑤ Fault Diagnosis and Remote Parameter Adjustment

- ✓ Provides detailed minute-by-minute data

시간	DC 전력			AC 전력								기타 정보			
5분 간격	전압(V)	전류(A)	입력(kW)	RS/RN(V)	ST/SN(V)	TR/TN(V)	R(A)	S(A)	T(A)	출력(kW)	발전량(kWh)	내부온도(°C)	절연저항(kΩ)	역률	주파수(Hz)
2026-02-27 13:05	697.7	46.4	32.37	220	220.8	221.5	47.1	47.1	47.2	31.26	108.6	34.1	20000	1	59.9
2026-02-27 13:00	693.5	38.7	26.84	221.6	220.8	221.8	39.6	39.5	39.6	26.3	106.1	34	20000	1	59.9
2026-02-27 12:55	695.7	35.3	24.56	221.6	221.6	222.4	35.6	35.5	35.6	23.76	104	34	20000	1	60
2026-02-27 12:50	695.3	36.1	25.1	221.6	221.6	223.2	36.9	37	36.9	24.62	102	34.1	20000	1	59.9

DC Voltage & Current

Individual string current values can be checked

→ Checks for blown string fuses

3-Phase Voltage & Current

Allows checking for abnormalities in each phase and tracking fault timestamps

→ Enables inferring grid-side (KEPCO) fuse blown conditions rather than power plant equipment issues

Internal Temperature & Insulation Resistance

Internal Temperature & Insulation Resistance

→ Checks cooling fan status via internal temperature

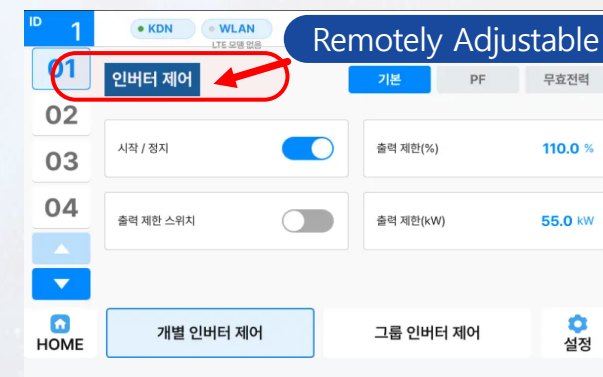
Checks power cable insulation status

→ Identifies and prepares for ground fault conditions

- ✓ In case of grid issues (such as inverter overvoltage or undervoltage) rather than inverter defects, immediate recovery is possible via remote configuration of inverter protection parameters.

Allows remote resolution without on-site visits when grid overvoltage occurs at the power plant.

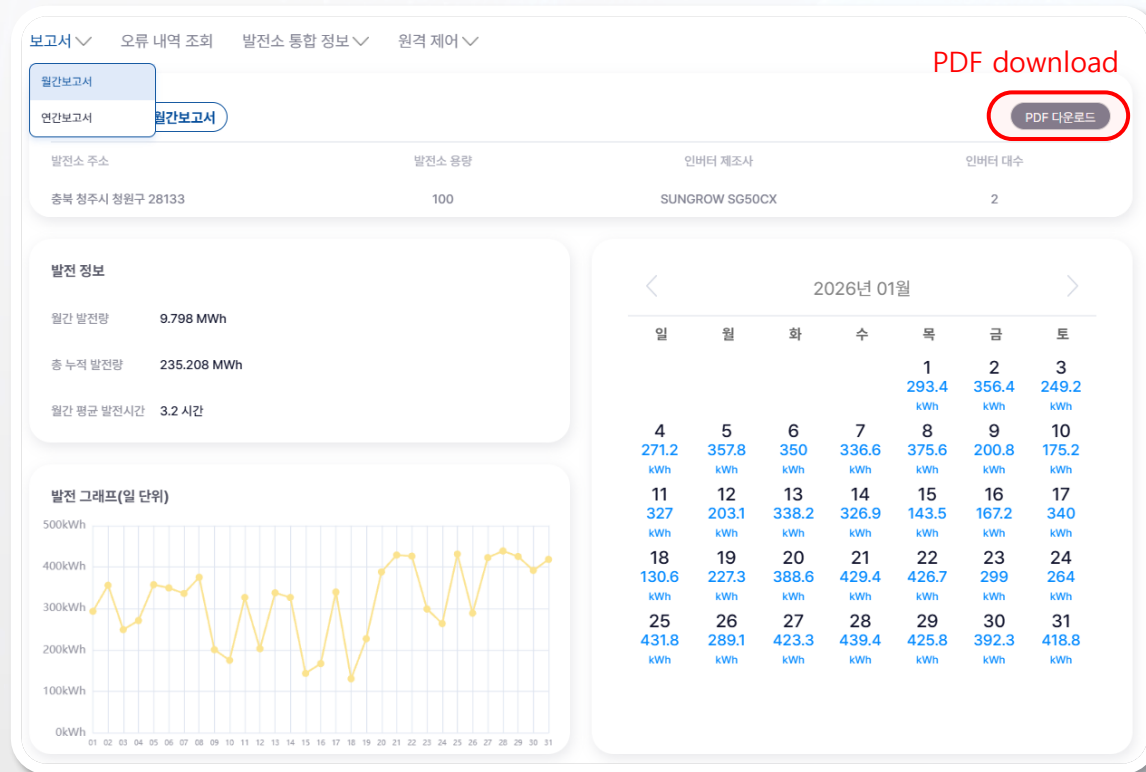
- ✓ Reduces labor cost expenditures caused by unnecessary on-site visits.
- ✓ Minimizes power generation revenue losses due to plant shutdowns.



▶ VPPC 2 RTU Product Features

⑥ Monthly / Annual Report Issuance

- ✓ Automated monthly report generation (Downloadable as PDF files from web and mobile monitoring platforms)
- ✓ Provides monthly and annual reports to check the operational status and power generation performance of the power plant



월간 발전 보고서 2026년 1월

1) 조회 기간
2026년 1월 1일 ~ 31일

2) 발전소 정보
청주 화상2호

발전소 주소	발전소 용량	인버터	인버터 수량
충북 청주시 청원구 28133	100.00kW	SUNGROW SG50CX	2대

3) 발전정보

발전 정보

월간 발전량	9.379MWh	월간 최고 발전량(일)	0.439MWh
연간 발전량	19.596MWh	월간 최고 발전시간	4.4시간
누적 발전량	235.208MWh	월간 최저 발전량	0.131MWh

▶ VPPC 2 RTU Product Features

⑦ Estimated Power Generation Revenue Calculation

- ✓ Automatic calculation of estimated revenue by reflecting real-time SMP and REC price fluctuations based on the KPX (Korea Power Exchange) API
- ✓ Real-time analysis of power plant profitability by integrating generation data with electricity market prices

발전 정보

실시간 발전량

9.13 kW

월간 발전량

0.196 MWh

연간 발전량

0.196 MWh

누적 발전량

0.799 MWh

일간 발전량

134.8 kWh

발전시간

1.4 시간

전일 발전량

61.1 kWh

전일 발전시간

0.6 시간

발전 (예상) 금액

SMP

REC 가중치 x 1

1REC = 1MWh (가중치에 따라 변동) · 매주 화, 목요일 10:00 - 16:00 개장

육지

제주

오늘의 SMP

104.76 원/kWh

발전소 오늘의 REC

0.135 REC

발전소 오늘의 REC 수익

9,525 원

거래일

2026년 02월 26일 목요일

오늘의 예상 발전수익

14,122 원/kWh

발전소 이달의 REC

0.196 REC

발전소 이달의 REC 수익

13,828 원

거래량(REC)

211,471 REC

이번달 예상 발전수익

20,522 원/kWh

발전소 누적 REC

0.799 REC

발전소 누적 REC 수익

56,372 원

평균가(원)

70,553 원/REC

누적 예상 발전수익

83,745 원/kWh

최고가

71,000 원/REC

최저가

70,000 원/REC

Web Platform



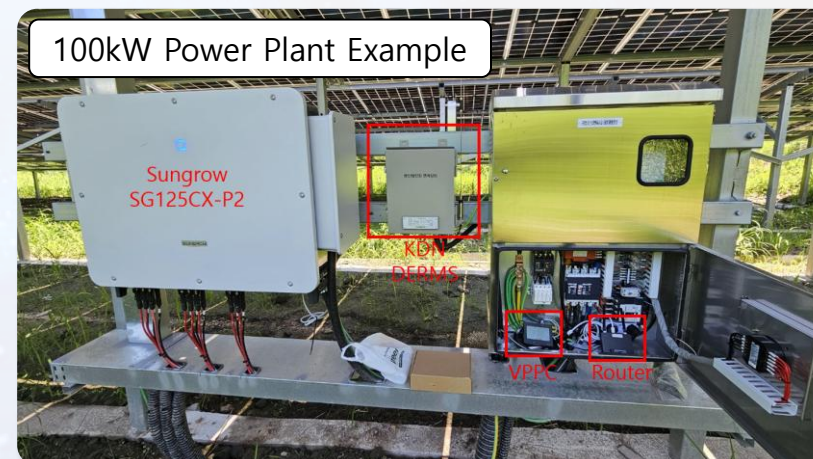
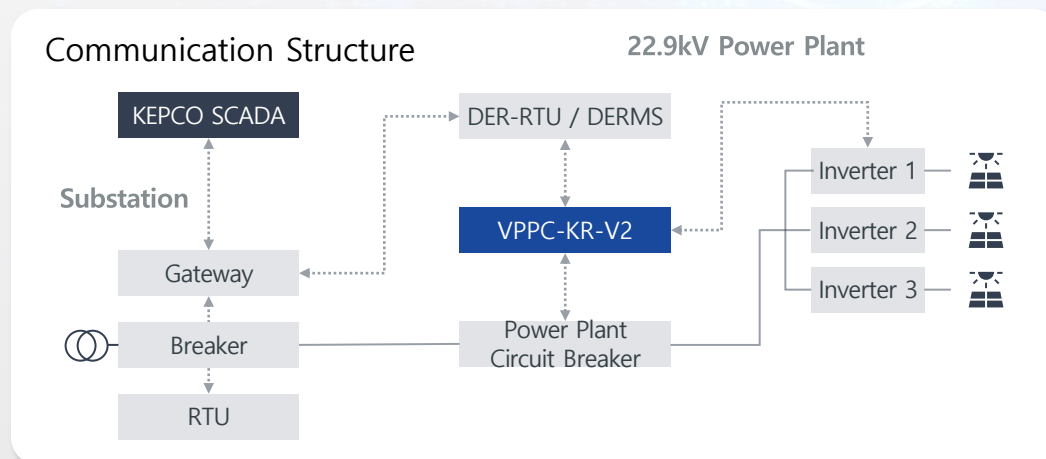
Mobile Platform

▶ VPPC 2 RTU Product Features

8 KEPCO KDN Renewable Energy Interconnection Terminal Device Integration

✓ Role of KEPCO DERMS and DER-RTU

- KEPCO's DER-RTU (power plants 1MW and above) & DERMS (power plants 90kW to 1MW) are systems that integratedly manage distributed energy resources, optimizing their operation and strengthening grid interconnection.
 - Additionally, through real-time data analysis, they perform various functions such as generation forecasting, power output control, and voltage regulation to enhance grid efficiency and stability.
 - As of October 1, 2023, power plant operators are required to fulfill power quality monitoring obligations, making the installation of this equipment mandatory.
- ✓ The VPPC-KR-V2 natively supports integration with renewable energy interconnection terminal devices, requiring no additional equipment installation for connectivity.
- ✓ No additional equipment installation is required for integration, and immediate connectivity is established as soon as the communication line is connected to the DERMS equipment without separate setup.



➤ VPPC 2 RTU Product Features

9 Encryption Architecture

- ✓ Establishes a systematic security architecture against external intrusions by applying security solutions compliant with KCMVP certification requirements based on domestic cloud infrastructure.

1

RTU Start

Load KCMVP module
private key & cert
at boot

2

TLS Handshake

Verify server cert,
then authenticate
the RTU client

3

CA Verification

Server checks RTU
certificate validity
with the CA

4

MQTT Connection

Allow only
authenticated RTUs,
block unauthenticated

5

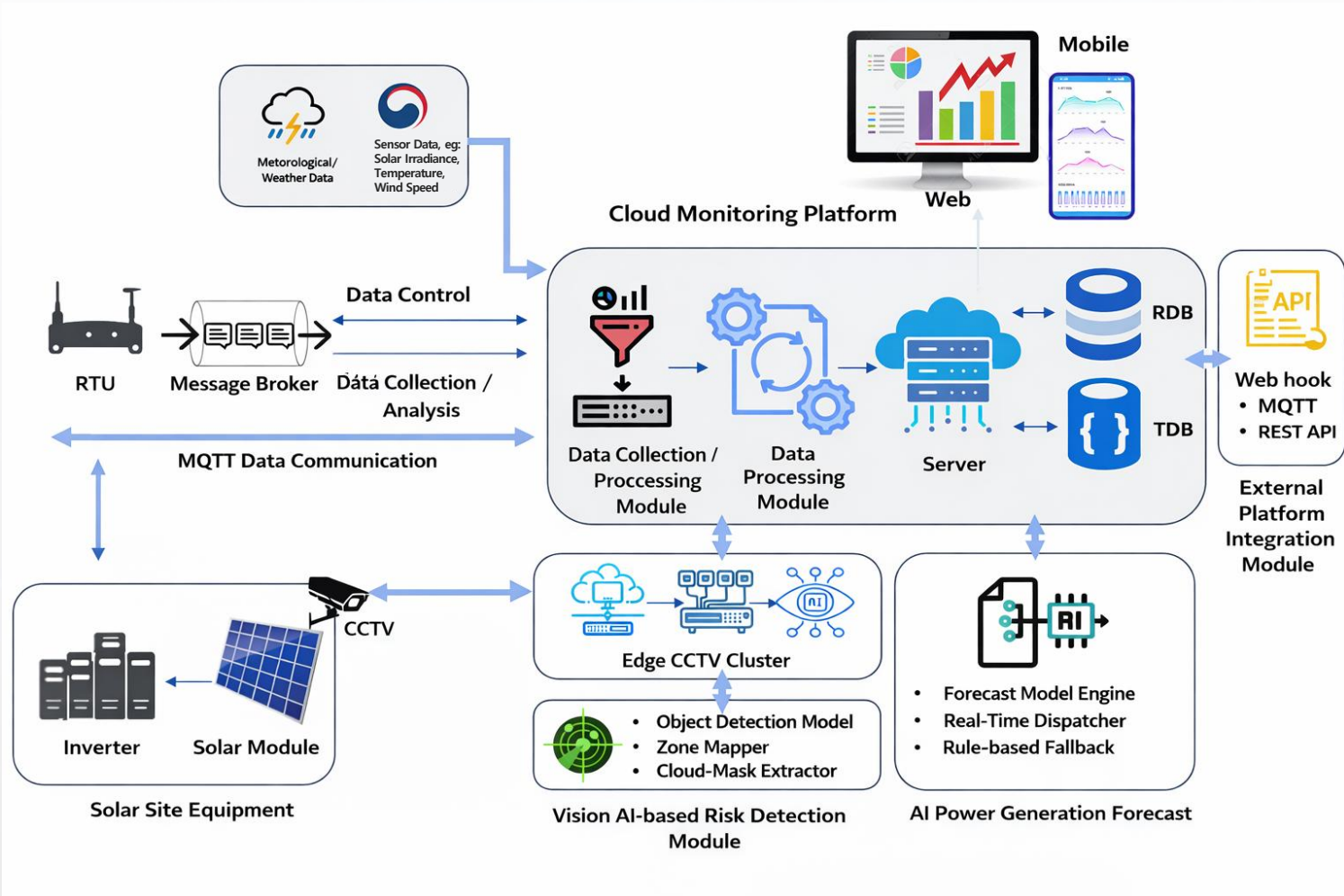
Data Publish

Securely transmit
data over an
encrypted channel

VPFC 2 RTU Product Features

10 System Structure

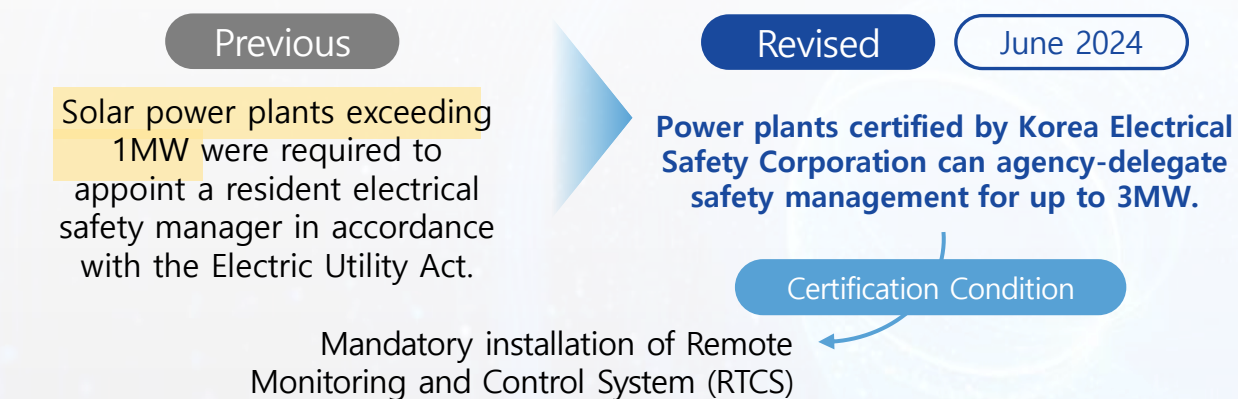
- Technology Advancement: Integration of Power Generation Forecasting AI Module and Vision AI Features into the Platform (2026)



VPIC 2 RTU Additional Product Features

1 Non-Resident Safety Management

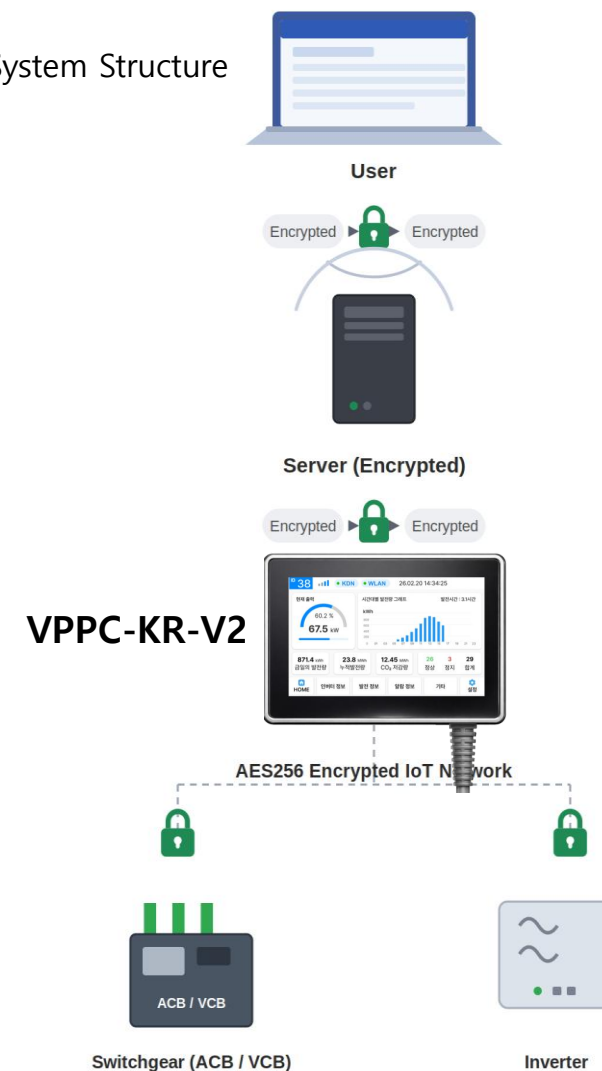
Key Details of Electrical Safety Management Deregulation



Remote Monitoring and Control System (RTCS) Functions



System Structure



➤ VPPC 2 RTU Additional Product Features

② Support for KEPCO Transmission Grid Technical Standards Q(t) Mode Communication

Under PPA Contract Conditions for Utility-Scale Power Plant Application

Q(t) Mandatory support for Q(t) control mode
(Active/Reactive power ratio adjustment)

Under current KEPCO regulations, native support by
both domestic and foreign inverters is limited

**Algorithm control via monitoring equipment is
required**

Contents of 'Reactive Power Supply Capability' in Current KEPCO Regulations

7. Reactive power supply capability

7.1 Within the operating voltage range (90%–110%), a renewable energy generator shall have the reactive power supply capability corresponding to its active power output, as shown in [Figure 3].

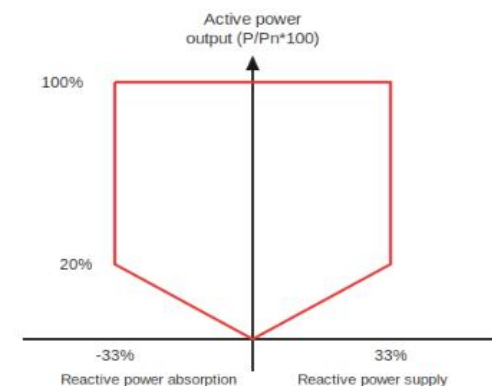
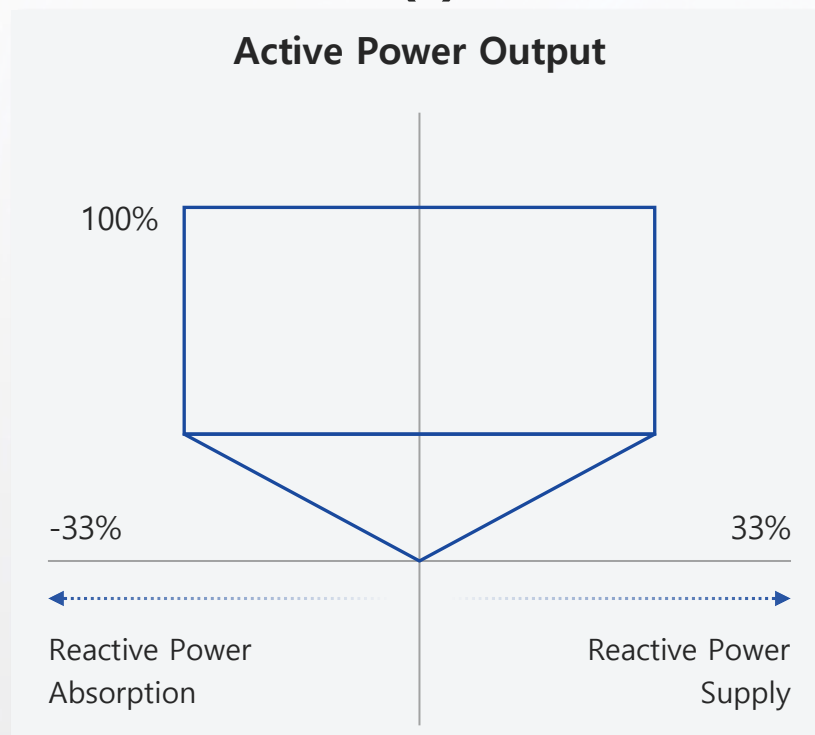


Figure 3. Reactive power supply range by active power output

- a. At 100%–20% active power output: absorb or supply reactive power equal to 33% of the active power rated capacity.
- b. At 20%–0% active power output: supply capability decreases linearly as active power output decreases.
- c. The steady-state allowable tolerance for reactive power shall be 5% or less.

➤ VPPC 2 RTU Product Additional Features

② Support Communication for KEPCO Transmission Grid Technical Standards Q(t) Mode



* State where reactive power ratio adjustment is allowed only within the applicable range (Unit: 0.1 kVAR)

SG350HX	0x2C27	12	2	0-1100	0-3520	-2112 - 2112
SG350HX	0x2C27	14	2	0-1100	0-3520	-2112 - 2112
SG350HX	0x2C27	16	2	0-1100	0-3520	-2112 - 2112
SG125CX-P2	0x2C2D	12	2	0-1100	0-1250	-750 - 750
SG110CX-P2	0x2C40	12	2	0-1100	0-1100	-660-660

✓ KEPCO Requirements

- Q(t) Mode Percentage: Applied based on rated active power.
- For example, when 33% is input based on 320 kW, 105.6 kVAR ($320 \text{ W} \times 0.33$) should be output.
- However, according to standard inverter settings, when 33% is input, 69.6 kVAR ($211 \text{ W} \times 0.33$) is output.

ENERGYUS
Algorithm Control

- When inverter output is 20% or higher: Fixed reactive power output at 33% based on rated active power (percentage applied).
- When inverter output is 20% or lower: Supports variable reactive power output according to a proportional formula.

➤ RTU Monitoring Features



RTU-Based Edge Computing Platform

- Directly performs data storage and analysis on the RTU
- Reduces RTU response time and lowers security risks, complementing the drawbacks of cloud systems



Remote Output Control Feature

- Equipped with output control functionality for power equipment such as inverters, PCS, and circuit breakers
- Prevents overload through remote control and enables response to the VPP electricity brokerage market



High-Resolution Data Collection

- Secures high-resolution data by collecting unit data in sub-second intervals (under 1 second)
- Optimizes data transmission and ensures reliability by transmitting/receiving data at 1 to 5-minute intervals



Versatile Connectivity and Compatibility

- Diversified input power port types (RJ45, USB, Adapter type, etc.)
- Collects data from various inverters, power meters, and SCADA systems by supporting multiple industry standard protocols
- Compatible with KEPCO KDN DERMS/RTU integration



Optimization for Diverse Power System Applications

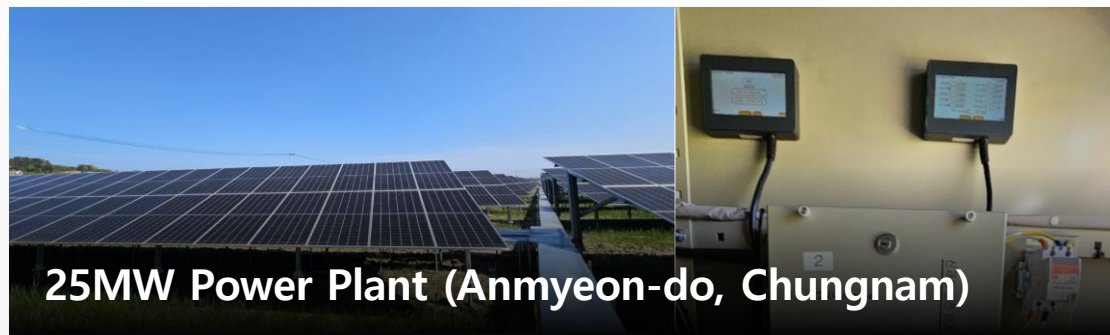
- Utilized for VPP bidding systems and grid interconnection through integrated output control features
- Leveraged for direct power purchase agreements (PPA) between suppliers and consumers
- Activates microgrids by interfacing with distributed energy resources (solar, wind, fuel cells, etc.) and ESS



Robust Security Features

- Provides data protection features utilizing encryption algorithms
- Supports secure data transmission and storage through software-based cryptographic modules

▶ Domestic Installation Cases



25MW Power Plant (Anmyeon-do, Chungnam)

Sungrow 125kW-class solar inverters (230 units)

KEPCO Seosan Branch Transmission Grid Interconnection

VPPC-KR-V1 products (49 units)



4MW Power Plant (Jeju)

Sungrow 350kW-class solar inverters (12 units)

KEPCO Jeju Branch DERMS Interconnection

VPPC-KR-V1 products (4 units)



200kW Power Plant (Chilgok, Gyeongbuk)

Hanwha Q Cells 110kW-class solar inverters (2 units)

KEPCO Gyeongbuk Branch DERMS Interconnection

VPPC-KR-V1 product (1 unit)



20MW Power Plant (Dangjin, Chungnam)

Sungrow 350kW-class solar inverters (12 units)

KEPCO Seosan Branch Transmission Grid Interconnection

VPPC-KR-V1 products (4 units)

▶ 국내/해외 설치 사례



Sungrow 200kW-class solar inverters (4 units)

Public Procurement / Government Supply

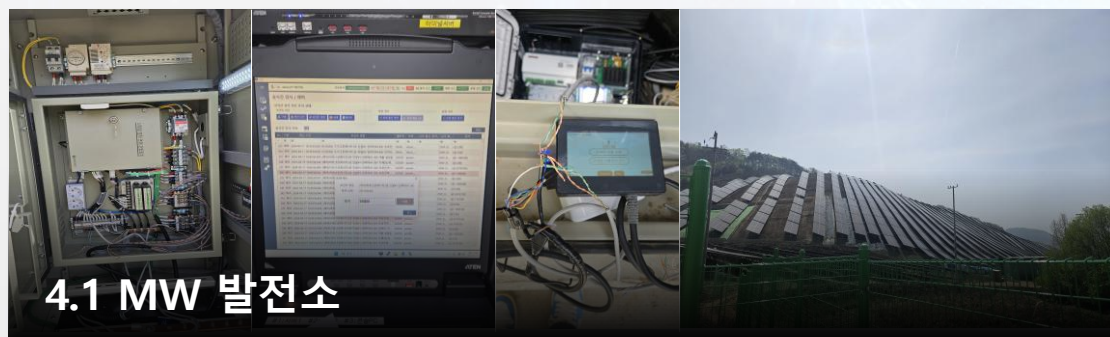
VPPC-KR-V1 product (1 unit)



Sungrow 100kW-class solar inverters (5 units)

KEPCO Chungnam Branch DERMS Interconnection

VPPC-KR-V1 product (1 unit)



Sungrow 320kW-class solar inverters (13 units)

KEPCO Chungbuk Branch DERTU Interconnection

VPPC-KR-V1 product (1 unit)



49.5 kW 발전소

Sungrow Japan

Japanese Market Demonstration Test

VPPC-KR-V1 product (1 unit)

01. About Us

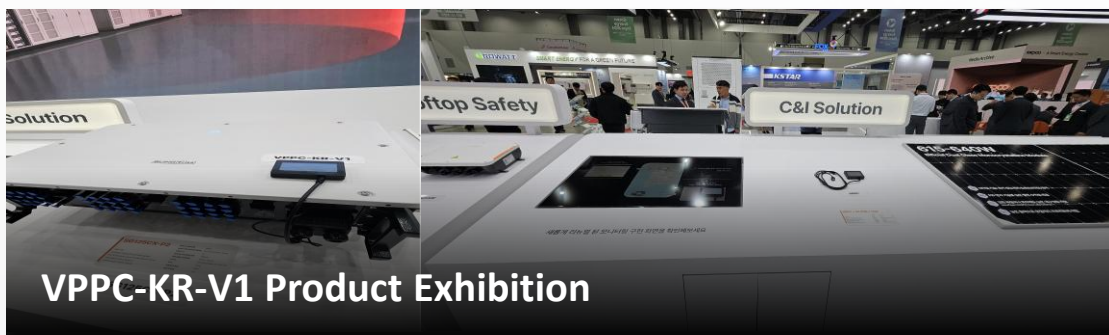
02. Market

03. Technology

04. Strategy

35

▶ 제품 전시



VPPC-KR-V1 Product Exhibition

Participated in 2024 Busan
BEXCO Exhibition

Conducted VPPC-KR-V1
Product Promotion

VPP C&I Solution Briefing /
Presentation



VPPC-KR-V2 Product Exhibition

Participated in 2026 COEX
InterBattery Exhibition

VPPC-KR-V1 Product:
1 Unit

PMS/ESS Monitoring
Exhibition



VPPC-KR-V2 Product Exhibition

Participated in 2026 Daegu
International Green Energy
Expo

VPPC-KR-V2 Product:
1 Unit

Product Presentation /
Briefing Session



VPPC-KR-V2 Product Exhibition

Participated in 2026 COEX
Korea Build Exhibition

VPPC-KR-V1, VPPC-KR-V2
Products: 1 Unit Each

Monitoring Display &
Overseas Buyer Meetings



Energy Goes Digital "Intelligent Energy For All of Us"

Thank you

ENERGYUS Co., Ltd.

Headquarters 77-26, Daegeum-ro, Daeso-eup, Eumseong-gun, Chungcheongbuk-do, Korea
Seoul R&D Center 34, Teheran-ro 28-gil, Gangnam-gu, Seoul, Korea 4th floor

Phone: 02-6347-4200 (R&D Center)

EMAIL: energyus@energyus-vppc.com

Homepage: <https://www.energyus-ai.com/>