

Company Introduction

Solar power project business

2016



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Introduction & Solar business

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O&M Reference

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PV eco-value chain



I. Introduction & Solar Business



1 – 1. Company Summary

“Trusted and Reliable Customer Relationship for 40 years”

“With Major Power Generation Companies in the world”

Founded

- Nov. 27th, 1973
- Nov. 7th, 2005 (KC Solar Energy)

Business area

- Dust collector
- Waste gas purification system
- Industrial facility
- New & Renewable energy

Capital stock

- 1,010 ten thousand (KC green holdings)
- 99 ten thousand (KC Solar Energy)

Location

- Head office : 11th floor, digital cube, Sangam-dong, Mapo-gu, Seoul, Korea
- Factory : 253, San0gi-ri, **Seoun-myeon**, Anseong-si, Gyeonggi-do, Korea

Home page

- www.kcgreenholdings.com
- www.kc-solarenergy.com
- www.kc-cottrell.com

Employees
Credit Rating

- 1,182(Total), 23(KC Solar energy)
- A-(KC green holdings), BBB- (KC Solar Energy)



Head office

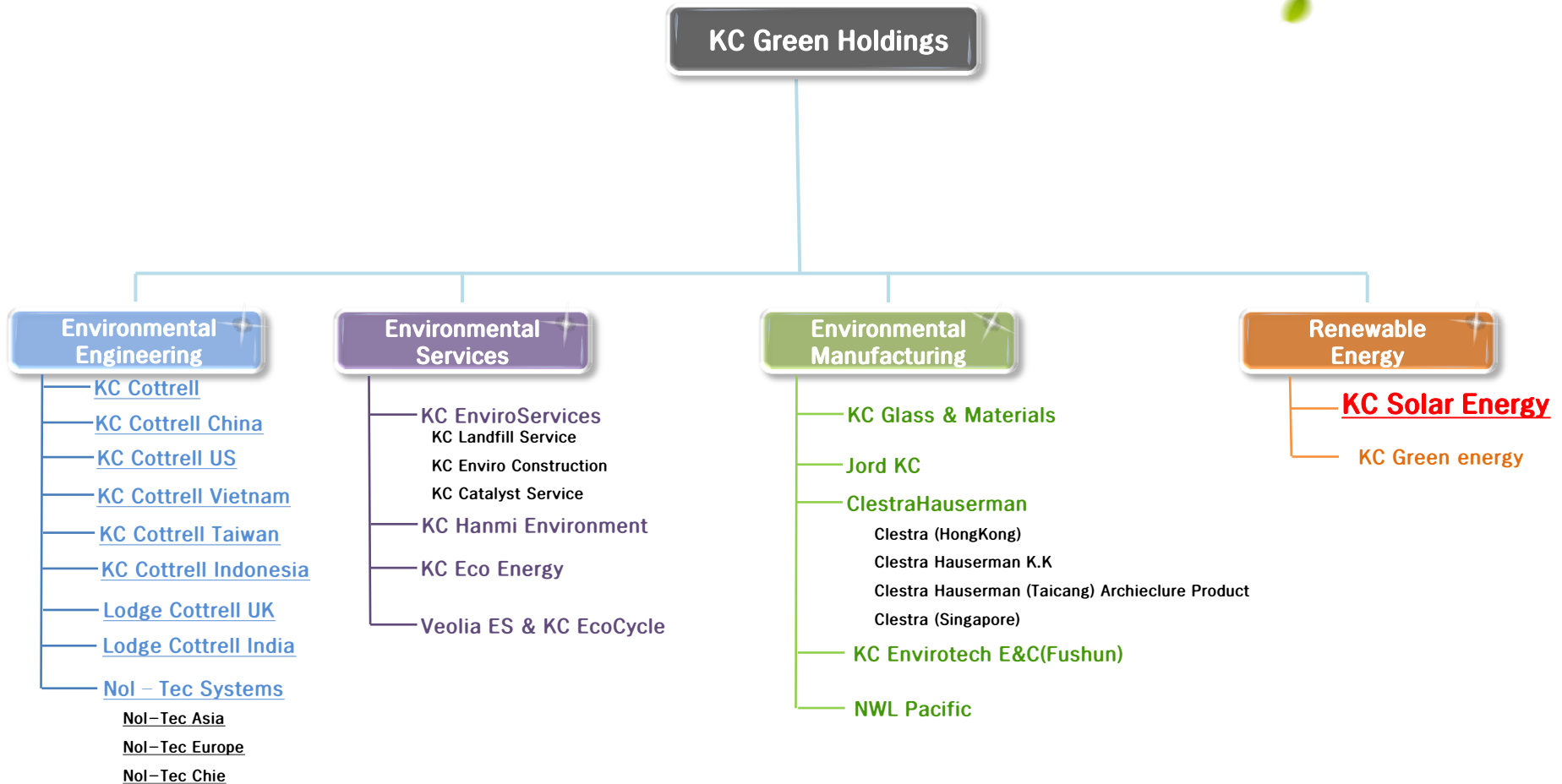


Renault Samsung, Busan factory,
Solar Power (26MW)



Young Kwang Saltern Solar Power
11MW

1 – 2 . Company Organization



1-4. Business Areas



EPC of utility scale PV system



Operation and maintenance services for PV



ESS[Energy Storage System] business with PV



Project consulting for solar power plant

1 – 4 . Business area



EPC(Engineering & Procurement & Construction)

Efficient DESIGN and CONSTRUCTION

Construction using detailed analysis and suitable design

- Expected Generation analysis
- Design for the best solar power plants
- Responsible construction and test operation

Efficient PROCUREMENT

Procuring liable and proven equipment for each solar power plant

- PV module
- Inverter
- Electric equipment
- Structure system
- Monitoring system



1 – 4 . Business area



O&M(Operation & Maintenance)



Pre-Inspection



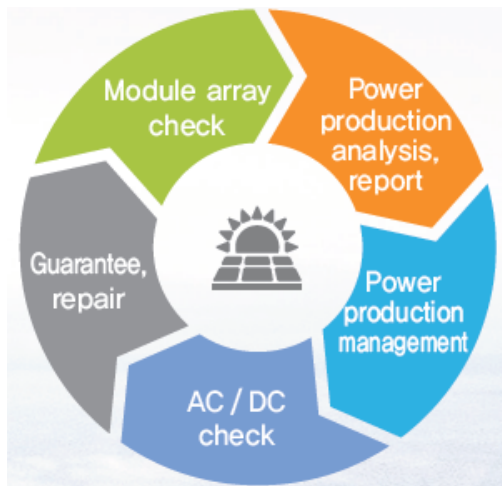
Check



Monitoring



Guarantee



KC Monitoring on Supervision Center(KC-MOS)



System Analysis



System O&M



PV Power Plant Manager



Management operation

- Electricity generation analysis
- Power plant maintenance
- Guarantee for Power generation amount
- Monitoring system
- Safety, Insurance, Internet
- Agency business to pay for electricity bill

R&R Solution[Revamping & Renewal]

- Development of solar power plant for M&A
- NPL or Acceptance of stocks
- Refinancing or New investment
- Reconstruction, Remodeling or Revamping



1 – 4. Business area



Trading and Consulting

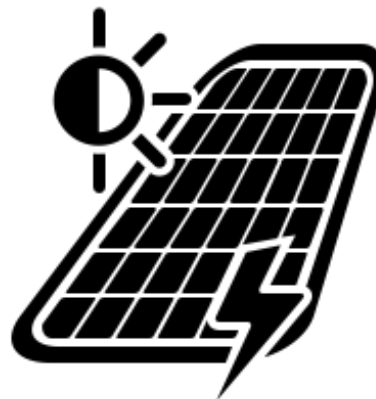
■ Solar power plant Trading on the internet



www.kc-solarenergy.com



■ Consulting service



Feasibility study

- Site suitability research
- Project validity analysis
- Profitability study

Trading consulting

- Profit optimization
- Realistic consulting to make customer satisfied
- Financing consulting
- Personalized business proposal

O&M

- Expected generation analysis
- Part of R&R Solution
- Monitoring system for guarantee

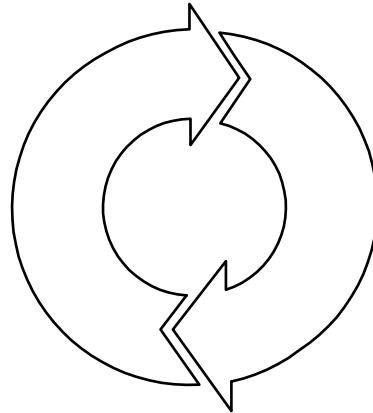
1 – 4. Business Areas



Combined energy business with ESS(Energy Storage System)

Decentralized power supply system

- On-grid system
- Load control system
- Efficient electric distribution control through expected generation analysis
- Energy cost down analysis through Energy demand check



Independent power supply system

- ESS support business with Solar power plant
- Generation analysis to supply each village
- Site suitability analysis for ESS
- Transmission & Distribution control system

■ ESS business application

❖ Effective utilization of Power

ESS with Solar power is able to change Unstable renewable energy in the part of generating point and power amount to Stable energy

❖ Stable supplying power

Contributing stable supplying power with load control system for peak time between daytime and night

❖ Alternative means

In case of application to Plant and structure, ESS with Solar power is able to be used for alternative means instead of emergency generator and electric cost saving during power peak time

1 – 5 . Resources and Advantages

KC SolarEnergy



78MW

Cumulative capacity 78MW
operation & Maintenance Services Knowhow

EXPERTISE

Proven engineering expertise
and references in Solar PV

**Global
Network**

Established network of
world-wide business operations

SOLID

Solid financial performances
And market credibility

Relationship

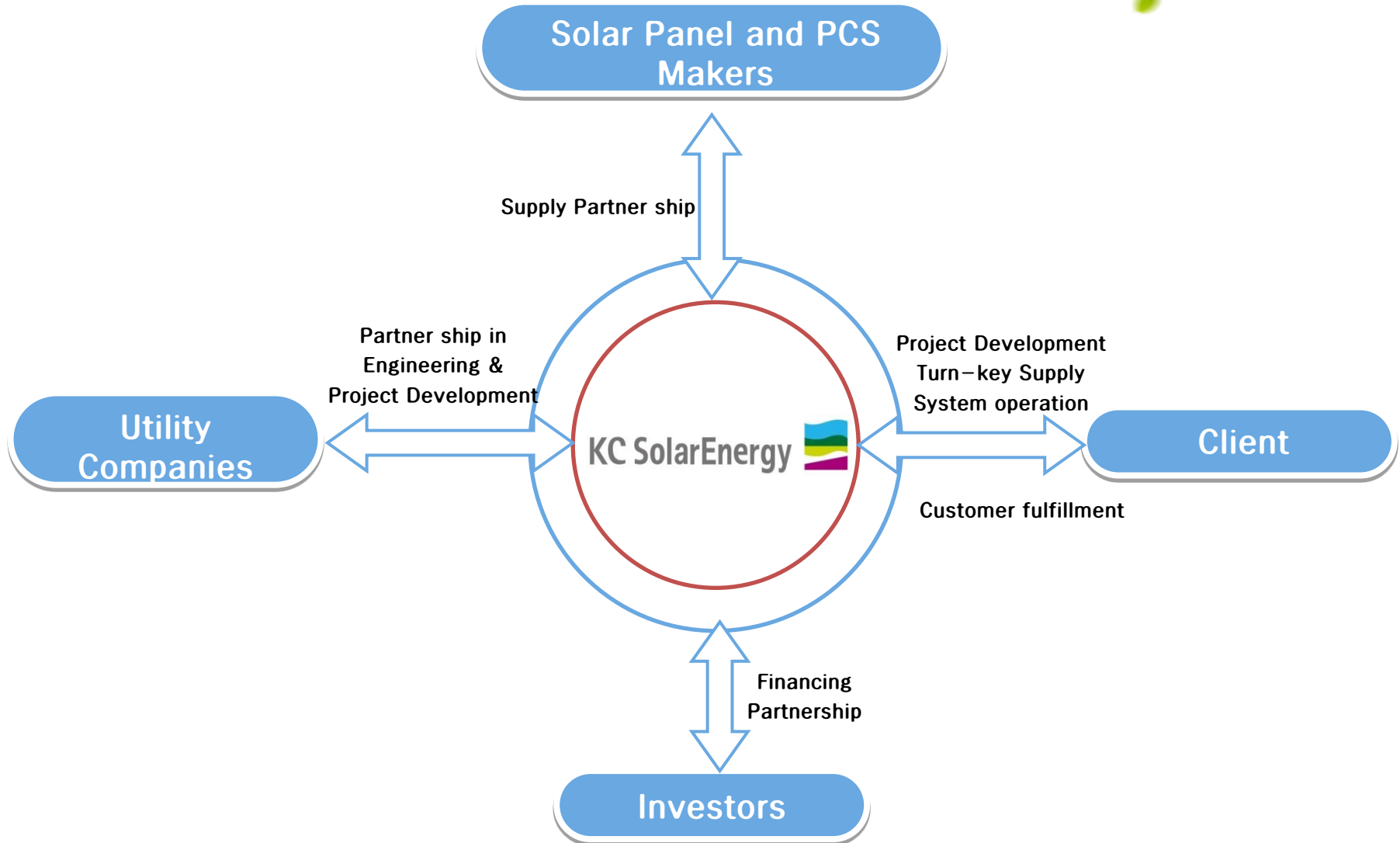
Established business relationships
With power generation companies

1 – 6. KC Solar Energy Business Process

KC SolarEnergy



Organization of Project, Engineering & Construction, Customer Fulfillment



1 – 7. Solar R&D

- Filed feature evaluation method development about performance, life and cause of declined efficiency of solar power module on the spot
- Standardization and performance evaluation method of solar power module on the spot



Site data
supply



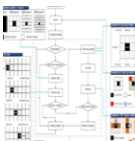
Site evaluation
through site
test
development



Site evaluation method
guide line development



Transmission of operation
efficiency of
real-time generation quantity



Site performance evaluation method development

- Site real-time trouble check evaluation method
- Solar power generation test execution to be adapted on the spot
- Busan renault solar power factory 26MWp,
Young-kwang deserted saltern 11MWp,
General Motors Korea etc.
- Cause about declined efficiency, evaluation of performance and life
- Trouble check method development through galvanometry and voltage measurement on solar power module array



1 – 8 . Award & Certificate



■ Award

■ 해외건설촉진법 시행규칙 [별지 제3호서식] <개정 2014. 2. 14> (양쪽)

제 1409 호
No.1409

해외건설업 신고확인증
(Certification of International Contractor)

상 호 : 케이씨솔라에너지(주)
(Name of Company) (KC Solar Energy)

대 표 자 : 이태영
(Name of Company Representative) (Lee Tae Young)

법 인 등 록 번 호 (생 년 월 일) : [134811-0113837]
[Corperation registration number(date of Birth)]

신 고 업 종 : 전기공사업
(Type of Business) (Electrical Works)

주 권 사무소의 소재지 : 서울특별시 마포구 상암산로 34, 11층
(Address of Company) (11F, 34 Sangamsan-ro, Mapo-gu, Seoul, Korea)

「해외건설촉진법」 제6조 제1항에 따라 해외건설업의 신고를 하였음을 증명합니다.
This is to certify that the above mentioned company is an enrolled international contractor in compliance with Clause 1 under Article 6 of Overseas Construction Promotion Act.

2011년 11월 02일

해외건설협회장
(Chairman of International Contractors Association of Korea)

해외건설업신고사실(상호, 대표자, 영업소소재지)이 변경된 경우 사유발생일로부터 30일 이내에 반드시 변경신고를 하시기 바랍니다.

210mmx297mm [포문용지(1종) 120g/㎡]

■ Certification of International Contractor

등록번호 서비스제공 제 212 호

지능형전력망 사업자 등록증

1. 성 명(대표자) : 이태영 (생년월일: 1959년 03월 09일)

2. 상 호 : 케이씨솔라에너지(주)

3. 주 소 : 서울특별시 마포구 상암산로34, 11층 (상암동, 디엠씨디지털큐브)

4. 영업소의 소재지 : 서울특별시 마포구 상암산로34, 11층 (상암동, 디엠씨디지털큐브)

5. 등록구분 : 지능형전력망 서비스제공 사업
(전기차 충전 / 기타 서비스)

6. 등록연월일 : 2016 년 2 월 24 일

「지능형전력망의 구축 및 이용촉진에 관한 법률」 제12조제1항, 같은 법 시행령 제8조 및 같은 법 시행규칙 제3조에 따라 위와 같이 등록하였음을 증명합니다.

2016 년 2 월 24 일

산업통상자원부장관

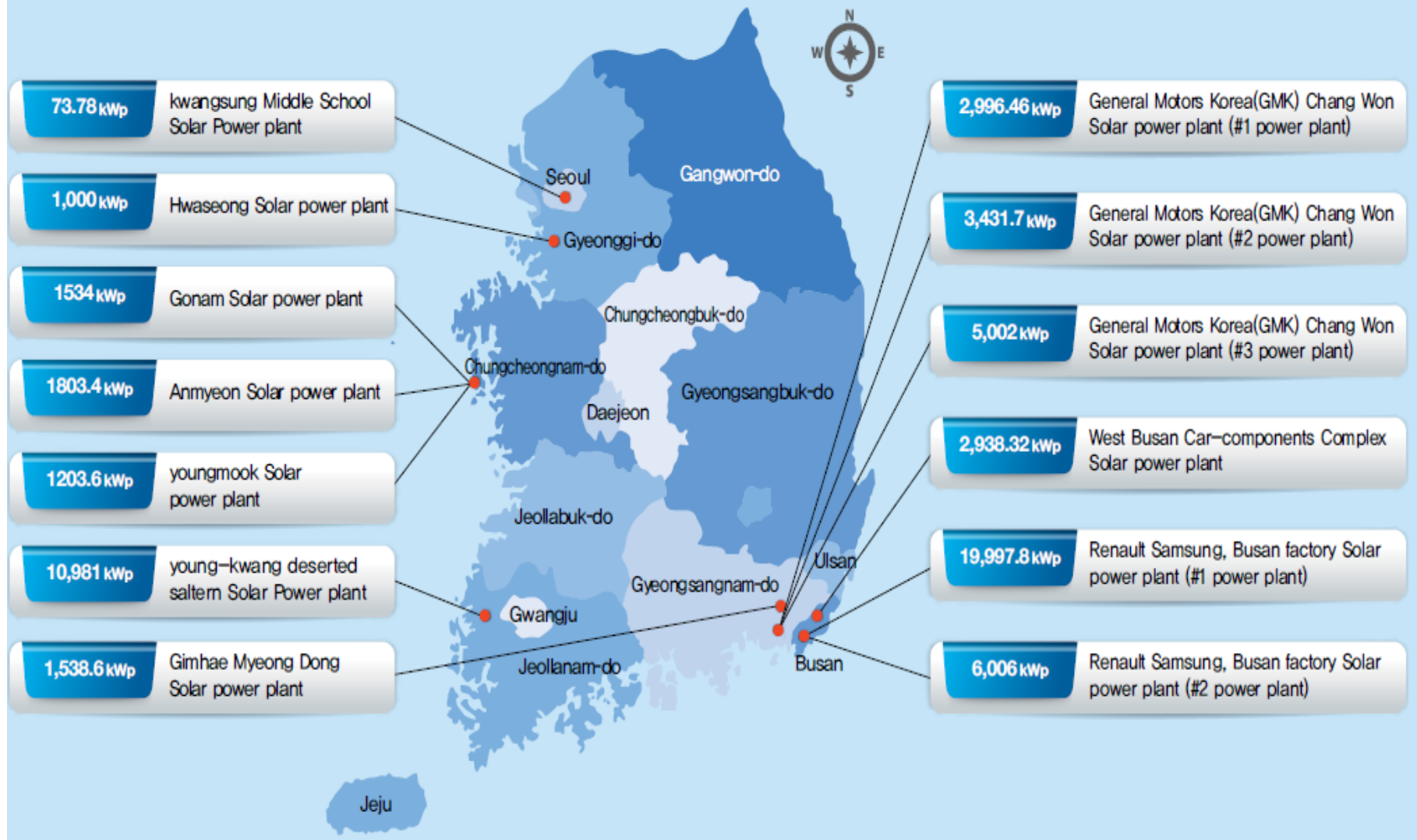
■ License of Smart-grid

II. 0&m Reference



2-1. O&M Reference of KC Solarenergy

Operation & Maintenance Services Knowhow.



2-2. Solar Power Plant Manage

Myeong -dong, Gim hae purification plant

- 1.5MW Solar Power Plant
- Completion date :2008
- 20year O&M



Hwa seong Waste landfill

- 1MW Solar Power Plant
- Completion date :2007
- 20year O&M



Renault Samsung, Busan factory

- 26MW Solar Power Plant
- Completion date :2012,2014
- 20year O&M



General Motors Korea Chang- won factory

- 6.5MW Solar Power Plant
- Completion date :2013,2014
- 15 year O&M



Young kwang Saltern

- 11MW Solar Power Plant
- Completion date :2013
- 20year O&M



Busan Solar (Wast Busan distribution complex)

- 3MW Solar Power Plant
- Completion date :2013
- 15year O&M



III. EPC Reference



3-1. Vietnam Dong Huong Solar power plant

Vietnam Nham Son kindergarten Solar power plant installation

Item	Expatiation	Item	Expatiation
Donor	▪ KC solarenergy	System capacity	▪ 3 kWp
Business purpose	▪ Subdivision business	PV module	▪ Crystalline
Location	▪ Vietnam Dong Huong, Nham Son kindergarten	Completion date	▪ Nov. 2015



Lễ trao tặng hệ thống năng lượng mặt trời và bình nước nóng cho trường mầm non xã Nham Sơn

[Bản để in](#) [Gửi bài này qua Email](#)

Sáng 4/11, Công ty KC Hàn Quốc phối hợp với Công ty xử lý chất thải công nghiệp Hòa Bình tổ chức lễ trao tặng hệ thống năng lượng mặt trời và bình nước nóng cho khu Đông Hương, trường mầm non xã Nham Sơn. Dự buổi lễ ở huyện có đồng chí Nguyễn Việt Tuấn tỉnh ủy viên bí thư huyện ủy, đồng chí Nguyễn Hữu Hưng phó chủ tịch UBND huyện, lãnh đạo công ty KC Hàn Quốc công ty xử lý chất thải công nghiệp Hòa Bình.

Khu Đông Hương trường mầm non xã Nham Sơn có 4 lớp và 100 cháu học sinh. Hệ thống pin năng lượng mặt trời do công ty KC của Hàn Quốc tài trợ đáp ứng được hệ thống đèn sáng, quạt mát và nước nóng phục vụ sinh hoạt cho các cháu học sinh.



Độc Bì thư huyện ủy phát biểu tại buổi lễ

Phát biểu tại buổi lễ trao tặng đồng chí Nguyễn Việt Tuấn tỉnh ủy viên bí thư huyện ủy nhấn mạnh: Trong những năm qua vấn đề môi trường luôn được các cấp, cả ngành của huyện quan tâm. Trường mầm non xã Nham Sơn đã được công ty KC dành một phần quỹ phúc lợi tài trợ cho địa phương. Đây là phần có ý nghĩa đối với các em học sinh và các thầy cô giáo nơi đây. Qua đó tạo điều kiện cho các cháu học sinh có hệ thống điện chiếu sáng, quạt mát nước nóng nhờ năng lượng mặt trời. Đồng chí cũng mong muốn các thầy cô giáo từ đây có hiệu quả các thiết bị được trao tặng, giữ gìn để các thiết bị được lâu bền góp phần chung tay xây dựng môi trường xanh. Nhân dịp này công ty có phần xử lý chất thải công nghiệp Hòa Bình tặng khu trường Nham non Đông Hương một chiếc tivi, công ty có phần Máy Bào Giang tặng các cháu quần áo.

Hạnh Liên

Tags: - Văn hoá - Xã hội

3-2. Modular Hybrid Energy(PV+ESS+Diesel)power supply system

Subject of national policy Djibouti Test site construction

Modular Hybrid Energy power system with ESS Development & Test

Item	Expatiation	Item	Expatiation
Companies	<ul style="list-style-type: none"> ▪ KC Cottrell, Samsung SDI,S-Energy,Intech FA, Korea Electrotechnology Research Institute 	System capacity	<ul style="list-style-type: none"> ▪ 100kWp
Subject purpose	<ul style="list-style-type: none"> ▪ Modular package Engineering , Manufacture and Test site constriction 	PV module	<ul style="list-style-type: none"> ▪ Crystalline
Location	<ul style="list-style-type: none"> ▪ Republic of Djibouti 	Completion date	<ul style="list-style-type: none"> ▪ Oct. 2015



3-3. Uzbekistan Namangan Test – bed Project

Uzbekistan PV Test bed Project

항목	상세설명
Business owner	<ul style="list-style-type: none"> Ministry Of Trade, Industry and Energy
Business Purpose	<ul style="list-style-type: none"> PV Project Development Central Asia on the basis of empirical results
Project Paricipate	<ul style="list-style-type: none"> KOPIA(Korea PhotoVoltaic Association) / KC Cottrell.co.Ltd
site	<ul style="list-style-type: none"> Uzbekistan Namangan Pap
System capacity	<ul style="list-style-type: none"> 130kW
PV module	<ul style="list-style-type: none"> Hanwha Q Cells, JSPV, S–energy, Topsun
Completion date	<ul style="list-style-type: none"> Dec. 31th, 2014



3–4. Renault Samsung, Busan factory 26MW Solar power plant



This is Solar project is one of the largest solar power built in a single factory in the world

Item	expatiation
Business owner	▣ Busan Sinho PV Generation
Business Purpose	▣ RPS enforcement
Project Paricipate	▣ Korea EAST–WEST Power CO.,ltd , KC Cottrell , KB Asset Management
site	▣ 185, Sinho–dong, Gangseo–gu, Busan, Korea
System capacity	▣ 20MW(1 step) , 6MW(2 step)
PV module	▣ Crystalline (hanwha–solarone & STX solar)
Completion date	▣ Dec. 31 th , 2012 (1 step), June 30 th , 2014 (2 step)
CO ₂ reduction	▣ about 23,400 ton/yr



Guest Parking 1.7MW



Motorpool 11MW



Rooftop 13.3MW

3-4. Renault Samsung, Busan factory 20MW Solar power plant

KC SolarEnergy



Complete parking lot



Complete parking lot



Factory roof



Customer parking lot



3-5. young-kwang deserted Saltern 11MW Solar Power Plant

11MW Solar Project constructed on deserted salt field

Item	expatiation
Business owner	▣ De Solar Co.,LTD
Construction & manage	▣ KC Solar Energy Co., Ltd
Project Paricipate	Korea Midland Power Co.,Ltd , JS Power, KB Asset Management
site	▣ 1881, Hasa-ri, Baeksu-eup, yeongkwang-gun, jeollanam-do, Korea
System capacity	▣ 11MW
PV module	▣ 310Wp Crystalline (shinsung Solar)
Completion date	▣ Dec. 17th, 2013
CO ₂ reduction	▣ about 9,900 ton/yr



3-6. General Motors Korea(GMK) 11.5MW Solar Power Plant

Solar Project Constructed at the factory roof – top of GMK

Item	expatiation	Item	expatiation
Business owner	▣ KS Solar Co.,Ltd	System capacity	▣ 3MW(1 step) , 3.5MW(2 step), 5MW(3 step)
Business Purpose	▣ RPS enforcement	PV module	▣ 310Wp Crystalline (shinsung Solar)
Project Paricipate	▣ Korea Southern Power Co.,Ltd, KC Solar Energy, Korea Asset investment securities Co.,Ltd	Completion date	▣ Oct. 31 th , 2013 (1 step), Apr. 30 th , 2014 (2 step) ▣ Mar. 10 th , 2015 (3 step)
site	▣ GMK chang won, Seongju-dong, seongsan-gu, Changwon-si	CO ₂ reduction	▣ about 5,850 ton/yr



3–7. Other Solar project of KC Solarenergy



N.	Project name	Capacity	Year
1	National forestry cooperative federation Solar project	918.54kW	2015
2	Modular Hybrid Energy(PV+ESS+Diesel) Power supply system	50kWp	2015
3	Car-Components Complex Solar project	3MW	2013
4	Thermoelectric Solar project	672kW	2012
5	Incheon Complex 3 rd Solar project	300kW	2011
6	Incheon Water-purification Solar project	1MW	2011
7	Seoul Water-purification Solar project	1.3MW	2011
8	Guang-yang CFS Roof-top Solar project	2.3MW	2011
9	Africa Senegal education Solar project	4kW	2011
10	Jordan Bedouin village Solar project	2kW	2011
11	Glass MFG Factory Solar power project	180kW	2008
12	Posco Roof-top Solar power project	1MW	2008
13	Ha-Dong Solar project	1MW	2008
14	Gimhae Myung dong Solar project	1.5MW	2008
15	Miryang Solar power project	200kW	2008
16	KCSP Hwaseoung Solar project	1MW	2007
17	Youngheung Solar project	1MWp	2006



THANK YOU

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