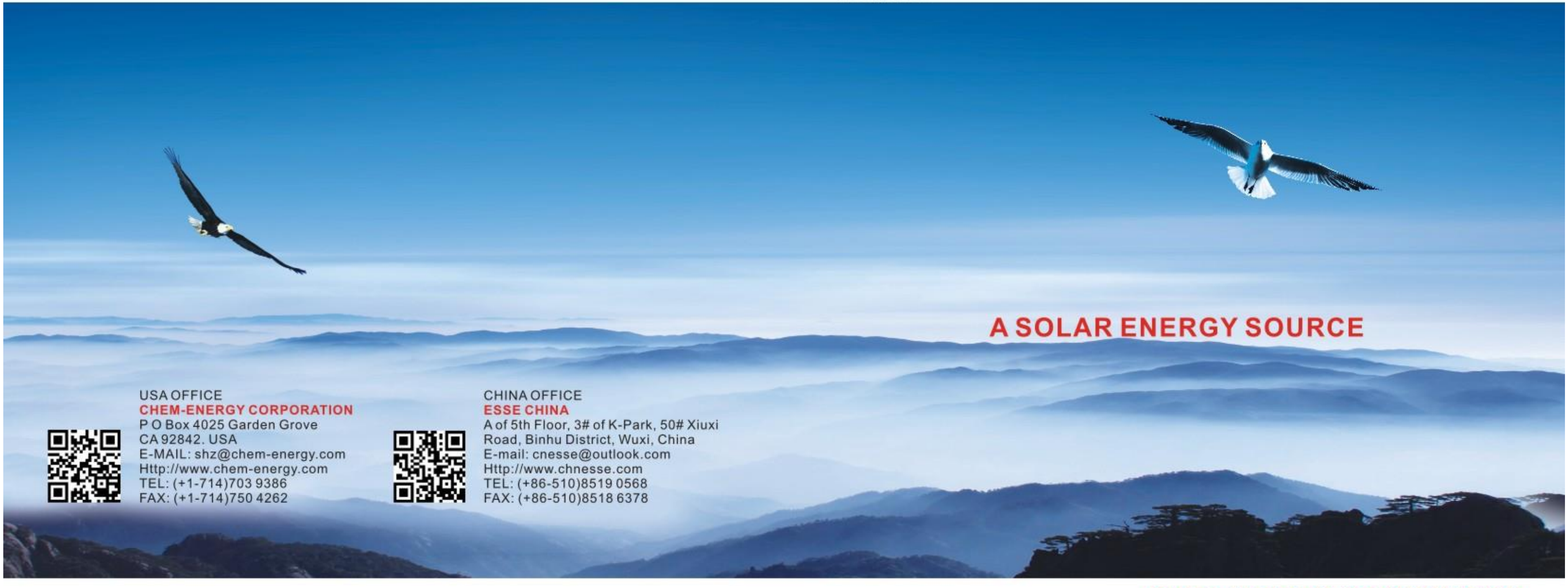

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CHEM-ENERGY CORPORATION

EASTERN STANDARD SCIENCE AND TECHNOLOGY WUXI CO., LTD.

MESSAGE FROM THE PRESIDENT AND THE CEO

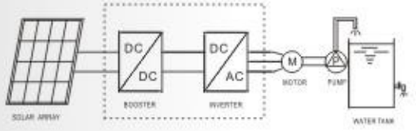
Chem-Energy Corporation started its operation 25 years ago on June 01, 1990. Safety, Service and Quality are the corner stones of our company which has led our company to grow and expand our operations both, in the USA and the global market. We look forward to continuing to innovate and execute, identify promising entrepreneurial skills to our business partners and clients while focusing on making our organization more attractive to our share holders and investors. On behalf of our share holders and members of the staff, we are thankful to all those who remained our business partners during this period and invested in our company.
Best wishes.

Shuja Haider Zaidi
President and CEO
Chem-Energy Corporation

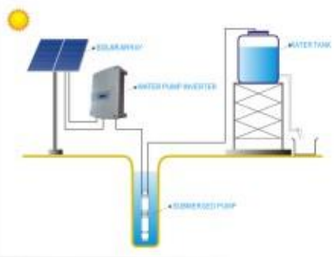
CONTENTS

SOLAR PUMPING SYSTEM

Our solar pumping system consists of solar pumping inverter, AC pump and PV array. System is designed to utilize cost effective water storage mechanism instead of costly electricity storage. System drives the pump directly without battery will dramatically reduce construction, operation and maintenance costs.
The PV array consists of multiple solar panels connected in series/parallel, supplying power to the whole system by converting solar radiation energy to electrical energy.
The pump driven by a 3-phase AC motor draws water from deep-well or river. The pumped water is then fed into reservoir or water tank, or connected to irrigation system or fountain system directly. Centrifugal, axial-flow, mixed-flow and deep-well pumps can all be utilized.
Our solar pumping system is perfectly suitable for areas without grid. Not only is the initial investment way lower than setting up transmission lines for long distance, but also the total investment, operation and maintenance costs are lower than diesel generator within 3 years' system operation. Stable water supply increases agriculture and forestry outcome, improves environments and living quality, ensures social stability.



We can according to your requirements and provide a variety of specifications of solar water pumping system, the amount of water from 5M3 to 900M3 per hour.



The following three specifications are usually the most common:

1.Bore Size is 6 inches, rated power of 32 M3/H of water, the water pipe is 2.5 inches
2.Bore Size is 8 inches, rated power of 50 M3/H of water, the water pipe is 3.0 inches
3.Bore Size is 8 inches, rated power of 80 M3/H of water, the water pipe is 4.0 inches

OFF-GRID SYSTEM
GRID-CONNECT SYSTEM
MICRO-GRID SYSTEM

WE ARE ABLE TO CUSTOMIZE YOUR REQUEST
THIS SOLAR SYSTEM FOR EV CHARGING STATION AND OTHER INDUSTRY

SUBMERGED PUMP

TYPICAL APPLICATIONS

- Water supply and irrigation system
- Lowering underground water level
- Booster
- Various industrial applications

FEATURES

- Compact structure, small volume, light
- Small O.D., easy to install and maintenance
- CE standard, more safety
- More material choice, suitable for various operation conditions.

OPERATION CONDITIONS

- **Power source:** Three phase AC, 380V/460V, 50Hz/60Hz
- **Water Source:** Water temperature: QJ series ≤30℃
  QJR series ≤90℃
- **Sand content (weight ratio) in water** should not exceed 0.01
- **Chlorine ion** not exceed 400mg/L
- **PH**=6.5-8.5

MODEL MEANING

Submerged pump

150 QJ(R) 20 – 18 A

- 150 means Min.well Dia. In mm
- QJ means Submerged pump for well
- R means for hot water
- 20 means capacity in M3/H
- 18 means total head in Meter
- A means first time improved

Submerged Motor

YQS T 200 – 45

- YQS means Submerged motor for well
- T means High down thrust bearing
- 200 means Min.well Dia. In mm
- 45 means motor power (KW)

No.	Min. Dia. Of the well	Model	Capacity (m3/h)	Tatal head (m)	Speed (r/min)	Motor power(kw)	Eff (%)	Out dia.of the set O.D.xlength.(mm)	Weight (kg)
1	150 (5.9 Inch)	150QJ(R)5 250	5	250	2850	7.5	60	Φ143X3110	156
2	150 (5.9 Inch)	150QJ(R)32 -90A	32	90	2850	13	67	Φ143X2371	165
3	150 (5.9 Inch)	150QJ(R)50 -90A	50	90	2850	22	70	Φ143X2820	172
4	200 (7.87 Inch)	200QJ(R)40 -98A	40	98	2875	18.5	72	Φ184*1843	169
5	200 (7.87 Inch)	200QJ(R)80 -95A	80	95	2850	37	75	Φ184*2213	224
6	225 (8.86 Inch)	200QJ(R)40 -105A	40	105	2900	18.5	74	Φ192*2036	196
7	225 (8.86 Inch)	200QJ(R)13 0-48A	130	48	2900	30	75	Φ192*1826	185
8	250 (9.84 Inch)	200QJ(R)10 0-90	100	90	2900	37	75	Φ232*2435	308
9	250 (9.84 Inch)	200QJ(R)12 5-96A	125	96	2875	55	77	Φ232*2295	341
10	250 (9.84 Inch)	200QJ(R)20 0-60	200	60	2875	55	75	Φ232*2122	299
11	300 (11.81	200QJ(R)20 0-80	200	80	2900	75	76	Φ281*2825	520
12	300 (11.81	200QJ(R)32 0-63	360	63	2900	90	77	Φ281*2654	495
13	500 (19.69	200QJ(R)55 0-81A	550	81	1475	180	78	Φ480*4279	795
14	550 (21.65	200QJ(R)90 0-30A	900	30	1475	110	78	Φ530*3855	530

SOLAR SUBMERGED PUMP

Our installation technology is mature and exquisite.
Has been successfully tested and widely installed by thousands of families.

INSTALLATION PROCESS

CONSTRUCTION SCHEME

- Engineering specifications and standards
- Design sketch
- Construction drawing include electrical diagram, structure chart and equipment list
- Construction progress and material in schedule
- Construction personnel structure
- Construction site layout

PRE-CONSTRUCTION PREPARATION

- PV system components preparation
- Include: mounting system
  - PV module
  - Inverter
  - Combine equipment and cable
  - Other electrical materials
  - Accessories
- Construction machinery & tools preparation
- Safety protection facilities

CONSTRUCTION PREPARATION

- Submit project start report
- Technical disclosure
- Water and electricity turned on
- Safety facilities layout
- Location pay-off
- Equipment on board

CONSTRUCTION PROCESS

- Rack mounting
- module installation
- Inverter and other electrical equipment installation
- Bridge and spool laying
- Cable and lightning-proof net connection
- Equipment testing and debugging before grid-connecting
- On-grid adjustment & testing

SOLAR FARM NEW ENERGY

Solar Farm, as a clean and renewable energy on the earth, is a device which can convert the luminous energy into electric energy with solar panels. It consists of the solar cell array, combiner box, DC power distribution cabinet, grid inverter, AC power distribution cabinet and voltage booster.

We can provide turn-key service of design, manufacture, installation, debugging of the solar farm. And the capacity of power generation ranges from 1MW to 20MW and even bigger.

CEC&ESSE NEW ENERGY

Solar system for industry

Solar system for house

PROJECT DEVELOPMENT AND BROKER

We can provide these projects development and financing, engineering services.

1.CRUDE OIL REFINERIES

We can make available the refineries of various capacities both used and new in a very short time with the capacity of 12,000 Barrels Per day, 30,000 Barrels Per day and 55,000 Barrels per day. We also have good team of engineers who are available and willing to relocate for the project at the location where the plant is to be installed.

2.POWER PLANT

We have developed a 300MW Fuel Oil fired Power Project with the assistance of a European company. We also can develop power plants and other refinery projects ourselves. We also offer small re-conditioned power plants on turnkey basis to small industry. The cost of these plants on turnkey basis is 60% less than the new one.

3. SOLAR PANEL FACILITY TURN-KEY PROJECT

4. BIO-DIESEL TURN-KEY PROJECT

SOLAR HOME SYSTEM

FEATURES:

- No pollutants, without noise, green, clean and comfortable living environment
- Fast and simple installation
- Long life expectancy and proven in service record
- Applicable in remote and harsh conditions
- Smart modular design for simple and cost effective servicing and repair
- Cost effective spare parts philosophy
- A wide range of options are available
- High quality non corrodible materials used throughout
- Friendly alarm system

SOLAR GENERATOR

Model No.: ESSE-SJ-1007

*CAN BE RECYCLING FOR MORE THAN **800** TIMES!*

Advantages:

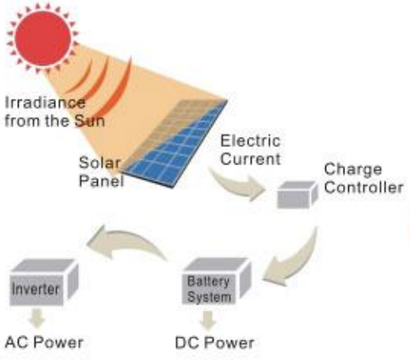
- Small size, light weight
- Recycle used, long lifespan
- Good discharge performance
- Secure and environmental friendly

SMALL SOLAR GENERATOR

Small Solar Generator Configuration Parameter Table (5W-50W)

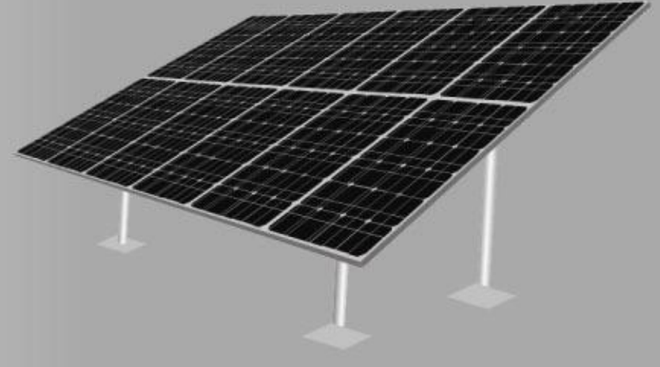
Model	Solar Panel	Battery	Controller	Charging time	Loads & Working time	
ESSE-L-0504	10V/5W	6V/4.5Ah Lead-acid	3A	6-7 hrs	3W LED*1	6-7 hrs
ESSE-L-0607	10V/6W	6V/7Ah Lead-acid	3A	8-9 hrs	3W LED*1	11-12 hrs
ESSE-F-0504	18V/5W	12V/4Ah Lead-acid	5A	11-12 hrs	3W LED*1	10-13 hrs
ESSE-F-1007	18V/10W	12V/7Ah Lead-acid	5A	10-11 hrs	3W LED*2	10-11 hrs
ESSE-F-1509	18V/15W	12V/9Ah Lead-acid	5A	8-9 hrs	10W Fan*1	8-9 hrs
ESSE-F-2012	18V/20W	12V/12Ah Lead-acid	5A	8-9 hrs	3W LED*1 10W Fan*1	8-9 hrs
ESSE-F-3017	18V/30W	12V/17Ah Lead-acid	5A	8-9 hrs	3W LED*1 10W Fan*1	11-13 hrs
ESSE-F-5024	18V/50W	12V/24Ah Lead-acid	5A	8-9 hrs	3W LED*1 10W Fan*1	15-18 hrs

HOME USE SOLAR GENERATOR



Solar Generator Configuration Parameter Table (50W-500W)

Model	Solar Panel	Lead-acid Battery	Controller	Inverter	Loads	Power / (W)	Qty	Working hrs/ (H)	Daily Power Consumption/ (WH)
ESSE-D-05026	18V / 50W	12V / 26Ah	12V / 5A	12V /150W	Fan	15	1	8	204
					Lamp	3	4	7	
ESSE-D-10055	18V / 100W	12V / 55Ah	12V / 5A	12V /300W	Fan	30	1	10	480
					Lamp	5	4	9	
ESSE-D-200100	18V / 200W	12V / 100Ah	12V / 7A	12V /600W	Fan	60	1	5	940
					Lamp	80	1	7	
					Laptop	2	5	8	
ESSE-D-300150	18V / 300W	12V / 150Ah	12V / 15A	12V /800W	Fan	60	1	10	1380
					Lamp	80	1	8	
					Laptop	3	5	8	
ESSE-D-400200	18V / 400W	12V / 200Ah	12V / 40A	12V /1000W	PC	200	1	5	1900
					Fan	60	1	5	
					TV	100	1	4	
					Lamp	5	5	8	



Products in Africa

HOME USE SOLAR GENERATOR

24-38AH

Electrical Parameters:

Solar Module Output:	18V; 80W-120W
Adapter Output:	15V 3A
DC Output:	12V 5A
USB Output:	5V 1A
AC Output Voltage:	220V±10%
Battery Voltage Capacity:	12V 24AH

55-65AH

Electrical Parameters:

Solar Module Output:	18V; 150W-200W
Adapter Output:	15V 5A
DC Output:	12V 5A
USB Output:	5V 1A
AC Output Voltage:	220V±10%
Battery Voltage Capacity:	12V 65AH

100AH

Electrical Parameters:

Solar Module Output:	18V; 250W-300W
Adapter Output:	15V 10A
DC Output:	12V 5A
USB Output:	5V 1A
AC Output Voltage:	220V±10%
Battery Voltage Capacity:	12V 100AH

CONTAINER HOUSE

These container homes are designed for workers dormitory, villa, apartment, small office, retail store and etc.

Advantages:

1. Reliable Structure

Light steel structure
Seal completely tightly
Noise insulation
Heat insulation
Good temperature preservation
Water proof
Fire proof.

2. Long Service Life

Long service life at least 20 years
Convenient transportation
Easy to install and disassemble
Environmental protection
Cost saving

3. Elegant Appearance

Elegant appearance with colorful coated decorates steel plate
Having the good external appearance
Coordinate color collocation
Kinds of sandwich panels

WALLPAPER

Advantages:

- Environmentally friendly
- Good air permeability
- Bright in color
- Flexible
- Not easy to break or fracture
- Excellent moisture resistance
- Has some function of sound-absorbing
- Design of three-dimensional
- Has concave-convex feeling with hand

SOLAR PUMPING FOR RO PLANTS

WORLD'S FIRST SYSTEM TO OPERATE RO PLANTS WITH SOLAR POWER

CEC-RO ECONOMY- EFFICIENCY

- Reduces AC power cost by 75%
- Reduces Solar PV power by 40% compared with conventional solar inverter
- Reduces systems cost by 40% (replaces solar inverter, conventional VFD, Pumps controllers).

CEC, A NEW GENERATION OF SOLAR PUMPING TECHNOLOGY

Operates RO Pumps from 5 to 600 GPM at 100 to 900 PSI
Lowers RO Operation Cost by 75%
Five Systems in One to Operate Pumps Efficiently
- Solar Inverter
- Solar VFD
- Pump Operation Controller
- Pump Protection Controller
- Pump Communication Controller

THE PUMPING TECHNOLOGY OF THE 21 CENTURY

ADVANCED NEW SOLAR TECHNOLOGY

New Class OF Solar Inverters operating Pumps in 3 Power Modes
The world's first battery-less, transformer-less solar inverter technology that operate OFF –Grid, On-Grid and Hybrid mode (Solar, and AC) to Prolong day time operation with any available solar power
New Solar VFD with Adaptive MPPT Technology
SOLAROPIA CEC employs new efficient MPPT technology (patent pending- Adaptive MPPT Solar VFD) that decreases solar PV power by 30% to operate pumps compared with existing solar inverters

BUILT-IN ADVANCED PUMPS PROTECTION FUNCTIONS

SOLAROPIA CEC implements advanced industrial heavy duty pump protection functions

Soft-start and Soft-shutdown Dry-Run Protection High Pressure Protection Pipe Leakage Protection	Soft-start and Soft-shutdown. Dry-Run Protection High Pressure Protection Pipe Breaks-leakage Protection	Short circuit –phase loss Protection GFIC protection from electrical leakage Emergency stop button Main turbulence protection

STANDARD INDUSTRIAL PUMPS VOLTAGES

CEC operates all 3Phase AC pumps at standard 200V, 400V, and 600V.
The required DC voltage in serial PV array is provided below for each pump voltage type.

CEC Feed AC Power Reference	Pump Voltage (3 phase)	Required DC voltage (Vmin-Voc) *	CEC MPPT Operating DC Voltage Range
1:1*200V 1 phase-AC 2:3*240V 3 phase-AC	200 V Class	250-400 V DC	185-400 V DC
3:1*400V 1 phase-AC 4:3*400V 3 phase-AC	400 V Class	550-800 V DC	350-800 V DC
6:3*600V 3 phase-AC	600 V Class	800-1200 V DC	500-1000 V DC

*Vmin: Minimum Voltage in Serial PV Array Voc: Maximum Voltage in Open circuit serial PV array

CEC MAIN BENEFITS

CEC offers unprecedented flexibility to operate RO plants
For municipal, commercial, industrial and irrigation applications with solar power.
- Pump Brand and Type independent
- All Pumps from 1 to 400 HP
- All Standard Pumps operation Voltages (200v, 400v, 600V)
- 3 Power operating modes: Solar, AC, and Hybrid (Solar and AC)
- Reduces RO plant Operation by 50%

OPERATE ALL PUMPS OF RO PLANTS

SPI OPERATES ALL BRANDS OF 3 PHASE AC PUMPS WITH SOLAR POWER
- ☐ RO Booster Pumps from 15 to 60 Bars
- ☐ Feed: Submersible and Surface Pumps Up to 400 HP

PUMPING POWER MODES

- Solar Mode: All day Long pumping is conducted with solar power (Off-Grid, Battery-less)
- Hybrid Mode: Combined Solar and AC to make use of any available solar power at any time
- AC Mode: Night time pumping

EASY TO OPERATE WITH BUILT-IN PLUG-N-PLAY TECHNOLOGY AND COM PROTOCOLS

Setting up and modifying pumps operating parameters never been so easy as with CEC, locally or remotely.

PUMPING OPERATION SUPPORT FUNCTION	Availability
Large Touch Screen to set up Pump operations: Power Modes, RPM, Timers, and data monitoring	Yes
Daily Auto start in Solar mode (No need to turn pump ON or OFF)-Auto switching between mode	Yes
Start-Stop- Boost Increase –Decrease Flow Rate (Manual-Event and Tim Set- Remote from PLC or SCADA	Yes
Built-in Meters for pumping performance (Q, RPM, KW) for local monitoring or distant transmission	Yes
Built-In Industrial Protocols to communicate with PLCs , and SCADA Systems (MODBUS, PROFINET)	Yes

CEC-RO MODELS FOR RO PUMPS

CEC is solar power optimized system- Its models are referenced below with PV power in KW, and it coincides with the operated pump HP.
For example: CEC-RO-15 will operate 15HP pump and it requires 15 KW PV array.

Q FLOW RATE		H: Total RO Pump Pressure (bar-psi)						
GPM	m3/h	7 bar 100psi	15 bar 200psi	20bar 300psi	30bar 450psi	40bar 600psi	50bar 750psi	60bar 900psi
5	1	CEC-RO-1.5	CEC-RO-3	CEC-RO-6	CEC-RO-9	CEC-RO-12	CEC-RO-15	CEC-RO-18
15	3	CEC-RO-3	CEC-RO-6	CEC-RO-9	CEC-RO-12	CEC-RO-15	CEC-RO-18	CEC-RO-24
20	5	CEC-RO-6	CEC-RO-9	CEC-RO-12	CEC-RO-15	CEC-RO-18	CEC-RO-24	CEC-RO-48
40	10	CEC-RO-9	CEC-RO-12	CEC-RO-15	CEC-RO-18	CEC-RO-24	CEC-RO-48	CEC-RO-75
60	15	CEC-RO-12	CEC-RO-15	CEC-RO-18	CEC-RO-24	CEC-RO-48	CEC-RO-75	CEC-RO-120
100	25	CEC-RO-15	CEC-RO-18	CEC-RO-24	CEC-RO-48	CEC-RO-75	CEC-RO-120	CEC-RO-150
200	50	CEC-RO-18	CEC-RO-36	CEC-RO-48	CEC-RO-75	CEC-RO-120	CEC-RO-150	CEC-RO-180
300	75	CEC-RO-36	CEC-RO-60	CEC-RO-75	CEC-RO-120	CEC-RO-150	CEC-RO-180	CEC-RO-210
400	100	CEC-RO-60	CEC-RO-90	CEC-RO-120	CEC-RO-150	CEC-RO-180	CEC-RO-210	CEC-RO-240
600	150	CEC-RO-90	CEC-RO-120	CEC-RO-150	CEC-RO-180	CEC-RO-210	CEC-RO-240	CEC-RO-300

CEC OFFERS TWO PACKAGES

CEC systems are offered in two solution packages:
PAC1: Package contains SPI only-Installers Supply Solar PVs and Mounts
PAC2: Package Contains SPI, PVs and Mounts- Ready to install system

RO SOLAR COMPACT PLANTS

WORLD'S FIRST RO PLANTS TOTALLY OPERATED BY SOLAR POWER

COMPACT SOLAR RO PLANTS UP TO 25,000 GALLONS (100M3) PER DAY FROM ANY SOURCE

IDEAL WATER SOLUTION FOR

- RURAL VILLAGES
- SCHOOLS
- COMPUNDS

S-ROX COMPACT RO SYSTEMS

CEC S-ROX SYSTEMS offer compact heavy duty industrial grade RO plants that operate totally with solar power. Models are available to supply portable water from 2,500 to 25,000 GPD (10,000 to 100,000 liters per day) from ground brackish wells and polluted saline surface water. The plants are offered as complete package ready-to-install and operate within few days. S-ROX is ideal for use in rural villages, schools, oil fields, and populated compounds. It is designed to operate in harsh environment.

MAIN FEATURES AND BENEFITS

- Models for various TDS ranging from 2500 to 10000 PPM
- Supplied with solar feed pumps from deep-wells' up to 1000' (300m), and solar surface pumps.
- Users Micro-Ultrafiltration pretreatment for surface salty water prior to RO processing
- Almost maintenance free-designed to operate in desert and rural villages operating conditions.
- Economic-expensive generator fuel cost, utility power cost, and reduces RO system operating cost by 95%.

ADVANCED SOLAR TECHNOLGY-THREE POWER MODES

S-ROX systems can operate with solar thanks to new CEC (Solar Inverter-VFD) technology capable of operating high-pressure RO and feed pumps directly from solar PV arrays.

- The world's first technology to operate RO plant pumps directly from PV array without grid power or battery banks.
- 40% more efficient than conventional solar technology (On or Off grid)
- Reduces solar power system cost by 50% making solar RO plants affordable and viable economic solution.

S-ROX can operate in three Power modes:

- Solar Mode: All day long water supply with solar (the world's first Off-grid, Battery-less solar power technology)
- Hybrid Mode: Combined Solar and AC (if available) to make use of any available solar power early or late of the day
- AC Mode: Night time operation to provide 24 hours services

Switching between these modes is automated or manual using the user friendly RO operating board.

RO PLANT FEATURES

- Embeds advanced Industrial RO (Pressure recovery, spiral membrane, and many other innovations)
- Easy to operate- all automated with touch screen user friendly operator council.
- Advanced protection technologies (over pressure, surge power, dry run, soft start, and many others functions).
- Supply water at 50 or less PPM
- Embeds advanced pretreatment technologies to prolong RO membranes service time with self-washable systems
- CAG sweetening and UV post treatment stage to supply absolutely bacteria free high-quality fresh water

COMPLETE PLANT IN ONE SYSTEM

All S-ROX Plants are supplied complete and ready to install-to-operate, as well as turn-key solutions. The system includes all plant parts in one package:

- RO Plant (Mobile or Skid mounted in coated containers heat dissipation systems)
- Solar Generator (PV, CEC SOLAR INVERTERS-VFD, GROUND MOUNTED RACKS, DC-AC CABLES, accessories)
- Feed Pumps (DEEP WELL PUMPS (S-ROW series) SURFACE PUMPS (S-ROS series))

SOLAR RO PLANT MODELS

S-ROX PLANTS are classified based on the TDS of the source water, the capacity per day and the feed pump required for the plant. The table below lists available RO plant models for specific application with required TDS and Capacity per day (CPD). The feed pump to the plants is provided in separate list.

Capacity Per Day (CPD)		TDS (PPM)			
Gallons	M^3/day	2500 PPM	5000 PPM	7500 PPM	10000 PPM
		"L-Series"	"M-Series"	"H-Series"	"V-Series"
2,500	10	S-ROX-1-L	S-ROX-1-M	S-ROX-1-H	S-ROX-1-V
7,500	30	S-ROX-3-L	S-ROX-3-M	S-ROX-3-H	S-ROX-3-V
12,500	50	S-ROX-5-L	S-ROX-5-M	S-ROX-5-H	S-ROX-5-V
25,000	100	S-ROX-10-L	S-ROX-10-M	S-ROX-10-H	S-ROX-10-V

DEEP WELLS SOLAR FEED PUMPS (CEC-W SERIES)

CEC-W series from CEC provides solar pumping systems for deep-wells UP TO 1000' (300M) to feed RO plants. The list below gives CEC-W models for given pumping head, and RO plant model with its intake flow rate.

RO Plant	Intake-Flow Rate (Q)		H:Total Pumping Head Foot(')-Meter (m)							
Model	GPM	m^3/h	30'-10m	75'-25m	150'-50m	250'-75m	350'-100m	500'-150m	700'-200m	1000'-300m
S-ROX-1	8	2	CEC-W-0.3	CEC-W-0.5	CEC-W-0.7	CEC-W-1	CEC-W-1.5	CEC-W-2	CEC-W-3	CEC-W-4.5
S-ROX-3	24	6	CEC-W-0.5	CEC-W-1	CEC-W-2	CEC-W-3	CEC-W-4	CEC-W-6	CEC-W-7.5	CEC-W-12
S-ROX-5	40	10	CEC-W-1	CEC-W-1.5	CEC-W-2.5	CEC-W-4.5	CEC-W-6	CEC-W-7.5	CEC-W-12	CEC-W-15
S-ROX-10	80	20	CEC-W-1.5	CEC-W-3	CEC-W-4.5	CEC-W-7.5	CEC-W-10.5	CEC-W-15	CEC-W-20	CEC-W-30

SURFACE SOLAR FEED PUMPS (CEC-S SERIES)

CEC-S series provides surface solar pumps to feed RO plants, and to distribute the water to destination. CEC-S models are listed below for given pumping pressure, and plant models.

RO Plant	Intake-Flow Rate (Q)		H:Total Pumping Head (bar-psi)				
Model	GPM	m^3/h	3bar-50psi	5bar-75psi	10bar-150psi	15bar-225psi	20bar-300psi
S-ROX-1	8	2	CEC-S-0.5	CEC-S-0.7	CEC-S-1.5	CEC-S-2	CEC-S-3
S-ROX-3	24	6	CEC-S-1	CEC-S-2	CEC-S-4	CEC-S-6	CEC-S-7.5
S-ROX-5	40	10	CEC-S-1.5	CEC-S-2.5	CEC-S-6	CEC-S-7.5	CEC-S-12
S-ROX-10	80	20	CEC-S-3	CEC-S-4.5	CEC-S-10.5	CEC-S-15	CEC-S-20

SOLAR RO PLANTS SYSTEMS REFERENCING

S-RO	X	C	T
	Plant Type: W, S;	Plant Capacity: 1,3,5,10	TDS Series: L,M,H,V

CEC, THE PUMPING TECHNOLOGY OF THE 21 CENTURY

New Solar Pumping Technology 40% more efficient than conventional solar pumps
Operate Pumps in 3 power modes
Five systems in one to facilitate Solar Pumping Applications at lower cost

- Solar Power Inverter
- Solar VFD
- Pump Operation Controller
- Pump Protection controller
- Pump Communication Controller

SOLAR AND AC PUMPING MODE

- Solar Mode: All day Long pumping is conducted with Solar power (No Grid – No Batteries)
- Hybrid Mode: Combined Solar and AC to make use of any available solar power early and late day-time
- AC Mode: Night time Pumping

STANDARD PUMPING SYSTEM OPERATING VOLTAGES

CEC operates all 3Phase AC pumps at standard 200V, 400V, and 600V.
The required DC voltage in serial PV array is provided below for each pump voltage type.

CEC Feed AC Power Reference	Pump Voltage (3 phase)	AC Voltage Range	Required DC voltage (Vmin-Voc) *	CEC MPPT Operating DC Voltage Range
1:1*200V 1 phase-AC 2:3*240V 3 phase-AC	200 V Class	200V-240V	250-400 V DC	185-400 V DC
3:1*400V 1 phase-AC 4:3*400V 3 phase-AC	400 V Class	380V-480V	550-800 V DC	350-800 V DC
6:3*600V 3 phase-AC	600 V Class	520V-640V	800-1200 V DC	500-1000 V DC

*Vmin: Minimum Voltage in Serial PV Array Voc: Maximum Voltage in Open circuit serial PV array

CEC MAIN BENEFITS

- Pump Brand and Type independent (No need to change existing pump to operate it with solar power)
- Operate All Pumps Types (Submersible, Surface or Booster for any Irrigation Applications)
- Operate Pumps from 1 to 400 HP (25 GPM TO 12000 GPM to irrigate 1 to 1200 Acres)
- Operate Pumps in 3 Power modes (Solar, AC , and Hybrid Solar-AC with 25% more solar pumping time)
- Standard Industrial Pumps Voltages (200v, 400v, 600V)
- 40% More Efficient than conventional Solar Pumps (pumps 40% more volume with the same solar PVs)

SOLAR IRRIGATION PUMPS

CEC FOR SOLAR SURFACE-BOOST PUMPING (CEC-S AND B SERIES)

CEC-S is a dedicated class for surface pumping from 25 to 12000 GPM.
CEC-S has kinds of models with different operating HP, the require PV power.

ADVANCE NEW SOLAR TECHNOLOGY

- The world's first 3 modes solar inverter technology that operate Off- Grid, On- Grid and Hybrid mode (Solar, and AC) that Prolongs solar pumping time by 20%).
- Employs new efficient MPPT technology (patent pending- Adaptive MPPT Solar VFD) that decreases solar PV power by 40% to operate pumps compared with conventional solar pumps and inverter.

CEC ECONOMY-EFFICIENCY

- Reduces AC power cost by 75%
- Reduces Solar System cost by 40% compared with conventional solar pumps and inverter
- Replaces Five systems IN-ONE (Save 50% of the Total Solar System Cost).

EASY TO OPERATE WITH BUILT-IN PLUG-N-PLAY TECHNOLOGY

Setting up pumps RPM, Power modes, and operating time never been so easy as with CEC. It embeds Built-in user friendly operations management for local and remote pumping applications

PUMPING OPERATION SUPPORT FUNCTION	Availability
Large Touch Screen to set up Pump operations: Power Modes, RPM, Timers, and data monitoring	Yes
Daily Auto start in Solar mode (No need to turn pump ON or OFF)-Auto switching between mode	Yes
Start-Stop- Boost Increase –Decrease Flow Rate (Manual-Event and Tim Set- Remote from PLC or SCADA	Yes
Built-in Meters for pumping data monitoring-displayed on large screen or distant transmission	
• Current flow rate pump RPM, daily pumped volume	Yes
• Current operating solar power (KW), accumulated solar power (KWh)	

BUILT-IN ADVANCE PUMP PROTECTION FUNCTIONS

CEC implements advanced industrial heavy duty pump protection functions

Soft-start and Soft-shutdown Dry-Run Protection High Pressure Protection Pipe Breaks-leakage Protection	Soft-start and Soft-shutdown. Dry-Run Protection High Pressure Protection Pipe Breaks-leakage Protection	Short circuit –phase loss Protection GFIC protection from electrical leakage Emergency stop button Main turbulence protection

CEC-W MODELS FOR DEEP WELLS PUMPING

CEC is solar power optimized system. CEC-W has kinds PV power and different operating pump HP for various flow rate and pumping heads. Feel free to contact us, you will find more details.

CEC COMPLETE SOLAR PUMPING SOLUTIONS

CEC offers complete ready-to-install solar pumping solutions in three packages

- PAC1: Package with CEC only (Installers supply PV and mounts).
- PAC2: Package to operate existing Pumps (PVs, Mounts and CEC system are included).
- PAC3: Package for New Pumping projects (PAC2 with new pump from partners)

PAC1	PAC2	PAC3
CEC system only-installers supply PV and mounts	CEC, solar PV with mounts, combiner box with DC and AC cables	PAC2 with new pump type (W, S, B) W: Submersible pump S: Surface pump B: Boost pump

OTHER PRODUCTS

TRANSFORMER

We have seven scientific research and production base provide us diverse transformers.
We can provide you:

- Resin insulation dry type transformer series
- Dry type transformer series with enveloped windings
- Oil-immersed transformer series
- Pad-mounted transformer series
- Cubical substation series
- Oil-immersed transformer series with amorphous alloy core
- Mining flameproof movable substation

LED BULB

We think of the sun as the ultimate light source, but it has limitations. The sun can not illuminate a dark tunnel, even on the brightest day. It can not light up a billboard to catch our attention as we drive past. For years, we've been doing what the sun can't. Our LED lighting products are used indoors and outdoors, by clients worldwide.

Let us work together, we can do more than the sun.

VALVES

We provide various types of valves which are mainly used in oil pipelines, gas pipelines, oil refinery projects, power plants and etc.

- Gate valve
- Ball valve
- Check valve
- Butterfly valve
- Globe valve

TURN-KEY PROJECT

We are able to provide our ideas and projects with our professionalism to customize your requests.-

We are willing to correct and refine our projects to meet your advise.-

We are sure that we can achieve a win-win progress eventually.-