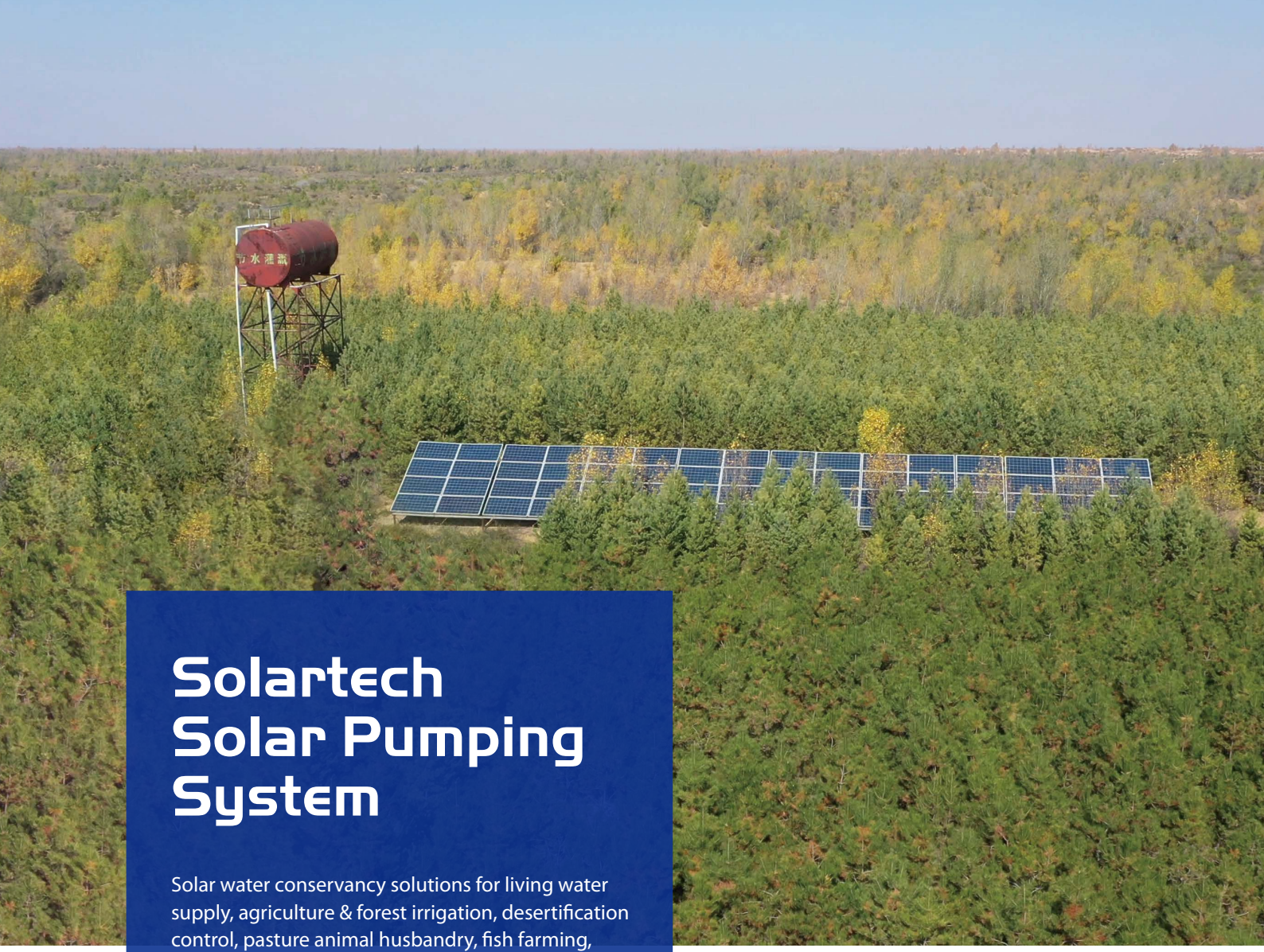


Solartech Solar Pumping System

Solar water conservancy solutions for living water supply, agriculture & forest irrigation, desertification control, pasture animal husbandry, fish farming, land consolidation, seawater and brackish water desalination.



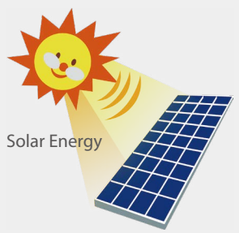
Shenzhen Solartech Renewable Energy Co., Ltd.

Solartech®



SOLAR PUMPING SYSTEM

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



Solar Array



Solar Pumping Inverter



Water Pump

- Generate and 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

SOLAR WATER CONSERVANCY



- Living Water Supply
- Agriculture and Forestry Irrigation
- Desertification Control
- Pasture Animal Husbandry
- Fish Farming
- Water Treatment

SOLAR WATER ECOLOGY

Utilize the green and low-carbon advantages of solar pumping technology, optimize the combination with other energy sources, achieve solar priority and hybrid power, and apply it to the entire cycle system of water ecology, including water resource development and utilization, water conservancy engineering construction and operation, water monitoring and protection, hydrophilic environment creation, water quality modification supply, sewage purification treatment, etc.





AC SOLAR PUMPING SYSTEM

Solartech AC solar pumping system is used for reclaiming abandoned mining land to farmland in Linyi, Shandong, China



PM SOLAR PUMPING SYSTEM

Solartech PM solar pumping system is used to help herders in raising livestock in Brazil



SYSTEM FEATURES

Suitable for large-scale agricultural irrigation, village water supply and desertification control. It can provide renewable energy application solutions for countries around the world, especially developing countries, to address challenges such as energy and electricity shortages, water access and supply issues, food crises and land desertification.

- Water head can reach 1,000 m and average daily water flow of a single system can reach 10,000 m^3.
- Fully automatic operation, easy to install and maintain.
- Energy saving and eco-friendly.
- Optional remote monitoring system.
- Support hybrid grid power input but solar priority and residual power to the grid or storage.
- Support fuel generator with self starting or stop function as backup.



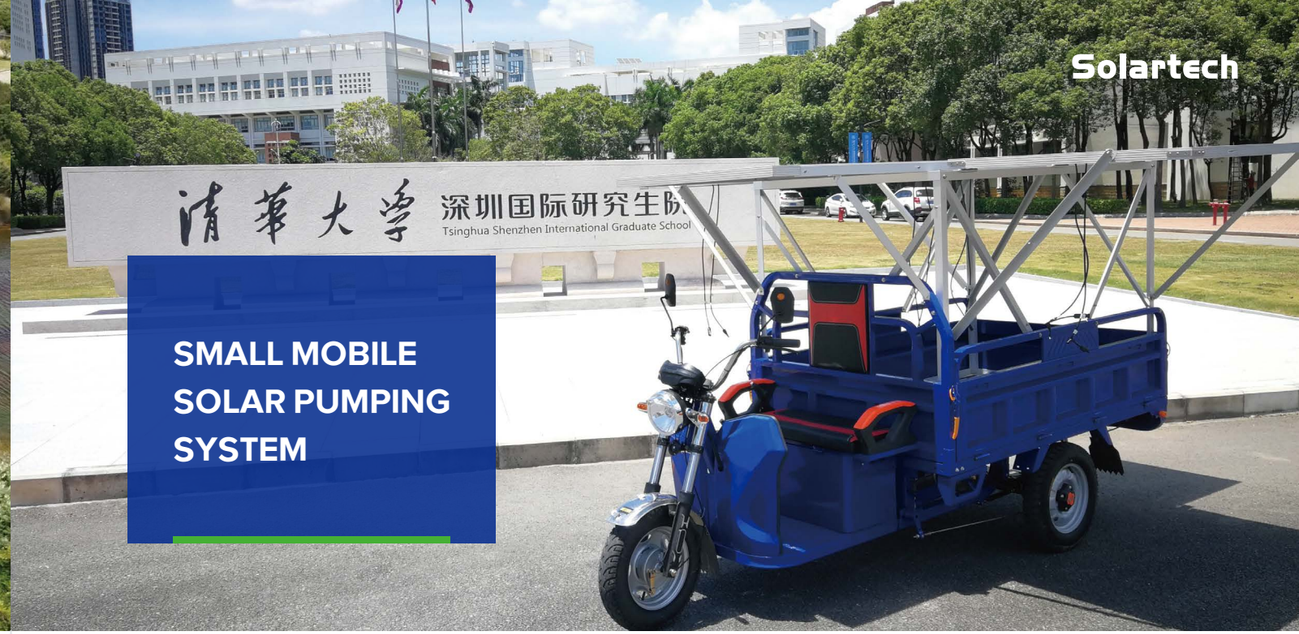
SYSTEM FEATURES

Suitable for small farm irrigation, household water supply, livestock drinking water, and other fields. It can provide cost-effective water supply solutions for the domestic use, agricultural irrigation and livestock farming of farmers and herdsmen in off-grid and power deficient areas, helping to reduce and alleviate poverty in rural areas, improve living environments and maintain community stability.

- Water head can reach 158 m and average daily water flow of a single system can reach 1,000 m^3.
- Comprehensive protection and high reliability.
- Convenient installation without the need for manual parameter settings.
- Equipped with high-efficiency permanent magnet water pump, saving solar panels configuration.
- Support access to battery power supply.
- Optional remote monitoring system.
- Support for implementing PayGo solutions.



SOLAR ENCAPSULATED MOTOR DEEP-WELL SUBMERSIBLE PUMPING SYSTEM



SMALL MOBILE SOLAR PUMPING SYSTEM



SYSTEM FEATURES

It is applicable to agricultural irrigation, livestock breeding, water supply for remote areas, landscape greening, industrial and mining water supply. It delivers clean and reliable water supply solutions for off-grid or power-unstable regions, facilitating ecological conservation and rural revitalization.

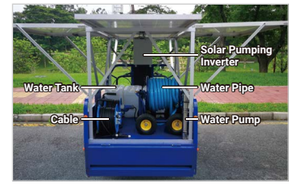
- System power range: 0.37kW ~ 22kW, maximum water head up to 300m, maximum flow rate 160 m^3/h.
- Adopts encapsulated motor deep-well submersible pump without mechanical seal and lubricant pollution, eliminating water contamination risks. Water-cooled heat dissipation extends motor service life, with few vulnerable core parts and low maintenance demand.
- Dedicated solar pumping inverter with 99% MPPT efficiency. Soft-start protection reduces inrush current, supporting automatic operation (dry-run protection, full water level shutdown).
- Compatible with solar, grid, diesel generator and energy storage systems. Solar power priority enables flexible multi-energy combination and intelligent switching.
- Built-in Bluetooth for local commissioning; optional WiFi/4G remote monitoring module to realize cloud data management and remote equipment maintenance.
- Solar panels adopt TOPCon technology platform with high conversion efficiency, excellent salt spray & dust resistance and low power attenuation, adapting to harsh high-temperature and dusty environments.
- Optional Flow Sleeves optimizes motor heat dissipation and further reduces overheating shutdown risks.



Range: 60km



Working Status



Equipment Layout

SYSTEM FEATURES

Suitable for water demands of scattered residents in remote areas, emergency water supply and mobile water supply in off-grid zones. It provides flexible water supply in power-shortage regions to meet domestic basic water needs and emergency agricultural irrigation requirements.

- System power: 0.6kW, water head range 5～50m, flow rate 18～12 m^3/h (flow decreases as head rises).
- Three operation modes available: solar priority, solar charging, PV-storage hybrid driving (power for electric vehicles during transit).
- It can directly drive pumps or charge storage batteries to realize PV-storage integration and boost energy utilization flexibility.
- Mobile trailer design with self-driving capability (approx. 60km driving range), enabling fast transfer and deployment across different operation sites.
- Equipped with dedicated controller and supporting devices, featuring compact structure and tidy cabin layout for easy operation and maintenance.

System Name	Solar Pump Model	Power (kW)	Water Head	Water Flow
Mobile Solar Pumping System	MSPM3600S	0.6	5 - 50 m	18 - 12 m^3

SOLAR PUMPING INVERTER



PB-HG4 (IP66, 3.7kW ~ 7.5kW)



PB-HG4 (IP66, 11kW ~ 18.5kW)



PB-G3 (IP65, 3.7kW ~ 45kW)



PB-G4 (IP65, 0.75kW ~ 4kW)

Solar Priority
Maximize solar energy utilization and prioritize water supply demands

Multi-Energy Complementary
Supports seamless switching between grid / diesel generators to ensure 24*7 water supply

Storage of Residual Power
Surplus electricity can be used for lighting, household appliances and other loads

Multi-Pump Linkage System
Supports coordinated operation of multiple pumps to meet high-flow demands

Installment Encryption
Supports installment payment mode to lower customers upfront investment cost

Remote Monitoring System
Real-time system status monitoring via mobile phones & computers with automatic fault alarms



PK-P (IP55, 1.5kW ~ 200kW)



PK (IP20, 0.75kW ~ 630kW)
PK-C (IP20/IP54, 0.75kW ~ 500kW)



PM-S (IP65, 0.2kW ~ 1.5kW)



PM-S-AD (IP65, 0.6kW ~ 4kW)

AC SOLAR PUMPING INVERTER

- Fully automatic operation without manual setup.
- Support soft start of pump. Full motor protections. Optional water level switch to protect overflow and dry running.
- Patented dynamic VI maximum power tracking (MPPT) algorithm, with fast response and good stability. MPPT efficiency reaches 99%.
- Support complement with grid power or fuel generator power input to meet 24-hour operation.
- Support realizing advanced system functions : hybrid AC power with solar priority, multi-pump linkage, fuel generator self-starting, residual power to the grid or storage.
- Built-in monitoring module or equipped with DM data monitor to access to remote monitoring function.
- PB-G4 Series with built-in DC circuit breaker and fuse, integrated design saves system costs and simplify wiring.
- PB-G4 Series with one key to enable the power saving mode (CRUISE).
- Power range: 0.75kW - 630kW.

PERMANENT MAGNET SOLAR PUMPING INVERTER

- High efficiency semiconductor device used in main circuit. High reliability. Up to 98% conversion efficiency of inverter.
- Dynamic VI maximum power point tracking (MPPT) algorithm. Fast response and good stability. 99% MPPT efficiency.
- Full automatically operation. Complete motor protection. Integrated with water level monitor to prevent overflow and dry running.
- Supports PV input anti-reverse connection, short-circuit, over-current, over-voltage and under-voltage protection.
- PM-S-AD series support complementary grid or fuel generator power input to meet 24-hour operation.
- PM-S-AD Series with one key to enable the power saving mode (CRUISE).
- PM-S-AD Series with built-in DC circuit breaker and fuse, integrated design saves system costs and simplify wiring.
- Full aluminum alloy case. IP65 protection grade, suitable for various harsh outdoor environments.
- Power range: 0.2kW - 4kW.

WATER PUMP / SOLAR PANELS / SOLAR BRACKETS / SOLAR COMBINER BOX / SYSTEM ACCESSORIES

AC WATER PUMP

- AC asynchronous motor.
- Submersible pumps or surface pumps can be selected for different water sources.
- Suitable for solar power supply, stable operation.
- Strict selection of specifications and parameters, reliable performance.
- Optional canned pump for longer service life & higher durability.
- Power range: 0.37 - 200kW.
- Voltage range: 3PH 220V/380V.
- Head range: 10 - 1000m.
- Flow range: 10 - 10000m^3/day.



AC Water Pump

PERMANENT MAGNET WATER PUMP

- Permanent magnet motor
- Centrifugal pump for large flow rates; Helical rotor pump for high lifts.
- High working efficiency, stable operation and long service life
- Easy to install and use
- Power range: 200 - 4000W
- Voltage range: 24V / 48V / 72V / 110V / 220V /380V
- Head range: 8 - 158m
- Flow range: 5 - 1000m^3/day



Permanent Magnet Water Pump

SOLAR PANELS

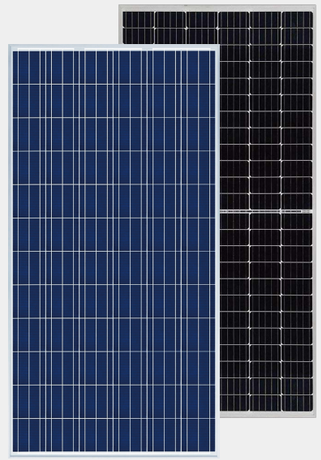
- Monocrystalline or polycrystalline panels are optional.
- Service life of more than 25 years.

SOLAR BRACKET

- A variety of materials are available, such as C-shaped steel, aluminum profiles, HDPE, etc.
- Provide installation drawings, easy and convenient to build.



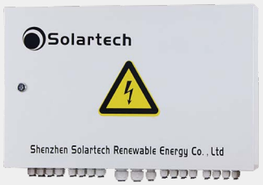
Solar Bracket



Solar Panels

SOLAR COMBINER BOX

- The positive and negative poles of the solar array are equipped with fuses.
- Equipped with solar special DC circuit breaker.
- Equipped with solar special lightning protection module.
- Optional external anti-reverse diode.
- Maximum number of input strings: 4-24 strings.
- Maximum number of output strings: 1/2/4 strings.
- Fuse current: 20A/25A.
- Protection level: IP65.



Solar Combiner Box

SYSTEM ACCESSORIES

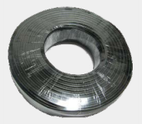
- Water level switch: conjunction with the inverter to prevent overflow and dry running.
- Wireless switch module: conjunction with water level switch to achieve wireless transmission up to 2km, reduce inverter damage caused by inductive lightning strikes caused by long-distance cables.
- PV cable: Special PV cable for solar system.
- AC cable: meets transmission requirements for power and distance.
- AC output reactor: maintains stable system operation when the AC cable exceeds 200m.



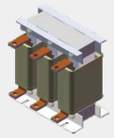
Water Level Switch



Wireless Switch Module



Cable



AC Output Reactor



SOLAR WATER CONSERVANCY

SOLAR LIVING WATER SUPPLY

Solartech solar pumping systems cover the power range of 0.2kW to 200kW which can not only meet lower head and lower flow requirements, but also support various water demand with high head and high flow, providing the perfect cost-effective solution and application product for domestic water and livestock drinking water in remote areas.



SOLAR WATER-SAVING IRRIGATION

Solartech solar pumping system used in conjunction with drip, sprinkler and center pivot irrigation equipment, which not only solves the problem of water shortage irrigation in off-grid or power shortage areas, but also realizes the comprehensive benefits of water saving, energy saving, yield increasing and environmental protection. The solar water conservancy industry solutions initiated and advocated by Solartech, leading the global solar industry to promote the development of renewable energy application in agriculture and water conservancy sector, and help solve the problem of global food security.







SOLAR LAND CONSOLIDATION

Solar water conservancy helps high-standard farmland construction, mining area ecological recovery and other land consolidation projects, provides free long-term irrigation guarantee for the operation and maintenance of arable land, solves the farmers' worries about farming, and improves the economy and sustainability of the project.



JINSHA RIVER SOLAR WATER CONSERVANCY

In 2026, the Yubu Village Water Source Project in Lvshui Town, Jinsha River adopted Solartech's PK400KH-3 multi-pump PV-grid complementary 3-stage pumping system (1.7MW PV, 1000m head, 5.3km pipe, 270m^3/h flow, >1.2M m^3/yr, 40,000m^3 storage), solving irrigation for 10,000 mu of farmland and daily water for 1,600+ residents.









HIGHWAY SHELTERBELT

In 2001, the world's first solar water-saving irrigation system was built, using the Solartech 9.2kW solar drip irrigation system to plant drought-endurable plants. Several years later, it has formed a highway shelter belt to prevent the spread of desertification, and improve the surrounding ecological environment.


2001 Project Finished


2004 Project In-site Picture


2023 Project View

DESERTIFICATION CONTROL

From 2009, Niu Yuqin, a well-know National Model Worker in China, started to apply the technology and equipment of solar pumping system which provided by Solartech in her sand-control and afforestation base. In this base, at beginning, one set of 3kW solar pumping system was successfully installed which can supply around 85m^3 water daily flow and equipped with water-saving and water-fertilizer integration technology to meet the irrigation water demand of 17 acre watermelon. Afterwards, she and her family continued to use Solartech solar pumping systems to do desertification control project in the Mu Us Desert.





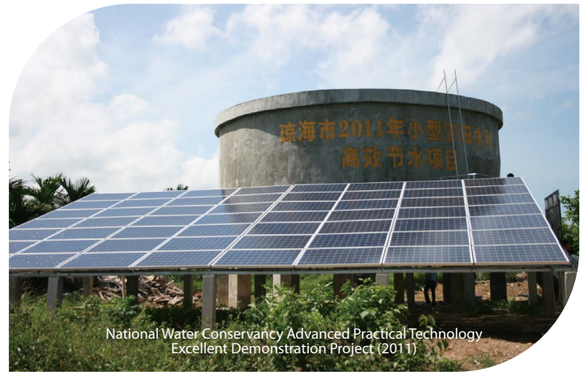

Jingbian Desertification Control Project (2009)

AGRICULTURE AND FORESTRY IRRIGATION

The project adopt the Solartech 7.5kW solar water pumping system. With water head of 25 meters and water extraction distance of 200 meters, the daily water flow is 200-260m^3, which can provide irrigation for the surrounding 200 acres of tropical economic crops such as betel nut, banana, pineapple, and litchi.






National Water Conservancy Advanced Practical Technology Excellent Demonstration Project (2011)

DESERT EDGE SHELTERBELT PROJECT

Located at Atbeixi Village, Tawakule Township, Hotan County, Xinjiang, the project broke ground on November 16, 2024. It is equipped with 5 sets of 15kW solar pumping systems (each set includes 22kW inverter, 19.68kW PV array and 15kW / 50m pump). This mass sand control project adds 60 ha of reserve cultivated land via water-saving irrigation, mainly planted with tamarisk and sacsaoul.






Taklamakan Desert Edge Shelterbelt PV & Ecological Sand Control Project (2024)

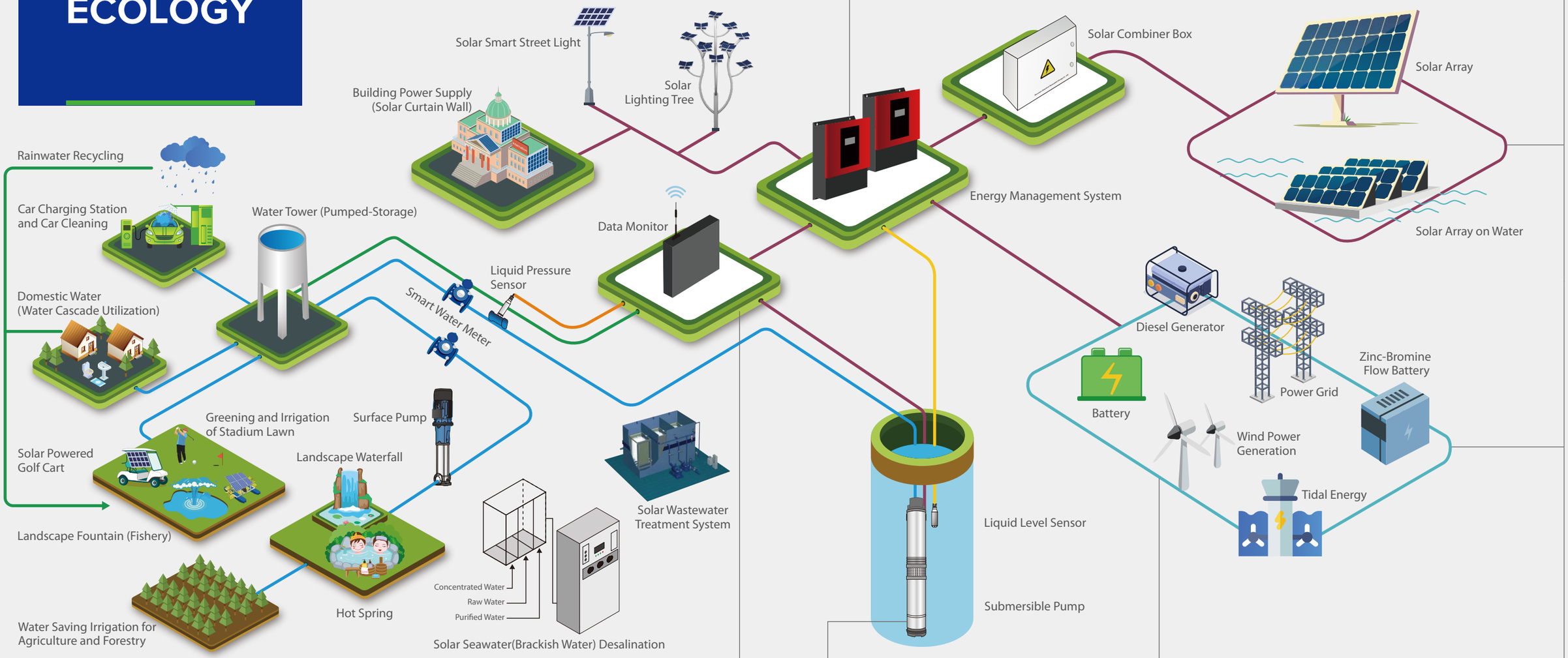
SOLAR WATER ECOLOGY

Multi-pump 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.

Residual Power to The Grid

When the generating energy of the PV array is abundant, the pumping inverter gives a control signal to start the solar charging controller to charge the battery or start the solar grid-tied inverter to generate electricity to the grid, making full use of the PV array energy.



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.

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.

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 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.



SOLAR WATER ECOLOGICAL EQUIPMENT

SOLAR SEAWATER / BRACKISH WATER DESALINATION

Solartech solar desalination systems and solar brackish water desalination systems are powered by solar arrays, which directly drive desalination devices through inverters to desalinate seawater without batteries, solving the need for "self-sufficiency" in areas such as islands and deserts for domestic water and crop cultivation. Swimming pool water purification systems can also be modified or replaced with solar water pumping systems.







Solar Seawater/Brackish Water Desalination System

SOLAR WATER ENVIRONMENT TREATMENT

Through the solar power supply aeration, promoting the mixing of the upper and lower water bodies, increase the dissolved oxygen in the water, enhance the metabolic activity of water organisms, especially microorganisms, thus promoting the degradation rate of organic pollutants in the water body, to improve water quality. Solar power supply and grid power complementary , fully automatic operation, can significantly reduce electricity expenses and manual operation and maintenance costs.







Shenzhen Xikeng Reservoir Solar Algae Suppression Project (2021)

SOLAR ENERGY STORAGE

The system utilizes PV power generation and stores energy, which can meet long-term electricity demand. The system adopts safe and efficient LFP battery or zinc-bromine flow battery, which can be applied to various occasions such as water-saving irrigation, oil pumping, saltwater desalination, water treatment, etc., helping to achieve clean energy substitution.







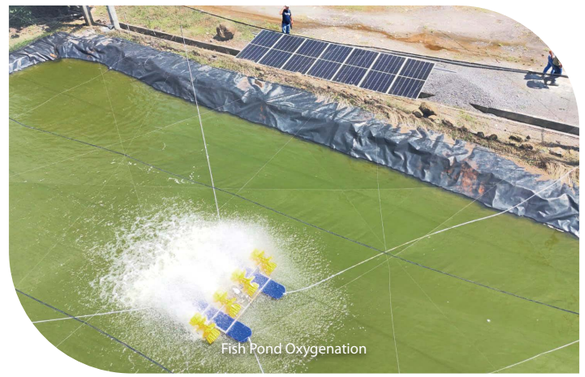
Beam Pumping Unit

SOLAR AERATION

It is developed for the application scenarios of fish pond oxygenation for fish farming.High water-proof protection level for inverter and motor to ensure electrical safety. Support dual power supply of solar and grid power, with solar priority function to save electricity costs. Using solar clean energy, pollution-free to the environment and water bodies.







Fish Pond Oxygenation



HOW TO USE SOLARTECH PRODUCTS

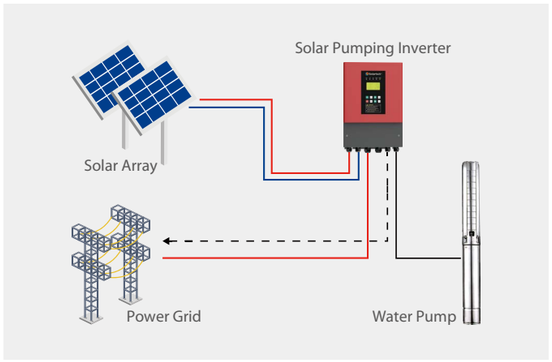
HOW TO ENSURE STABLE OPERATION AND LONG-TERM SERVICE LIFE OF SOLAR PUMPING SYSTEMS?

Solartech MPPT Multi Criteria for Dynamic VI Maximum Power Point Tracking patented algorithm will 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
- Long Running Time
- Stable Photoelectric Conversion
- Avoid Water Hammer
- Prolong Water Pump Service Lifespan

SOLAR PRIORITY

The system supports dual power supply of PV and grid. When the solar can provide enough power for system operation, only solar energy is used. When the sunlight weakens, the solar power maintains maximum output and the power shortfall is provided by the grid. Then if the sunlight intensifies, the grid power will be intelligently disconnected as backup.




Solar Agriculture Irrigation Project in Thailand (2022)

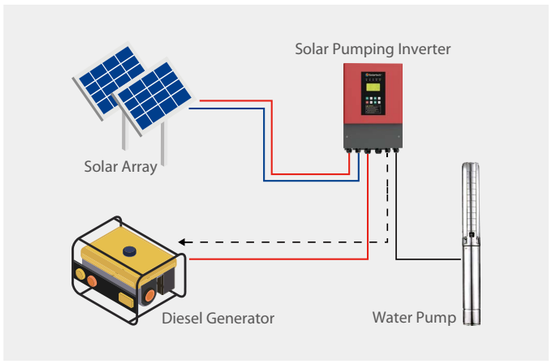






DIESEL BACKED-UP

When fuel generator serves as backup power supply, the solar pumping inverter switches the power supply automatically based on the lighting conditions, by starting or shutting down the diesel generator. The utilization rate of solar energy is high, which can save the consumption of diesel or gasoline.




Solar Agriculture Irrigation Project in Tanzania (2021)

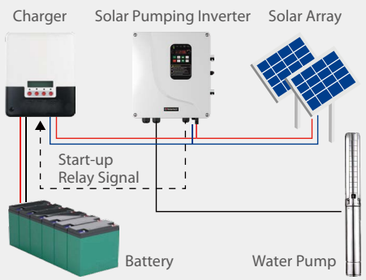






STORAGE OF RESIDUAL POWER

The solar pumping system can be equipped with battery, which can not only meet the 24-hour water supply demand, but also be used for lighting and other electrical appliances.




Solar Agriculture Irrigation Project in Australia (2020)

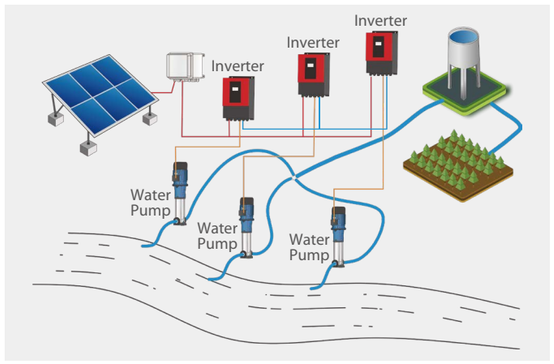






MULTI-PUMP LINKAGE SYSTEM

Solartech multi-pump linkage system is suitable for large power and high lift requirements. A PV array supplies power to multiple solar pumps. The system adopts Solartech patented algorithm to allocate energy in real-time based on changes in sunlight, ensuring that the system operates at the optimal efficiency point. Compared with multiple PV arrays powered separately, the utilization efficiency of solar energy can be improved by 10% to 15%. This greatly improves system reliability and reduces the costs of transportation, installation, and maintenance.




Solar Agriculture Irrigation Project in Chile (2020)

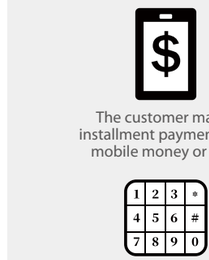






INSTALLMENT ENCRYPTION

Solartech's installment encryption technology can support the distributors in providing a credit sales model. The user pays a deposit, and the balance is paid in daily or monthly installments. This can quickly provide products and services for customers who urgently need solar pumping systems and cannot afford the one-time purchase cost.




PayGo Solar Agriculture Irrigation Project in Zambia (2022)

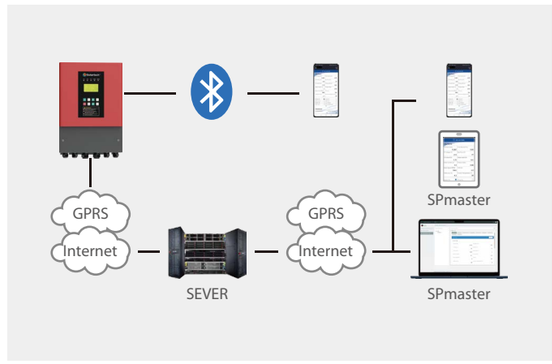






REMOTE MONITORING SYSTEM

The Solartech remote monitoring system helps achieve low-cost and efficient management. By applying DM data monitors or built-in monitoring modules in the system, users can use Solar Winsight (Android) and SP Master (PC) to view the real-time operation status of the system, analyze historical data, debug and control the system.




Remote Control Solar Agriculture Irrigation Project in Benin (2021)









ABOUT SOLARTECH

SHENZHEN SOLARTECH RENEWABLE ENERGY CO., LTD.

Shenzhen Solartech Renewable Energy Co., Ltd. is the world's leading solar pumping system professional manufacturer as well as the global solar water conservancy solution provider. Solartech solar pumping technology research began in 2001. The company's research center is located in the Shenzhen International Graduate School of Tsinghua University, and has established the world's first solar pumping system research demonstration base in conjunction with the Nation Key Laboratory of Power Systems in Shenzhen. Solartech focuses on the water needs for survival, production, and ecology in remote areas lacking electricity. Based on cost-effectiveness and eco-friendliness, we specialize in manufacturing solar pumping systems, providing solar water conservancy industry solutions, and advocating for solar water ecology.

Solartech solar pumping system utilizes solar energy to directly drive the water pump. It features low cost, simple structure, easy construction, automation, economy and high reliability. There is no need for battery and manual labor. At present, the products have been applied in more than 130 countries and regions worldwide in fields such as domestic water supply, agriculture irrigation, seawater/brackish water desalination, pasture animal husbandry, and desertification control.

The "solar water conservancy" proposed by Solartech combines PV power generation with hydraulic engineering and smart water management. It solves the problems of long distance, long construction period, large investment, and low utilization efficiency in installing power grids in remote areas. It has developed an ecological and eco-friendly model for increasing grain production and improving human settlements.

The "solar water ecology" advocated by Solartech utilizes the low-carbon advantages of solar pumping technology and optimize the combination with other energy sources. It includes water resource development and utilization, hydraulic engineering construction and operation, water monitoring and protection, hydrophilic environment creation, water quality modification supply, sewage purification treatment, etc. It solves the problems of new energy supply and consumption in construction, production, and processing.

RESEARCH CENTER

The company's research center is located in the Shenzhen International Graduate School of Tsinghua University, and has established the world's first solar pumping system research demonstration base in conjunction with the Nation Key Laboratory of Power Systems in Shenzhen.











2001



The world's first solar drip irrigation system built for desert highway shelterbelt in 2001.

2004



In 2004, the world's first solar pumping system research demonstration base was established at Tsinghua University Shenzhen Graduate School.

2014



In 2014, honored with UNDP Global Human Settlements Model of Green Technology.

2019



In 2019, the WB granted The Global LEAP Awards for Solartech products.

2022



In 2022, Solartech advocates innovative development of solar water conservancy industry at the UNCCD COP15 side event.

2024



In 2024, Hotan County Tewekkul Township PV-based Biological Sand Control Project of the Taklamakan Desert Border-locking Project.



DEMONSTRATION BASE

The world's first research and demonstration base of solar pumping system



SYSTEM RESEARCH & DEVELOPMENT PLATFORM

By using a variable head testing system, the operational characteristics of solar pumping systems are studied to provide data support for system optimization and configuration.



SOLAR APPLICATION DEMONSTRATION PLATFORM

Including solar fountains, landscape lighting, advertising light boxes, etc.



SEAWATER/BRACKISH WATER DESALINATION EXPERIMENTAL SYSTEM

NEW ENERGY ON-GRID AND OFF-GRID SYSTEM RESEARCH AND DEMONSTRATION BASE







About 1000 m² thin-film solar module is installed on the top of the solar carport for grid-connected power generation, car charging, and night lighting.







The solar tree uses polycrystalline silicon modules to generate electricity for grid connection, landscape lighting, and fountains.

MICROGRID DEMONSTRATION BASE



10 types of solar cell operation test and data collection.



Integrated energy management of photovoltaic, wind power, energy storage, and power grid.

Solar and Water, a Better Future

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