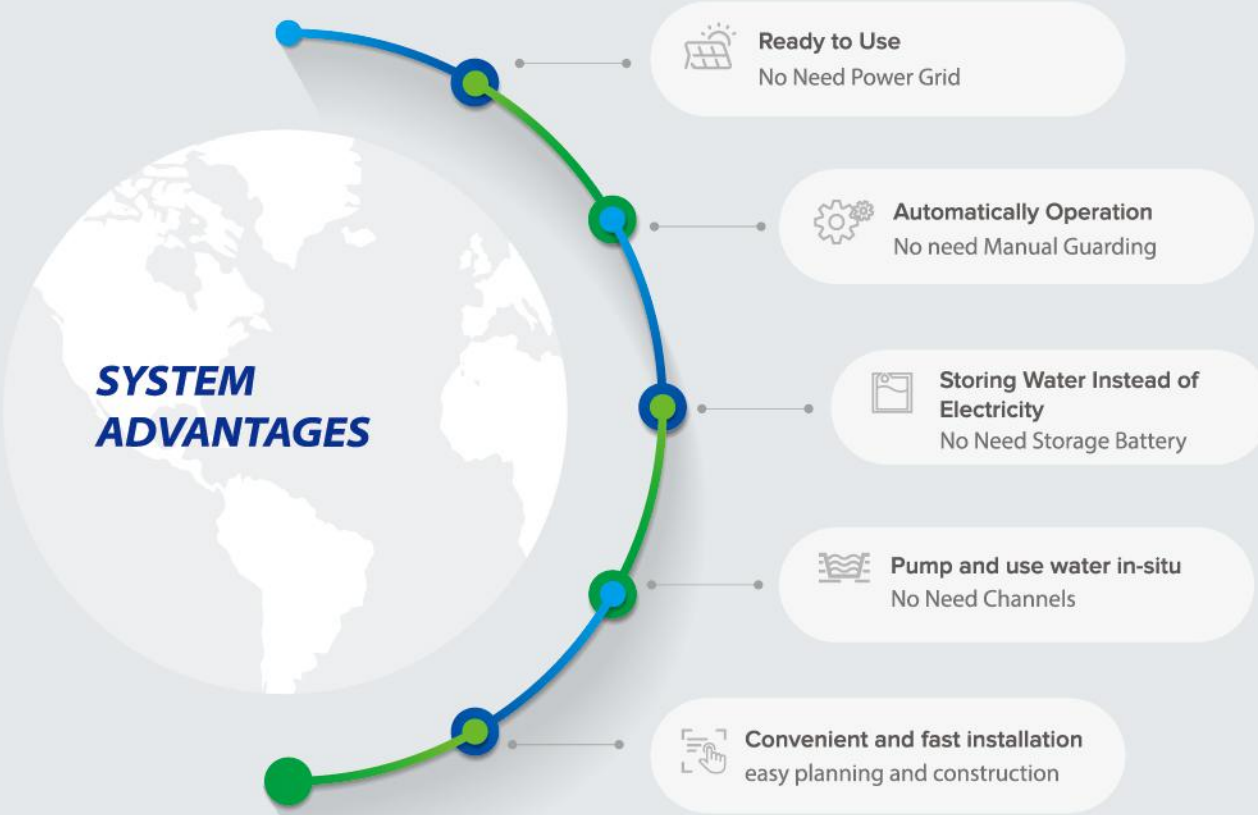# Solartech Solar Pumping System

Solar water conservancy solutions for living water supply, agriculture & forest irrigation, pasture animal husbandry, desert control, seawater and brackish water desalination and ecological waterscape.

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SOLAR PUMPING SYSTEM

Solartech solar pumping system, using the infinite energy from the sun, provides a renewable energy solution based on cost-effectiveness advantages. It can be quickly constructed, without power infrastructure and energy storage battery device. The system operates automatically and intelligently, reducing the cost of manual management and maintenance.

Solar Energy

Solar Array

Solar Pumping Inverter

Water Pump

SYSTEM ADVANTAGES

Ready to Use
No Need Power Grid

Automatically Operation
No need Manual Guarding

Storing Water Instead of Electricity
No Need Storage Battery

Pump and use water in-situ
No Need Channels

Convenient and fast installation
easy planning and construction

SYSTEM BENEFIT

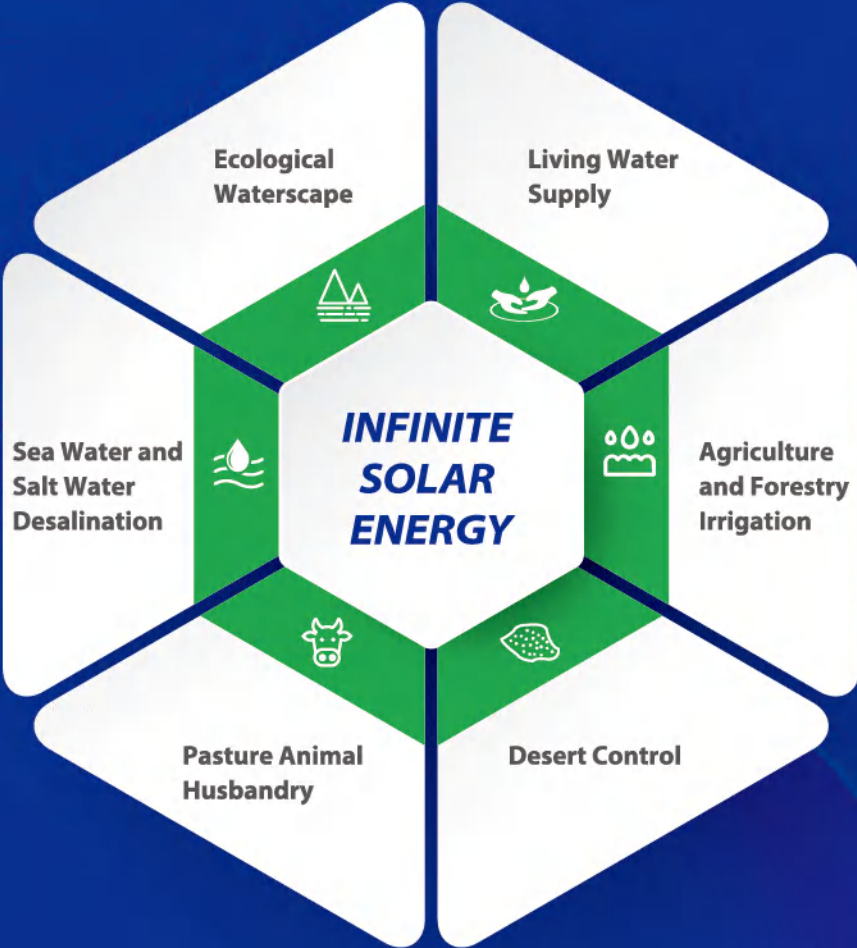| Solar Pumping System	Diesel Generation Pumping System	Power Grid Construction
Acquisition Costs	Acquisition Costs	Acquisition Costs
Maintenance costs	Maintenance costs	Maintenance costs
Solar Energy is free	Fuel Costs	Electric Bill

Compared with the diesel generation pumping system

More labor and maintenance costs are saved on solar pumping system. Based on the 25 years service life, the cost of purchasing solar pumping system equipment is equal to the investment and operation cost of diesel generation pumping system within about 2 years operation period. What is more, solar pumping system has no follow-up fuel costs. As the conversion efficiency of solar module increases and diesel prices rise, the unit cost flat period will be shortened.

Compared with the power grid construction

The power grid construction investment and long-term operation and maintenance costs of remote areas are much higher than that of solar pumping system. There is no need to pay electricity bill for solar pumping system.

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SOLAR PUMPING SYSTEM SOLUTIONS

INFINITE SOLAR ENERGY

- Ecological Waterscape
- Living Water Supply
- Sea Water and Salt Water Desalination
- Agriculture and Forestry Irrigation
- Pasture Animal Husbandry
- Desert Control

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SOLAR PUMPING SYSTEM

AC SOLAR PUMPING SYSTEM

- Water head can reach 400 meters.
- Average daily water flow of a single system can reach 1400 cubic meters.
- Widely used in large-scale agricultural irrigation, desert control and village water supply, etc.

PERMANENT MAGNET SOLAR PUMPING SYSTEM

- Water head can reach 178 meters.
- Average daily water flow of a single system can reach 125 cubic meters.
- Suitable for small farm irrigation, domestic water supply, livestock drinking water supply and ecological waterscape, etc.

PERMANENT MAGNET SOLAR DIRECT DRIVE PUMPING SYSTEM

- The water head can reach 60 meters.
- Water pump with built-in inverter, solar panel connect to pump directly.
- Simple installation and operation, full stainless steel, long lifespan, suitable for small water requirement supply.

SYSTEM PRODUCT

SOLAR PUMP

AC Solar Pump Features:

- Submersible or surface pump depends on water source
- Automatically operation, remote monitor and control optional
- Easy installation and convenient parameter setting
- Comprehensive protection and high reliability

- Power Range: 0.37kW – 75kW
- Voltage Range: 3PH 220V / 380V
- Head Range: 10m - 400m
- Water Flow Range: 1,400m³/d – 10m³/d

SPM and SPMD Solar Pump

- Permanent magnet DC Brushless Motor
- Centrifugal pump or screw pump
- Bulit-in or external inverter optional
- Easy to install and use
- High efficiency, stable operation and long lifespan

- Power Range: 0.25kW – 1.5kW
- Voltage Range: 36V / 48V / 110V
- Head Range: 10m - 178m
- Water Flow Range: 125m³/d – 1m³/d

PB-G3: 0.75kW – 22kW

PB: 0.75kW – 75 kW

PM: 0.4kW – 1.8kW

PK: 0.75kW – 200kW

SOLAR PUMPING INVERTER

- Support soft start of water pump, complete motor protection
- Allow multiple solar array strings input at the same time with anti-reverse circuit
- Intelligent identification of input voltage range, stable operation without manual adjustment of open circuit voltage and other parameters
- Self-provided or optional equipped with solar control box to support hybrid with grid power and diesel power input to meet 24-hour operation
- With DM data monitor equipped, GPRS remote monitoring and Bluetooth near-field monitoring can be realized
- Technical specification: 0.75-200kW, support 2.2kW and lower power single-phase motor application

SOLAR ARRAY

Solar Panel

- Poly or Mono material optional
- 25 years lifespan

Mounting Structure

- C type Steel, Aluminum or HDPE optional
- Provide installation drawings

SOLAR COMBINER BOX

- Both positive and negative poles are equipped with fuses
- Equipped with DC circuit breaker
- Equipped with lightning protection module
- Optional external anti- reverse diode
- Max. Input Strings: 4-24 Strings
- Max. Output Strings: 1/2/4 strings
- Fuse Current: 15A
- Protection Grade: IP65

SOLAR PUMPING SYSTEM ACCESSORIES

- Water Level Switch: used with inverter to prevent overflow and pump dry running
- Wireless Switch Module: used together with water level switch to realize wireless transmission of switch signal, transmission distance up to 2km
- PV Cable: special PV cable to meet the use environment of solar system
- Pump Cable: meet the requirement of pump power diameter configuration
- AC Output Reactor: when pump cable exceeds 200m, it is selected to maintain the system operation voltage stability

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HOW TO USE Solartech PRODUCTS

HOW TO ENSURE STABLE OPERATION AND PROLONG SERVICE LIFE OF SOLAR PUMPING SYSTEM?

Solartech MPPT multi criteria method which with the patent algorithm of dynamic VI maximum power point tracking (MPPT) can help you.

Solartech MPPT multi criteria method is a patent algorithm of dynamic VI maximum power point tracking, which has fast response speed and good operation stability. It can make full use of solar energy to solve the problem of poor tracking effect and unstable operation of the traditional MPPT method when the sunlight intensity changes rapidly, even causing water hammer danger, and prolonging the service life of the system.

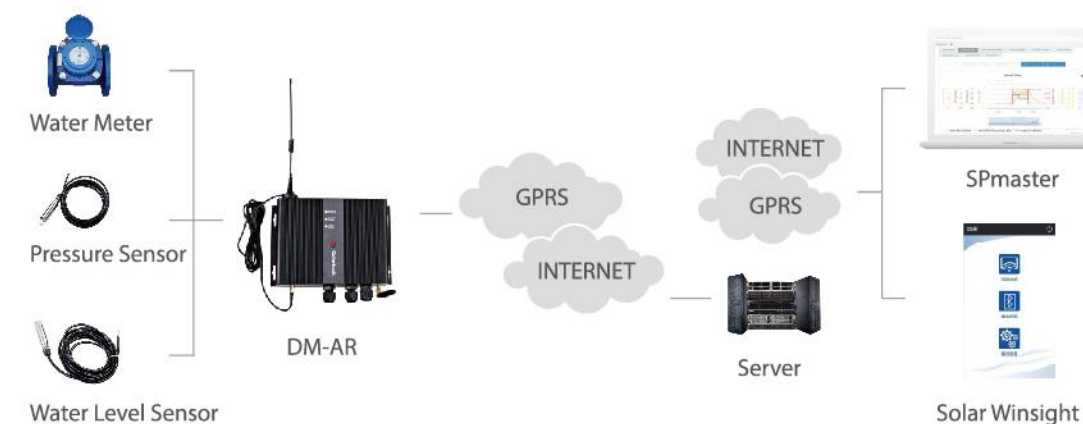| Fast startup speed	Long running time	Stable photoelectric conversion	Avoid water hammer	Prolong water pump service lifespan

IS IT DIFFICULT TO MANAGE AND MAINTAIN THE SOLAR PUMPING SYSTEM BECAUSE OF ITS LONG INSTALLATION DISTANCE OR LARGE NUMBER?

Solartech Solar Winsight / solar SPmaster remote monitoring system can help you.

Water Meter

Pressure Sensor

Water Level Sensor

DM-AR

GPRS

INTERNET

INTERNET

GPRS

Server

SPmaster

Solar Winsight

Combined with Solar Winsight (APP) and SPmaster (solar pumping system user management system), users can achieve the following operations:

Monitoring the operation status of solar pumping system, including inverter operation parameters and operation status of water delivery system	Monitor the operation status of DM equipment	Record the historical operation data of solar pumping system, conduct statistics and analysis, and read them at any time
Remote setting of system control parameters to enable or disable various functions	Remote control of inverter operation mode and parameter modification	Operation record of monitoring system and fault history of inverters

DO SOLAR PUMPING SYSTEMS NEED TO OPERATE FOR LONGER TIME OR 24 HOURS WITHOUT SUNLIGHT?

Solartech solar pumping system hybrid solutions can help you.

Solartech solar pumping system can support or realize hybrid power complementary power supply, use solar power system, and configure power grid, wind power, diesel generator and battery for hybrid use, providing 24-hour operation guarantee.

Series	PB-G2A / PB-G3	PB/PM/PK
Function	Inverter can support grid power or diesel generation power supply	Optional selection of solar pumping control box to support hybrid power complementary supply

HOW TO ACHIEVE MORE ENERGY-SAVING FOR HYBRID SOLUTION OF SOLAR PUMPING SYSTEM?

Solartech's technology and products of "Soalr Priority, with Grid Complementary" can help you

Solar Priority, with Grid Complementary: when solar power system and AC power supply (grid or diesel generator) are available at the same time, under the condition of ensuring the normal operation of solar pumping system, the priority is given to the maximum utility of solar power system, and the AC power supply is automatically shielded or connected.

SOLAR PRIORITY WITH GRID COMPLEMENTARY

HOW TO SAVE ENERGY AND SYSTEM COST WHEN MULTIPLE PUMPS WORK AT THE SAME TIME?

Solartech solar pumping system - multi-linkage system solution can help you.

Solartech solar pumping system - multi-linkage system is powered by a unified solar array, and multiple sets of solar pumps operate in parallel. The system adopts Solartech patented algorithm to adjust the energy distribution according to the change of solar radiation intensity, so as to ensure that the pump works at the best efficiency point. Compared with the single set of solar pumping system, the effective utilization rate of solar energy can be increased by 10% ~ 15%, at the same time, the system reliability can be improved, and the transportation / installation / maintenance cost can be reduced. It is especially suitable for big-power and high water head pumping system.

DO NOT KNOW HOW TO DESIGN AND CONFIGURATION OF SOLARTECH SOLAR PUMPING SYSTEM?

Solartech SP manager selection software can help you.

SP Manager Software is user software based on the Windows operating system developed by Solartech for the Solartech Solar Pumping System product selection and configuration.

Automatically calculation and selection.	Output system design	Provide product data sheet	Customized company information	
Save manpower investment cost	Quickly provide configuration options	The design scheme is scientific and rigorous	Project parameter input is flexible	The selection results provided by design scheme are comprehensive

PROJECT QUESTIONNAIRE

Contact Information

Company Name : _____ Contact Name : _____ Tel : _____

Website : _____ E-mail : _____ Address : _____

Project Information

Country : _____ City : _____ Latitude & Longitude : _____ Altitude : _____ m

Water Source ☐ Borehole (Diameter: _____)mm ☐ Lake, river, reservoir, dam Average daily water demand : _____ m³

H1(ift from lowest water level to ground) : _____ m

H2 (tank height and extra lift if any) : _____ m TDH (total dynamic head) = _____ m

L (pipeline length from pump outlet) : _____ m

Inner diameter of the pipe (if any) : _____ mm

Other Requirements

☐ Back-up AC power supply (diesel/grid)   ☐ PV cable : _____ m

☐ Pump cable : _____ m ☐ Solar bracket (free blueprint can be provided if you purchase solar panels from Solartech

Upgrade Existing 3 phase AC Pump (if any) to Solar Energy

Motor power : _____ kw   Motor Voltage : _____ v   Max. Lit : _____ m

TDH of project : _____ m

Please tell us the pump model with performance chart at dffrent heads, our Technology Engineering Center will study and provide you a suitable solar pumping system solution accordingly.

SOLAR WATER CONSERVANCY SYSTEM SOLUTIONS

Solar Pumping Inverter

Core of the system, adjusts the output frequency and sunlight radiation synchronous conversion to achieve maximum power point tracking and maximum water consumption.

Hybrid Power

Hybrid power supply technology, using solar power generation, mixed use of power grid, wind power, generator, and energy storage battery to provide 24-hour operation guarantee.

Solar Array

The solar array is the main power source of the solar pumping system. Inverter controls the solar array to convert solar energy into electrical energy.

living Water

Water Tower

Water Saving Irrigation

Smart Water Meter

Waterpressure Sensor

Date Monitor

Solar Combiner Box

Solar Pumping Inverter

Solar Array

Solar Array on Water

Reservoir

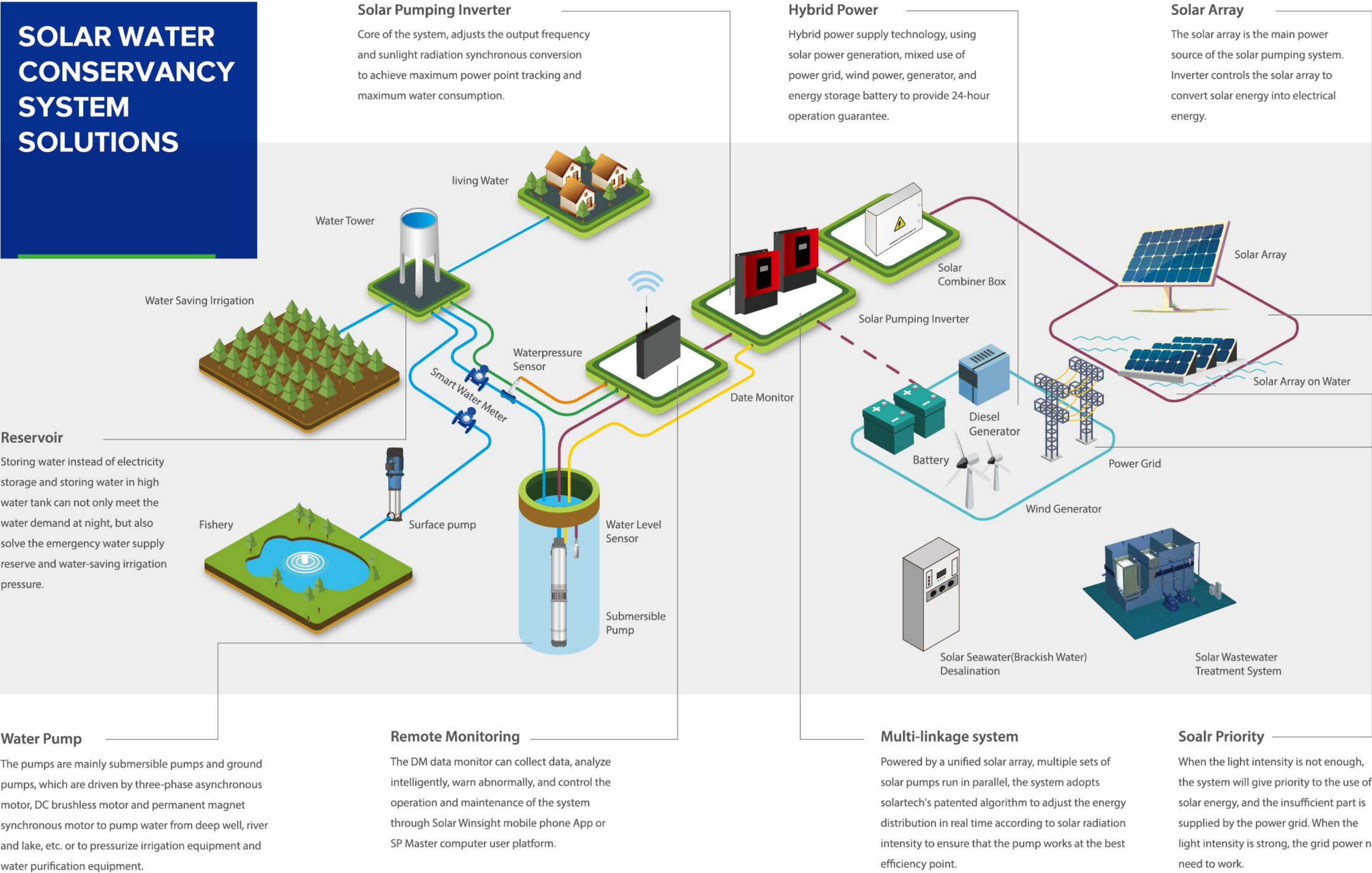Storing water instead of electricity storage and storing water in high water tank can not only meet the water demand at night, but also solve the emergency water supply reserve and water-saving irrigation pressure.

Fishery

Surface pump

Water Level Sensor

Submersible Pump

Battery

Diesel Generator

Power Grid

Wind Generator

Solar Seawater(Brackish Water) Desalination

Solar Wastewater Treatment System

Water Pump

The pumps are mainly submersible pumps and ground pumps, which are driven by three-phase asynchronous motor, DC brushless motor and permanent magnet synchronous motor to pump water from deep well, river and lake, etc. or to pressurize irrigation equipment and water purification equipment.

Remote Monitoring

The DM data monitor can collect data, analyze intelligently, warn abnormally, and control the operation and maintenance of the system through Solar Winsight mobile phone App or SP Master computer user platform.

Multi-linkage system

Powered by a unified solar array, multiple sets of solar pumps run in parallel, the system adopts solartech's patented algorithm to adjust the energy distribution in real time according to solar radiation intensity to ensure that the pump works at the best efficiency point.

Soalr Priority

When the light intensity is not enough, the system will give priority to the use of solar energy, and the insufficient part is supplied by the power grid. When the light intensity is strong, the grid power no need to work.

ABOUT SOLARTECH

SOLARTECH INTRODUCTION

Shenzhen Solartech Renewable Energy Co., Ltd is the world's leading solar pumping system professional manufacturer as well as the global solar water conservancy system technology solution provider.
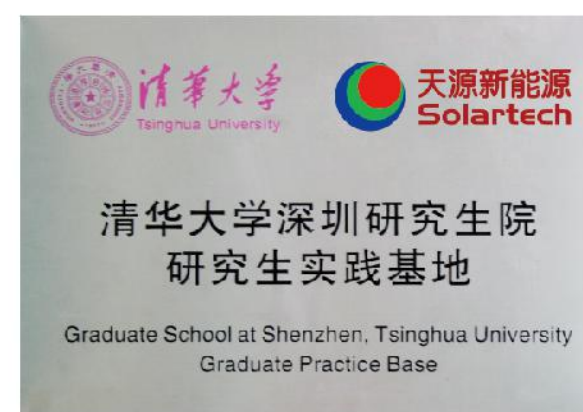
Solartech solar pumping technology was founded in 2001. The research and demonstration base is located in Tsinghua Shenzhen International Graduate School. It is mainly composed of academicians, professors and other industry experts and researchers from Tsinghua University. It has a perfect research and development platform, advanced control theory and important intellectual property rights. The series of products are applied in more than 130 countries and regions for living water supply, water-saving irrigation, seawater (brackish water) desalination and grassland animal husbandry, desert control and other fields.

The patented solar pumping technology which originally developed by Solartech can directly convert solar energy into photovoltaic power to drive pumps and no need power grid or energy storage batteries. It is ready for use during the day and can store water instead of electricity at night. Solartech solar pumping system technology was listed in the China Key Promotion Guidance Catalog of Advanced Water Conservancy Technologies by the Ministry of Water Resources in 2011, awarded the United Nations Global Human Settlements Model of Green Technology in 2014 and the Final List of Global Leap Awards in 2019.

The solar water conservancy industry technology initiated and advocated by Solartech has developed a new energy innovation application solution based on cost and benefit for the global living water supply, agricultural and forestry irrigation, animal husbandry and security of human settlements. For the transformation of renewable energy, it initiated the functional transformation and industrial upgrading scheme from urban development to rural development, agricultural development and ecological restoration.

RESEARCH CENTER

Solartech solar pumping technology research center is located in Shenzhen University Town, led by Academician Lu Qiang and Professor Xu Zheng of Tsinghua University. It is jointly established by State Key Laboratory of Power System of Tsinghua Shenzhen International Graduate School and Shenzhen Solartech Renewable Energy Co., Ltd.

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The first solar pumping system research and demonstration base in the world

SOLAR PUMPING SYSTEM RESEARCH AND DEVELOPMENT PLATFORM

it has multiple sets of variable head test systems and solar arrays, which are used to study efficient MPPT algorithm, evaluate solar pumping inverter performance, test system operation characteristics and optimize system configuration.

SOLAR APPLICATION DEMONSTRATION PLATFORM

solar fountain, solar landscape lighting, solar advertising light box, etc., which are used to test the newly developed inverters, test the long-term operation characteristics and evaluate its benefits.

SOLAR SEAWATER / BRACKISH WATER DESALINATION EXPERIMENTAL SYSTEM

measure and compare the desalination effect and energy consumption of reverse osmosis systems and nanofiltration systems, and develop automatic intelligent control system and optimize system configuration.

ON-GRID AND OFF-GRID RESEARCH AND DEMONSTRATION BASE

1,000m2 solar car parking lot, using amorphous silicon thin film solar panels, grid connected power generation, which is used for landscape lighting and electric vehicle charging;

solar tree, using polycrystalline silicon solar panels, grid connected power generation to provide power for landscape lighting and fountains.

MICROGRID DEMONSTRATION BASE

operation test and data acquisition of 10 different types of solar panels.

The solar power, wind power, grid power and energy storage system will be networked for operation and control.

SOLAR AND WATER,
A BETER FUTURE

Solartech®

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