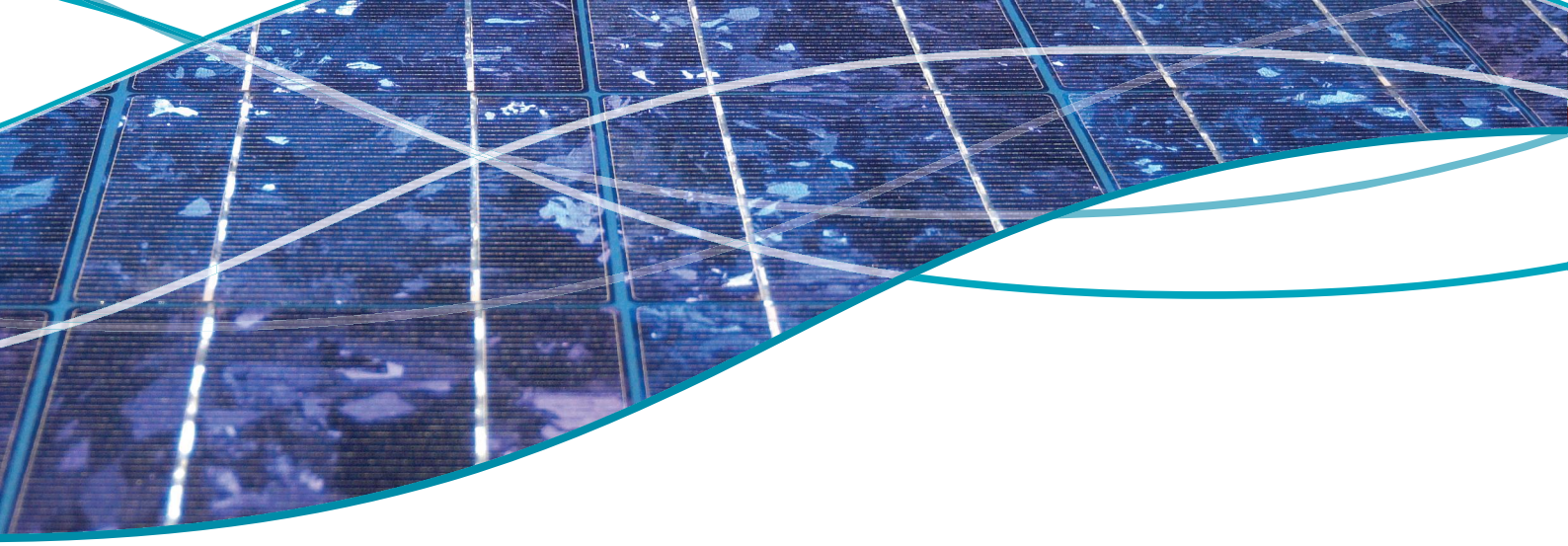
Solar Powered Water Pumping Systems

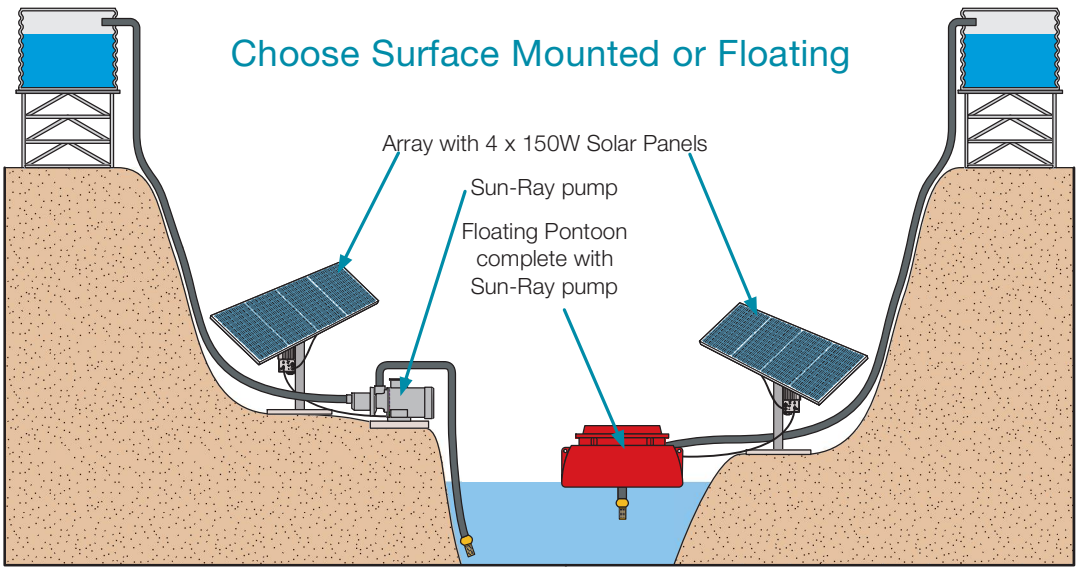
Mono® NOV

One Company, Unlimited Solutions



Sun-Ray Surface and Floating Pumps

- Compact & Rugged CP Pumps
- MPPT Power Maximiser
- Easy Priming
- Tracker or Fixed
- Rotor / Stator Simplicity
- No More Fuel Bills
- Ideal windmill replacement



Floating Solar Kits

For the simplest water supply under the sun!

✔ Never Need Priming

✔ High Stability

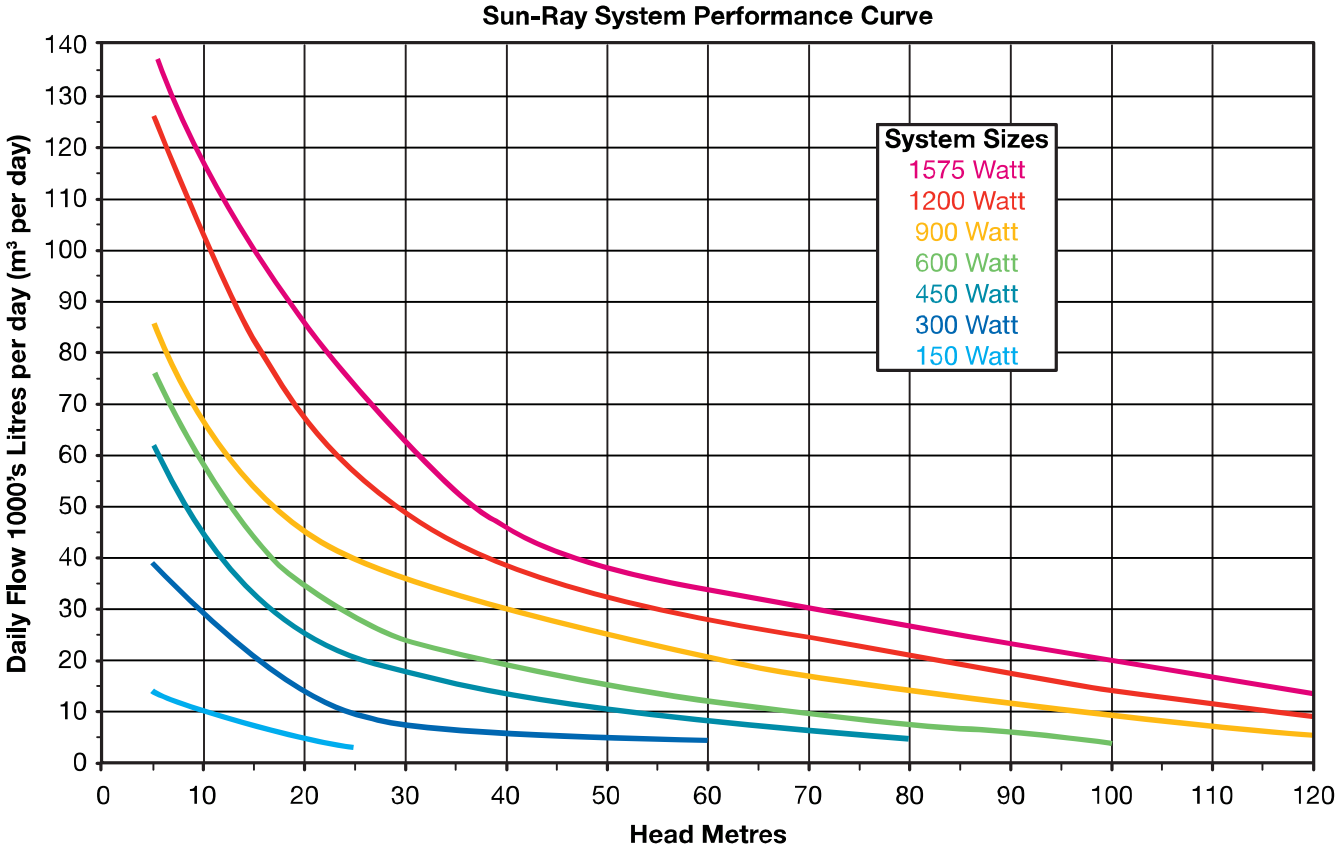
So simple to install, and you will never have to worry about water level again. Wide range to choose from.

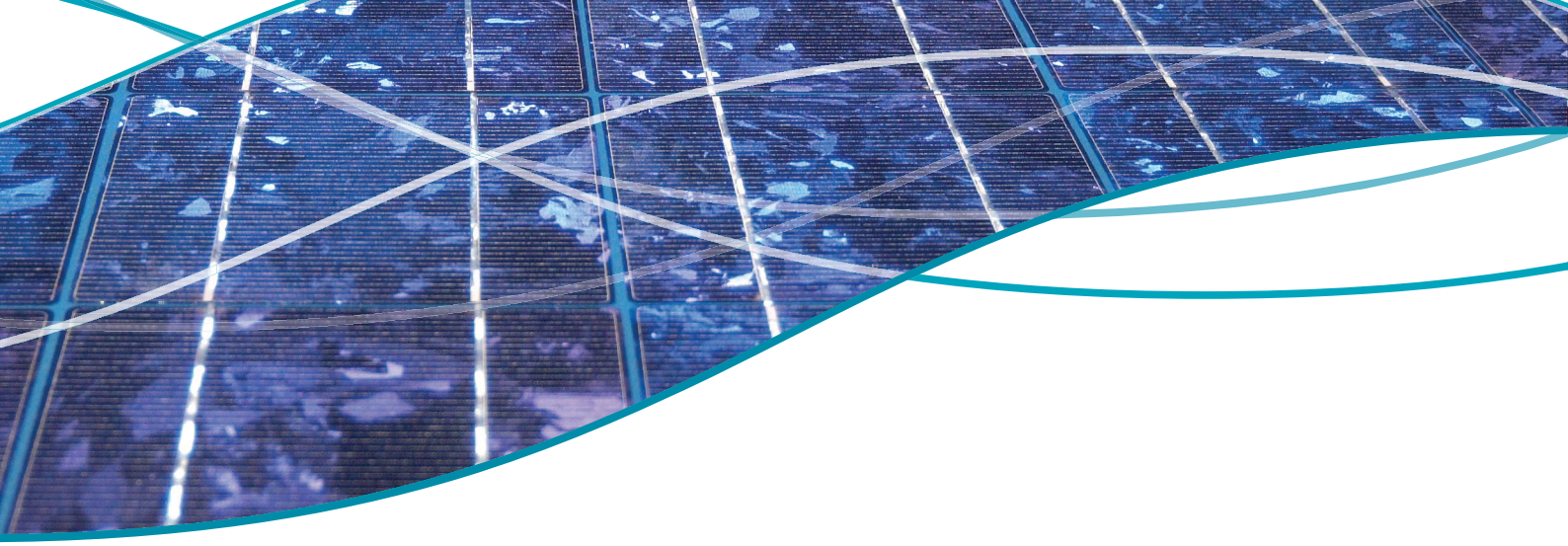
Complete with streamlined floating pontoon, MPPT (Maximum Power Point Tracker) and power cable to suit your application needs.

Mono High Transfer Solar Pumps

Higher heads and volumes

Typical ASP belt-drive system for high heads



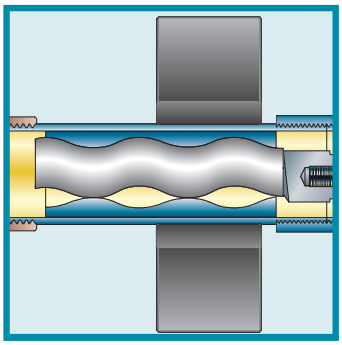


Sun-Sub Submersible Pumps

- Power from the Sun
- Flows up to 135,000 l/day
- Heads up to 150m
- 100% plug & socket assembly
- Built in electronic pressure control
- GPS tracking arrays
- Variable speed control
- Helical rotor pump
- Designed & built in Australia

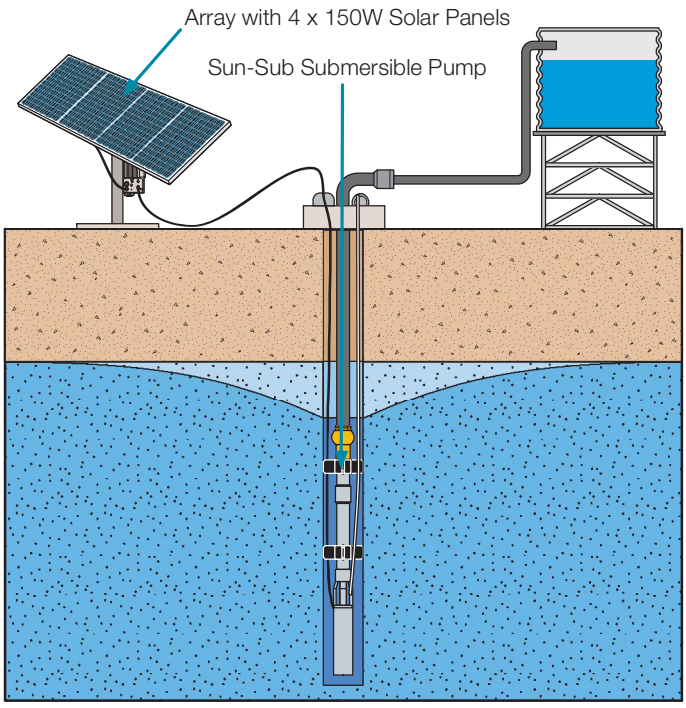
Brushless DC Motor

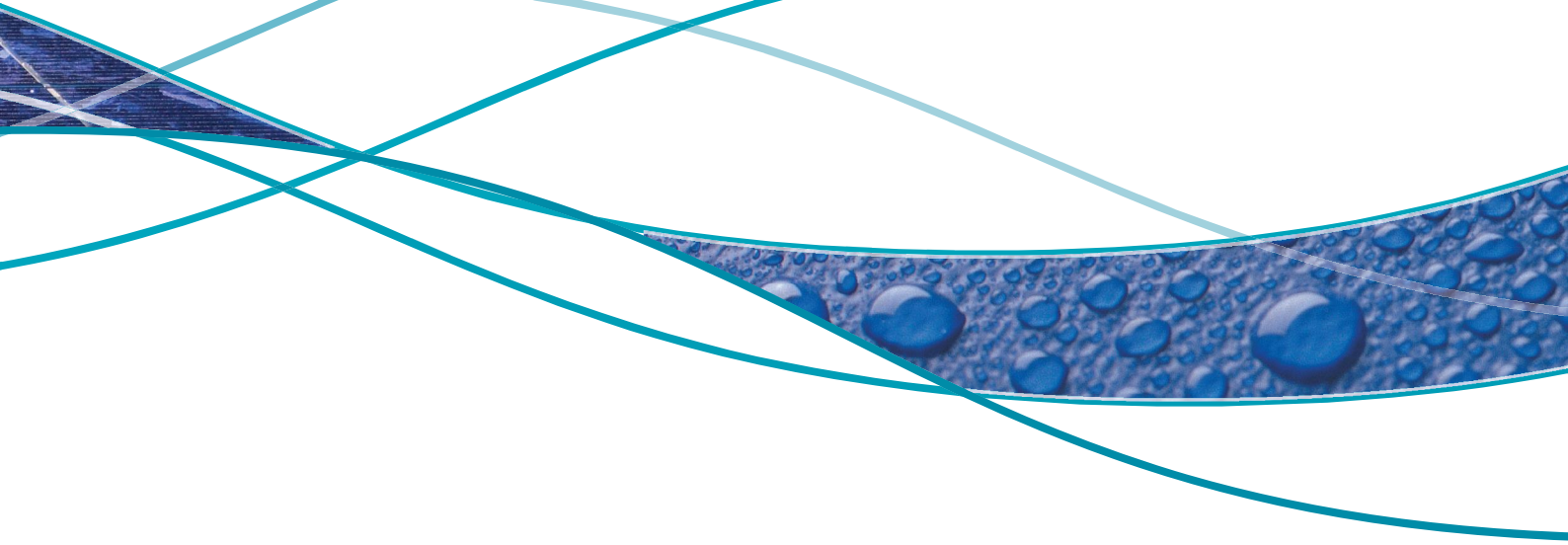
Solar Controllers



Rotor / Stator

Hand Held Display Unit (HHDU)





The System Components

Helical Rotor Pump

Solar pumps need to be simple and efficient, helical rotor pumps are amongst the most efficient and simple pumps in the world with only one moving part. They are self cleaning which make them ideal for iron oxide environments.

All rotors in the Mono solar range are 316 stainless steel and hard chrome plated.

Brushless DC Motor

This purpose built motor is the result of years of research and development by the engineering staff at Mono. Specifically designed for use in solar pumps, this high torque motor is extremely efficient. Built completely from 316 stainless steel, the motor is fully sealed and oil filled. This design allows for an extremely long life in the hardest of applications. There are no brushes to wear out, therefore no maintenance.

Solar Motor Controller (SMC)

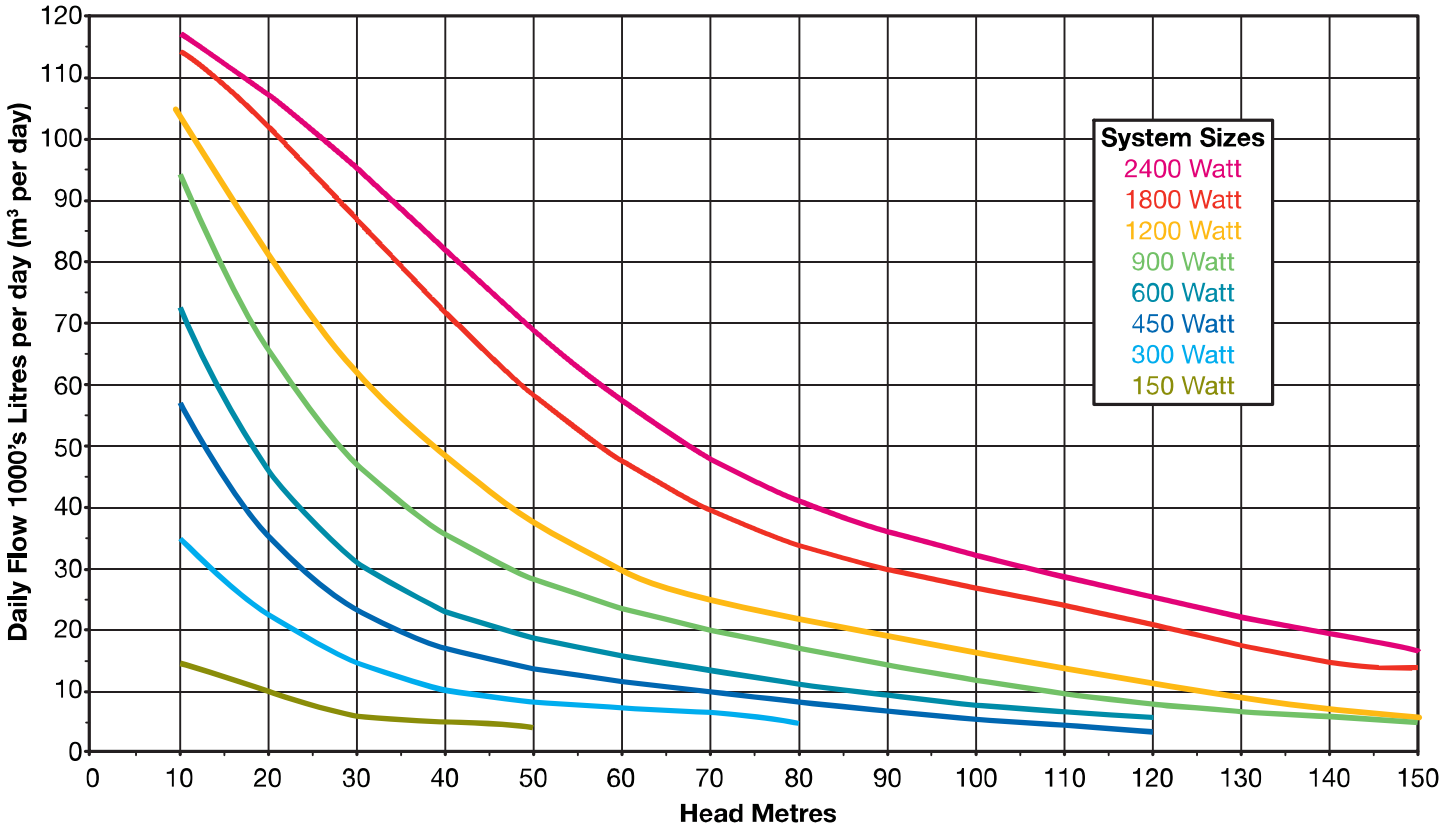
The SMC has been specifically designed by Mono for solar pumping applications. The SMC has an inbuilt Maximum Power Point Tracker (MPPT) which maximises the power provided by the array in all conditions. It has a variable speed control which allows for easy regulation of the pump flow, ideal for low yield bores. The SMC also has electronic pressure control which eliminates troublesome pressure tanks and switches and enables automatic shutdown of the pump once tanks and troughs are full. The system can be monitored using the Mono Hand Held Display unit. All Sun-Sub SMC's are suitable for Sun-Dial Telemetry systems which allow for remote monitoring and operation.

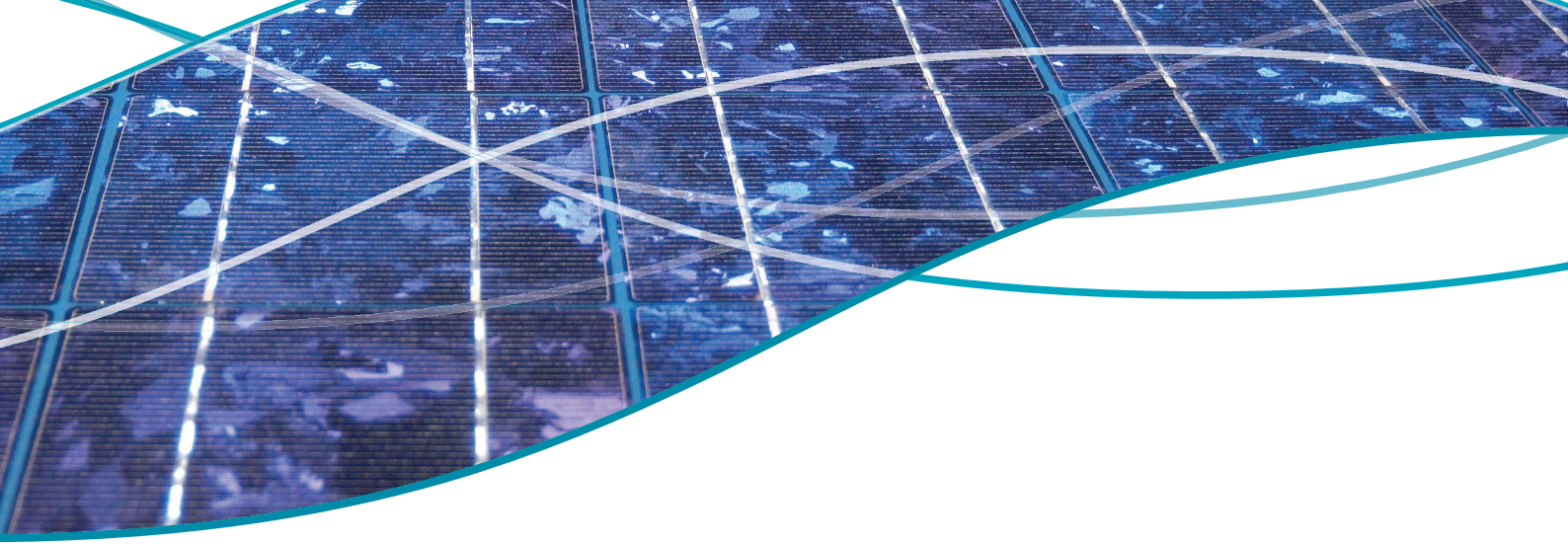
Solar Panels

The most visible part of any solar pumping system is the solar panels. As the power behind any system, the correct choice of panels is a must. Quality, reliability and long life are the critical requirements here. All Mono solar pumping systems are fitted with BP Solar panels because they meet these exact requirements. Complete with a 25 year warranty on power output, your system will be operating for a long time to come.

bp solar

Sun-Sub System Performance Curve





Sun-Sub SMC - Series 1000 & Series 2000. Up to 700W Arrays

Sun-Sub Series 3000 SMC 750W to 1800W Arrays

Mini MPPT Up to 300W Arrays

Power Master MPPT Various models up to 1575W Arrays

Solar Controllers & Accessories

Solar Motor Controller (SMC)

The SMC is the heart of the Sun-Sub solar pumping system. The highly efficient microprocessor controlled drive, coupled with the brushless DC submersible motor ensures the maximum water output of your solar pump.

- Microprocessor controlled power point tracking
- Variable speed control - low yield bores
- High pressure cut-out - tank filling applications
- Compatible with HHDU (Hand Held Display Unit) diagnostic tool
- Fully plug & socket design - no electrical wiring required

Power Master Controller

The Mono Power Master or Maximum Power Point Tracker (MPPT) continually monitors the available solar power to ensure the maximum power is delivered to the DC motor used in Sun-Ray solar pumping systems.

- Microprocessor controlled power point tracking
- Full plug & socket design
- Compatible with HHDU diagnostic tool

GPS Tracking Array (Optional Accessory)

To maximise the efficiency of your solar pumping system, you need an accurate and reliable tracking array. Mono's patented GPS tracker will ensure that your solar array is always facing the sun.

Utilising a GPS (Global Positioning Satellite) sensor built into the controller, the system can accurately calculate the exact position of the sun and correctly positions the solar array to take advantage of the available light. The GPS tracker overcomes problems traditionally associated with refrigerant gas, light sensor and timer trackers. Increased flows of around 30% are achievable with the GPS tracker.

AC PowerPak (Optional Accessory)

Not every solar pump needs generator backup, however if you do, you need a 100% reliable supply - designed to enable connection of your Sun-Sub pump to a generator. The AC PowerPak, designed by Mono will enable you to pump water 24/7.

- Compact design - easy to move it to where you need it
- Efficient - only requires 1kVA generator, (but will also work on large generators). Less fuel consumption, longer run time
- Intelligent - Automatically protects itself and the solar pump from voltage spikes
- Auto change over - Automatically switches from AC back to solar power when the generator stops

GPS Actuator and Solar Tracker Controller

AC PowerPak

Solar Selection - CASS

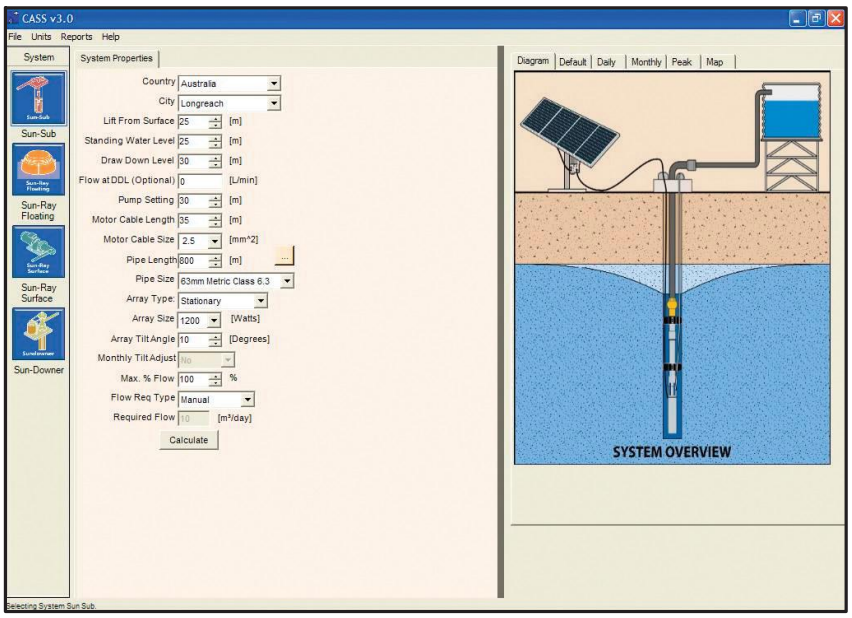
The right solution for your site.

This is vital in the selection of every solar pumping system. Through the use of the Mono CASS program, this is what you will get.

Using historical meteorological data and the results of extensive system testing we can predict the daily average flows from every system in the Mono solar range, for hundreds of locations around the world.

CASS takes into consideration location, type of pumping system, solar array size and length of your discharge pipe work. This information allows CASS to accurately predict the flow rate of your system, with your pipe work, in your location.

CASS allows for a variety of systems to be modelled easily to ensure you get the Mono solar system to suit your requirements.



Frequently Asked Questions

On cloudy days

A Mono solar pump keeps working even in low light. When it is cloudy, your Mono will slow down but because it has no minimum speed (unlike a centrifugal pump), it will keep drawing water.

Daily flow rates

Minute by minute flow is irrelevant to a system that pumps from dawn to dusk. Our figures are based on the daily average performance of a pump. Flow will be highest on sunny days when you most need water.

Weather resistance

Solar panels are far more cyclone resistant than windmills. All array frames have been designed to withstand 140km/hr winds and can be easily modified to withstand 210km/hr storms. The toughened glass panels are famous for their resistance to hail.

Pump and panel life

Mono pumps can last for decades. We do not yet know how long it takes to wear out solar panels. Our first installations were installed in 1985 and are still going strong many years later. Their owners expect many more years of reliable pumping power.

How Mono solar pumps work without batteries

Other solar pump motors need batteries to keep up speed, wasting up to 30% of the electrical energy in the process. Mono solar pumps use the same DC (direct current) produced by the panels. Add Mono's low-speed pumping power and the electrical efficiency of the MPPT and you have today's most productive solar pumping systems.

Store energy as water

The simplest way to store solar energy is to use gravity by pumping water into elevated tanks.

Budgeting for solar

A solar pumping system costs about the same as an old-fashioned windmill. And your Mono solar powered pump will quickly pay for itself in savings on diesel, petrol or electricity.

Water level protection

Like any electric pump, your Mono solar pump can be controlled with pressure and/or float switches. A connector on the MPPT control box makes it easy to protect against dry bores or full water storage.

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