

FREE ENERGY PLANET

S-Energy strives to create a world where everyone can freely use clean and unlimited energy.



SE Group will take the lead in protecting the Earth.



SINCE
1992

Energy in daily life beyond PV

S-Energy made history of being the first and the best in the Korean PV industry. Beyond PV, we are creating a world with infinite and clean energy for everyone to use freely.

SE Group Configuration

| Company name | Company name | Company name | Company name |
|--------------------|----------------------|-------------------|-------------------------------|
| S-Energy Co., Ltd. | S-Fuelcell Co., Ltd. | S-Power Co., Ltd. | S-Mobility Solution Co., Ltd. |
| Year established | Year established | Year established | Year established |
| January 12, 2001 | March 3, 2014 | January 2, 2014 | September 6, 2021 |

History

- 1992** · Created an energy business team in Samsung Electronics
- 1994** · Started PV module production
- 1996** · Installed PV generation system for buildings for the first time in Korea (Samsung SDI Office in Giheung-gu, Yongin-si)
- 1999** · Samsung Electronics in-house venture No.1
- 2001** · Established S-Energy
- 2004** · First company to participate in Korea's 1 million green home project
· Established remote integrated monitoring system for PV generation for the first time in Korea(SolarMon)
- 2005** · Commercialized BIPV modules (empirical study at South Korea's Presidential Office)
- 2006** · Installed MW-Scale PV power plant for the first time in Korea(Donghae coal-fired power plant)
- 2007** · First PV company listed on the KOSDAQ
· Developed metal roof integrated PV module for the first time in the world(Poly Metal PV Panel:PMPP)
- 2008** · Started overseas sales of PV modules
- 2009** · Achieved \$100 million in exports
· Won the Presidential Prize in new and renewable energy section
· Obtained BIPV G to G type certification for the first time in Korea
- 2010** · Won 3rd place in Photon magazine's PV module quality evaluation
· Achieved \$200 million in exports
- 2011** · Established US and German offices (S-Energy America Inc. / S-Energy Europe GmbH)
- 2012** · Started overseas project (Green Acres 4.8 MW, California, US)
· Started overseas EPC project (KP Project 13.3 MW, Malaysia)
- 2013** · Established Japanese office(S-Energy Japan Co., Ltd.)
· Completed the largest BIPV site in Korea (the Federation of Korean Industries Building)
· Obtained international certification for desert PV module with mirror backsheet for the first time in the world
- 2014** · Established a subsidiary specializing in PV O&M (S-Power Co., Ltd.)
· Established a subsidiary specializing in fuel cell (S-Fuelcell Co., Ltd.)
· Ranked 2nd in the world in financial soundness by Bloomberg New Energy Finance and selected as global top tier company
· First in Korea to acquire 5kW fuel cell system KS certification for building (S-Fuelcell Co., Ltd.)
- 2015** · Obtained UL certification for 1500V PV module for the first time in the world
· Patent and CE certification for single axis tracker Solutio (S-Power Co., Ltd.)
· Obtained the first certificate in Korea for 5kW LPG FC system and facility for building (S-Fuelcell Co.,Ltd.)
- 2016** · Obtained the first KS certified by Korea Energy Agency (S-Fuelcell Co., Ltd.)
· Established subsidiary specializing in O&M in US and Japan (S-Services Inc. & S-Services Co., Ltd.)
· Acquired Korea's first KS certification for crystalline PV module
- 2017** · Established Chilean office (S-Energy & S-Power Chile SpA)
· Awarded National Brand Prize
· 5 consecutive years of highest market share in PV lease business (S-Power Co., Ltd.)
- 2018** · First fuel cell company listed on the KOSDAQ (S-Fuelcell Co., Ltd.)
- 2019** · Obtained patent for floating PV system(S-Power Co., Ltd.)
· Developed building fuel cell facility-battery hybrid system for the first time in the world (S-Fuelcell Co., Ltd.)
- 2020** · Started overseas sales of Fuel cell system(S-Fuelcell Co., Ltd.)
· Established the first central control center for solar power plant with AI function in Korea (S-Power Co., Ltd.)
· Installed PV module for soundproof tunne for the first time in the world
- 2021** · Selected as the first official hydrogen company in Korea (S-Fuelcell Co., Ltd.)
· Established a subsidiary specialized in fuel cell power pack business (S-Mobility Solution Co., Ltd.)



S-Energy

As a pioneer in the Korean solar industry, We have made the first and best history. *history* Under the philosophy of creating a world where anyone can freely use clean and infinite energy, starting with the production of solar PV modules for the first time in Korea, we have expanded our business areas from Operation and Management Services (O&M) for solar power plants / Residential lease business to fuel cells.



S-Energy is exclusive in Korea that owns operating modules after its 25 years of warranty period.

Why S-Energy?

World's First

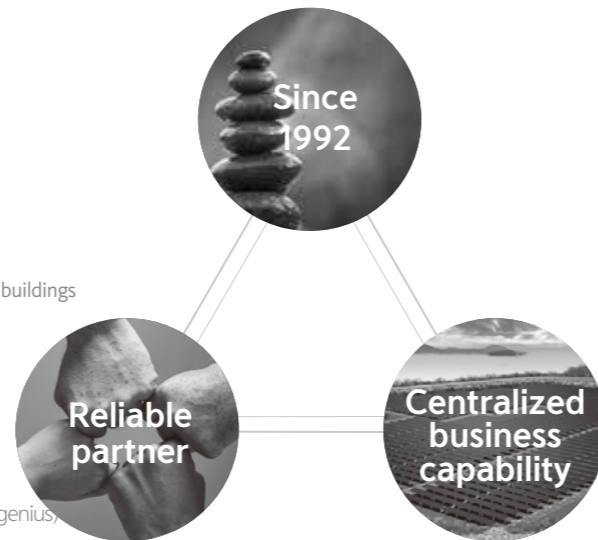
- Metal roof integrated PV module (Poly Metal PV Panel:PMPP)
- UL Certification for 1500V PV Module
- International certification for the mirror backsheet type desert PV module
- Installation of the PV module for soundproof tunnel

Korea's First

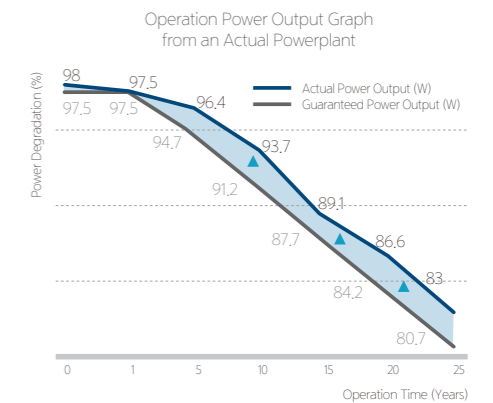
- PV module manufacturer
- 1 million Green Home Project
- MW-Scale PV power plant (Donghae coal-fired power plant)
- BIPV G2G type certification (Renewable Energy Center)
- Acquisition of Pre-Qualification (MEW of Kuwait)
- Installation of PV generation system for buildings
- Remote integrated monitoring system for PV generation (SolarMon)
- KOSDAQ listed PV company
- Certification of Specialized Green Enterprise (PV Module)
- Remote Integrated Monitoring System for PV generation based on AI function(genius)

Korea's Largest

- Completed the largest BIPV site in Korea (the Federation of Korean Industries Building)



Test Site in Yongin-Si, GyeongGi-Do (March, 2020)



Bloomberg Tier 1 since 2014

PV Module Manufacturer that Satisfies Tier 1 Standards of Bloomberg NEF, as of Q3 2020.

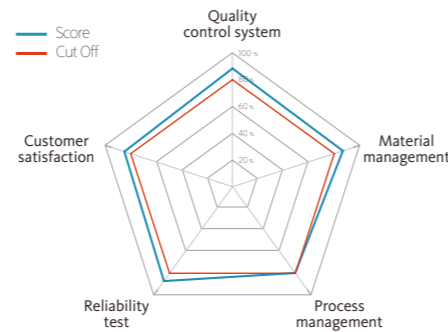
| Firm / brand | Annual module capacity, MW/year | Firm / brand | Annual module capacity, MW/year |
|----------------------------|---------------------------------|------------------|---------------------------------|
| China | 8,000 | Longsun Energy | 800 |
| Wuxi Suntech | 6,000 | Alembic | 1,000 |
| Wapac | 1,000 | Amring Energy | 1,000 |
| Ammon (Samsung SDI/Alkerm) | 1,000 | Asur | 80,000 |
| Ube Solar | 800 | Asio | 1,000 |
| Trina Solar | 45,000 | Asi Solar | 10,000 |
| Teknor | 3,000 | Busen | 800 |
| Canadian | 140 | CL Green | 1,000 |
| Canadian Solar | 1,000 | Hangzhou (SMA) | 1,000 |
| Genesys (Phosco Solar) | 1,000 | Helios | 300 |
| Shingora | 300 | Horshua Co. Ltd. | 10,000 |
| Trina | 200 | Good Solar | 200 |
| Canadian Solar | 1,000 | CL Green | 1,000 |
| S-Energy | 530 | Trina Solar | 4,000 |
| Solar Energy | 1,000 | Sung | 1,000 |
| CL Green | 1,000 | Chen (Hemtech) | 4,000 |
| Beacon Solar | 700 | Canadian Solar | 10,000 |
| Beacon Solar (L&E) | 1,000 | Beacon | 1,000 |
| Longi | 20,000 | Adem (Wacker) | 1,000 |
| CL Green | 1,000 | Tiara | 100,000 |

** Source : BloombergNEF Q3 2020 Global PV Market Outlook

Highest Standards of Quality

1 Inspection of Overseas Facility

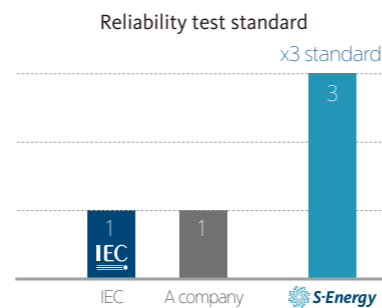
Professional engineers dispatched to overseas apply the identical production standards as from Korea. The productions are strictly managed from beginning to end through real-time remote monitoring in Korea.



2 S-Energy Lab Test

Sustainability analysis according to S-Energy's quality standards is examined three times higher than the standards of IEC regulations.

* Tests with three times higher standards than IEC regulations



3 Reliability Evaluation Overalls

Reliability and quality control are performed before & after the mass production. Plus, additional tests are passed for all products before shipment.



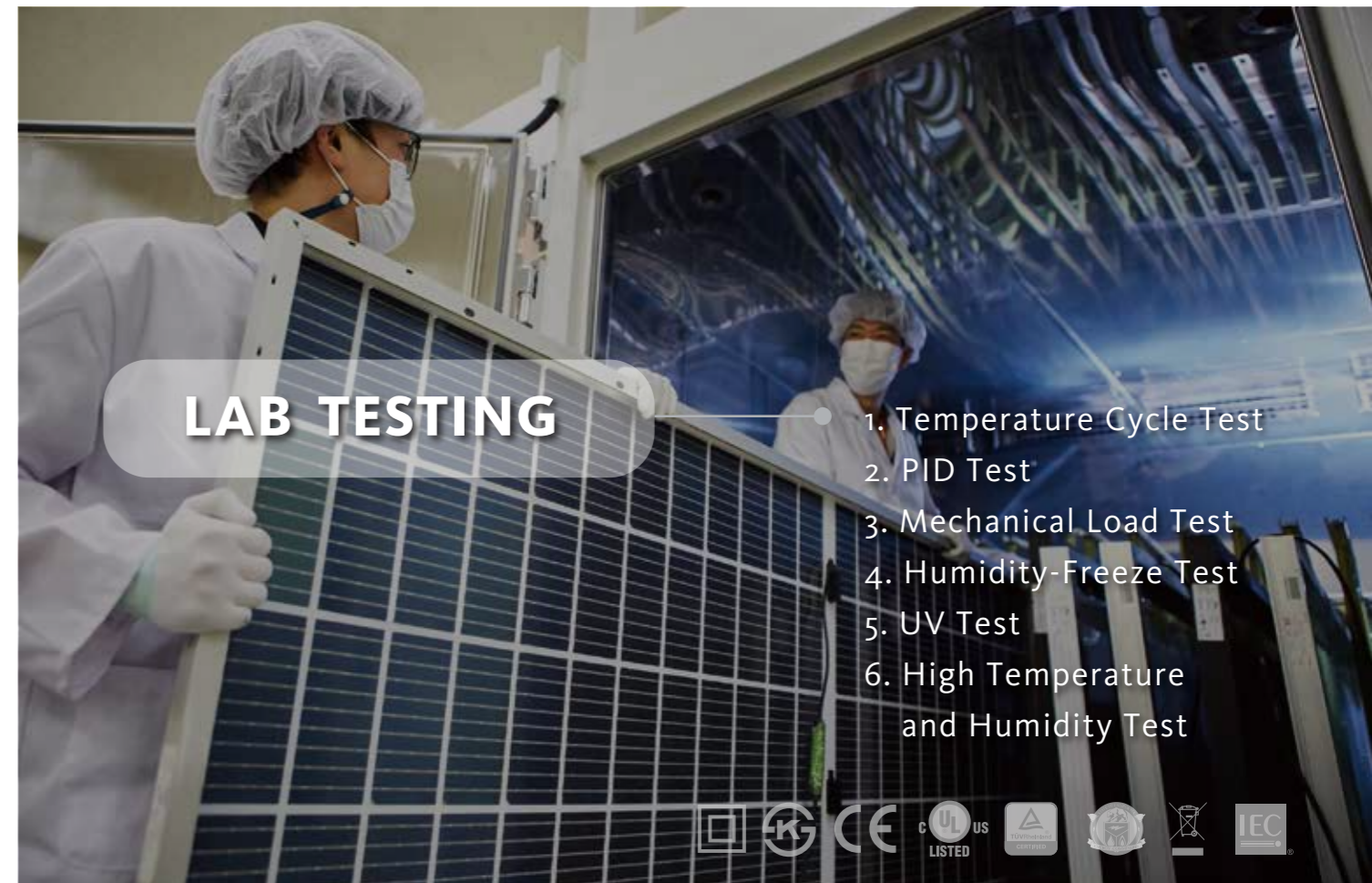
4 Periodical Evaluation

Quarterly evaluation is practiced to maintain high quality standards of the overall productions and management.



Reliability and Warranty of the Proven Module

S-Energy has its in-house lab to evaluate 6 reliability test items and carries out tests with three times higher standards than the global standard. Also, S-Energy tries to deliver PV modules proven by its high reliability after comparing the test result with 3rd party labs.



1. Temperature Cycle Test
2. PID Test
3. Mechanical Load Test
4. Humidity-Freeze Test
5. UV Test
6. High Temperature and Humidity Test



Sustainability

15-year product warranty
Performance Warranty (Year 1): 98%
Performance Warranty (Year 30): 84.95%

*Warranty policy varies by product, please inquire for more details

Durability

Durability for the Maximum Instantaneous Wind Speed up to 45m/s
National Guidance for Wind Speed Engineering: Max 44m/s

Module Quality Proven by 3rd Party International Test Labs

EL Inspection for Final Products, Enhanced PID Quality

Long term reliability

Constant Quality Control with Its In-House Lab Operation and 3rd Party Inspection

PRODUCT INFORMATION

Increased Reliability PV Module

For Tough Environments

Designed for Certain Climate Environments such as Strong Wind, Heavy Snow and High Temperature



Excellent Anti-Corrosive Effect
Completed tests for ammonia corrosion, salt mist and sand dust



Mechanical Load Feature Snow & Wind Load
Front 6200Pa, Back 5400Pa



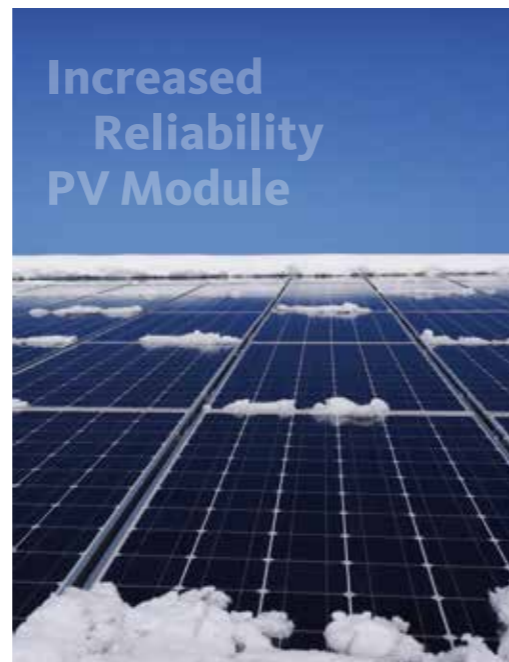
Minimized PID/LID
Enhanced performance by improving low power output causes



Long Term Reliability
Quality evaluation with three times higher standards than IEC regulations



High Efficiency and Lower Temperature Coefficient
Secures power generation and profit even under a high temperature environment



Low Carbon PV Module

Eco-Friendly PV Module to Reduce CO2 Emission

Lower Carbon Emission than the Industry Average



Medium and Large Scale PV Power Plant
Suitable for a power plant



Profit Increase
System cost saving by providing higher efficiency PV modules



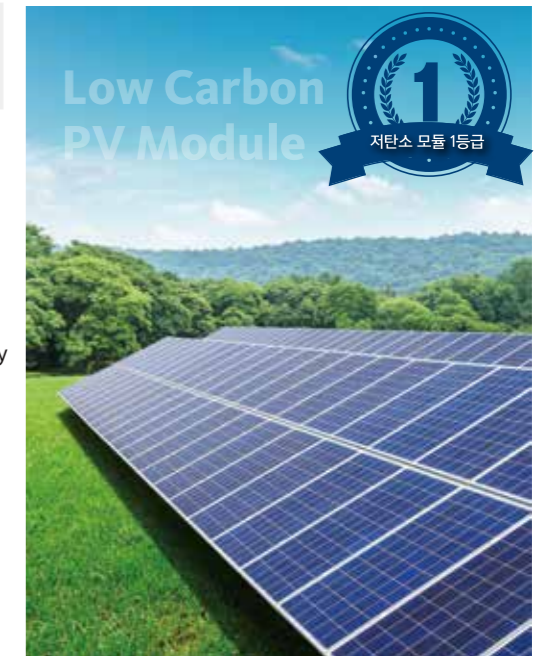
Minimized PID/LID
Enhanced performance by improving low power output causes



Long Term Reliability
Quality evaluation with three times higher standards than IEC regulations



Acquired Carbon Certification Grade 1 for PV Modules
To extend the eco-friendliness of renewable energy to PV modules



Floating PV Module

Optimized for Aquatic Environments

Designed for Aquatic Environments with Its Enhanced Damp-Proof and Corrosion-Resisting Features



Medium and Large Scale PV Power Plant
Suitable for a power plant



Profit Increase
System cost saving by providing higher efficiency PV modules



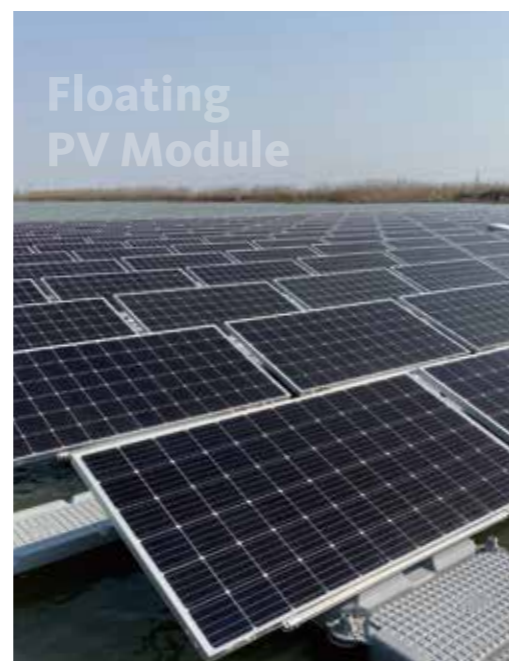
Excellent Anti-Corrosive Effect
Completed tests for ammonia corrosion, salt mist and sand dust



Long Term Reliability
Quality evaluation with three times higher standards than IEC regulations



Specially Designed for Aquatic Environments
POE and glass with lower moisture infiltration rate secures higher durability under hot and humid environment



All Black AC Module with Micro-inverter

Design Module that Enables Smart Installation and Control

No Need for an Inverter Installation Space Power Output Monitoring Enabled



Aesthetic Black Design
Visually designed to appear integrated into the roof material of the house



Strict Quality Management
Higher reliability guaranteed with strict quality controls and certification as an AC module



Smart Management
Power output monitoring and analysis enabled by smart devices



Easy and Safe Installation
Easier installation without an inverter Rapid shut-down function



Cost Saving
Saving of installation time, material and logistics



BIPV Building materials + Power production

S-Energy commercialized Korea's first BIPV module, starting with the installation of BIPV in the Yeomin Hall, Blue House in 2005.



The largest BIPV site in Korea
National Federation of Entrepreneurs Hall (728kW)



Economics

It is economical because it is used as a building material to reduce construction costs and energy is saved by supplying electricity through self-generation.



Safety

By using PVB Film, it has superior heat resistance and moisture resistance compared to EVA Film, and has excellent bonding strength, making it suitable for construction.



Durability

It is the first G2G type module] that passed the IEC 61215 standard test in Korea.

BIPV module No.1 certified product, Testing Institution : Korea Testing Laboratory (KTL)



Wall-type BIPV It is the general exterior construction method that is simple and economical to install and construct, and can be used as a building material in various locations.



Roof-type BIPV It can be installed at an optimal angle and maximum power generation efficiency, and can be easily applied to existing buildings.

Specialized PV Modules



Water Floating PV Module
Terhin Chagan Lake, Mongolia



Sound-Proof Tunneling Module
Dongbu Expressway, South Korea



Desert-Specialized PV Module
Bayan Water Tower Project, Kuwait

Project Business

With its best team of specialists for engineering, financing, and legal issues, S-Energy can provide you with the fastest action and the best result.



| Development | | Financing |
|--|--|---|
| <ul style="list-style-type: none"> Project search and development Feasibility study Legal due diligence | <ul style="list-style-type: none"> Technical due diligence Project acquisition/sales | <ul style="list-style-type: none"> Deal structuring Equity investment Debt financing |



| Engineering / Procurement | Construction |
|--|--|
| <ul style="list-style-type: none"> PV power generation analysis and design optimization Competitive device supply and management Customs and logistics management | <ul style="list-style-type: none"> In-house EPC team (civil engineering · construction · electric work) Process and cost control Construction supervision service |

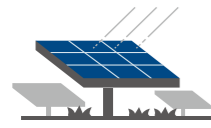


| Operation & Maintenance | |
|---|--|
| <ul style="list-style-type: none"> System validation after construction Real-time integrated monitoring system of power generation Expected power generation guarantee | <ul style="list-style-type: none"> Risk analysis and solution for the PV power plant (troubleshooting) Re-modeling of worn out PV power plants |

Installation Cases

With achievements in Korea, Europe, and Japan attained in the early days of the company, we are expanding our business areas to the U.S.A., Southeast Asia, Middle East, and South America.

Korea Power Plant Projects



TOTAL CAPACITY

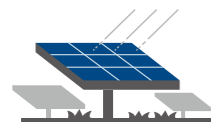
597MW

4351MW, 244MW Completed, 107MW in Progress

| Major Project Title | Capacity(MW) | Year |
|--|--------------|------------------|
| Donghae Coal-Fired PV Project | 1.0 | 2006 |
| Muan Solartopia PV Project | 1.0 | 2007 |
| Jindo Samsung Soluce PV Project | 3.0 | 2008 |
| Chungbuk Health & Science University PV Project | 1.5 | 2012 |
| BIPV for Federation of Korean Industries Building | 0.7 | 2013 |
| Nexen Tire PV Project | 3.0 | 2014 |
| Kairos PV Project | 8.9 | 2015 |
| Koroad Rest Stop PV Project | 8.2 | 2016 |
| Korea Western Power Corp. PV Project Phase 1 | 5.2 | 2017 |
| KRCC Gyehwa 2,3,4 District PV Project | 3.0 | 2018 |
| Oksan-Ochang Highway PV Project | 6.5 | 2019 |
| Dangjin Coal-Fired 1st Treatment PV Project | 25.0 | 2020 |
| Samyang PV Project | 17.0 | 2020 |
| Jeju small-scale PV project | 43.0 | 2021 |
| Korea Western Power Corp. Lee Won Lake Floating PV Project | 47.7 | 2020~In progress |
| 제주 수망리 100MW 태양광 발전 사업 | 100 | 2022~In progress |

*KRCC : Korea Rural Community Corporation

Overseas Power Plant Projects



TOTAL CAPACITY

248MW

248MW, 159MW Completed, 89MW in Progress

| Major Project Title | Location(Country) | Capacity(MW) | Year |
|--------------------------------------|-------------------|--------------|------------------|
| Green Acres Project and Others | U.S.A. | 9.0 | 2012~2013 |
| KP Project (Kuala Perlis and Others) | Malaysia | 18.0 | 2012~2014 |
| Tojo Project and Others | Japan | 156.0 | 2015~In progress |
| DAS Project and Others | Chile | 64.5 | 2017~In progress |



2006, Korea

PV Power Project in Donghae Coal-Fired Power Plant
- First RPS based MW project in Korea



2012, Korea

Chungbuk Health & Science University PV Power Project
- S-Energy's first RPS based project



2013, Korea

BIPV for Federation of Korean Industries Building
- The largest BIPV site in Korea



2014, Korea

PV Power Project for Nexen Tire
- The largest PV rooftop project in Korea



2012, U.S.A.

Green Acres Project
- S-Energy's first overseas project



2012, Malaysia

KP Project (Kuala Perlis)
- S-Energy's first overseas project as an EPC contractor



2017, Chile

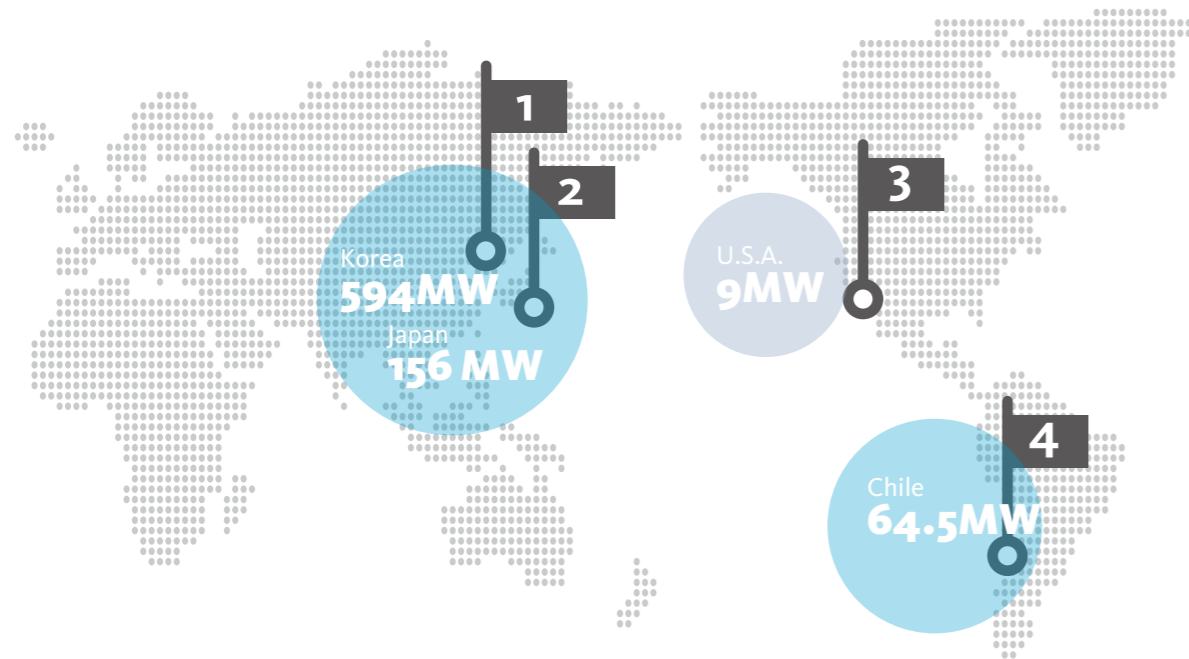
DAS Project
- Korea's first PV project EPC in South America



2021, Japan

EBINO Project
- S-Energy's largest overseas project (a single site basis, 45MW)

Location



Contact Us

1 Korea

S-Energy

Address Headquarters

· 20 PanGyoYeok-Ro 241BeonGil, BunDang-Gu, SeongNam-Si, GyeongGi-Do, Korea(3F MiraeAsset Tower)

Factory

· 260, Gapcheon-ro, Yuseong-gu, Daejeon, Korea

TEL · +82-70-4339-7100 FAX · +82-70-4339-7199 E-mail · inquiry@s-energy.com

S-Fuelcell

Address Headquarters

· 20 PanGyoYeok-Ro 241BeonGil, BunDang-Gu, SeongNam-Si, GyeongGi-Do, Korea(3F MiraeAsset Tower)

Q1 Center

· 66, Saneop-ro 156beon-gil, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (2F Nadong)

TEL · +82-70-4613-4900 FAX · +82-70-4613-4999 E-mail · sales@s-fuelcell.com

S-Power

Address Headquarters

· 20 PanGyoYeok-Ro 241BeonGil, BunDang-Gu, SeongNam-Si, GyeongGi-Do, Korea(3F MiraeAsset Tower)

TEL · +82-70-4339-7100 FAX · +82-70-4339-7199 E-mail · inquiry@s-energy.com

2 Japan

S-Energy Japan Co., Ltd. (Osaka Headquarters)

Address · 6F Hoshiwa City Building, 4-2-15
Kutaro-cho, Chuo-ku, Osaka, Japan

TEL · +81-6-4703-5388

FAX · +81-6-4703-5387

E-mail · sales_jp@s-energy.com

S-Energy Japan Co., Ltd. (Tokyo Branch)

Address · 6F Nishikicho BLDG., 1-8-11
Kandanishiki-cho, Chiyoda-ku, Tokyo, Japan

TEL · +81-3-6261-3759

FAX · +81-3-6261-3769

E-mail · sales_jp@s-energy.com

S-Energy Japan Co., Ltd. (Hiroshima Branch)

Address · 1144-11 Tojocho Kawahigashi,
Shobara, Hiroshima, Japan

TEL · +81-8-4773-6100

FAX · +81-8-4773-6110

E-mail · sales_jp@s-energy.com

3 America

S-Energy America, Inc.

Address · 1170 North Gilbert Street, Anaheim,
CA 92801, U.S.A.

TEL · +1-949-281-7897

FAX · +1-949-281-7893

E-mail · sales.us@s-energy.com

S-Services, Inc.

Address · 1170 North Gilbert Street, Anaheim,
CA 92801, U.S.A.

TEL · +1-949-281-7897

FAX · +1-949-281-7893

E-mail · s-services@s-energy.com

4 Chile

S-Energy Chile SpA

Address · Ave. del Valle Norte 961, Of.1701,
Huechuraba, Santiago, Chile

TEL · +56-22-604-8111

E-mail · sales.cl@s-energy.com