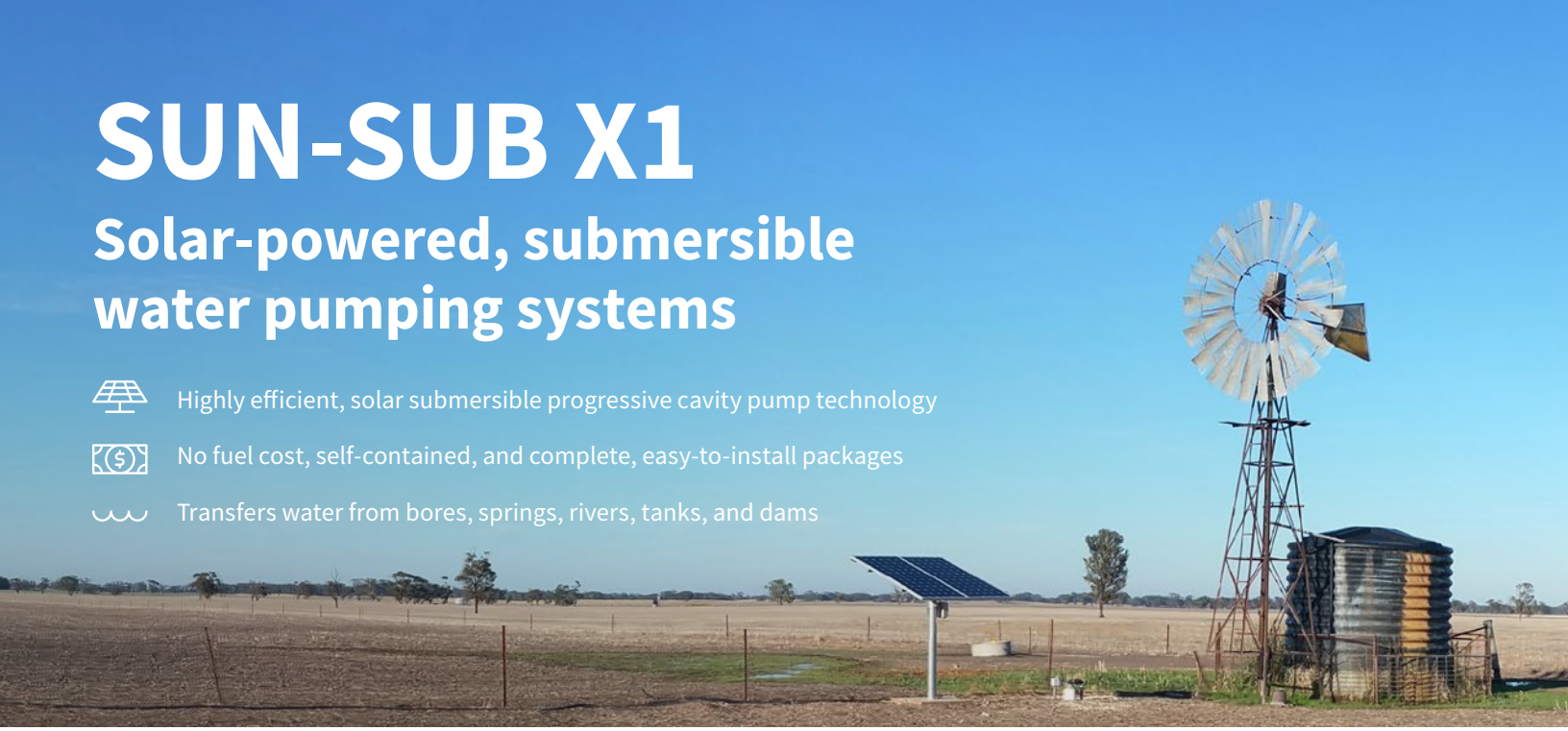
# SUN-SUB X1

## Solar-powered, submersible water pumping systems



- Highly efficient, solar submersible progressive cavity pump technology
- No fuel cost, self-contained, and complete, easy-to-install packages
- Transfers water from bores, springs, rivers, tanks, and dams

### The SUN-SUB X1 system

SUN-SUB X1 systems are comprised of four main parts:

1. Solar array
2. Solar Motor Controller (SMC)
3. Brushless DC submersible motor with electrical drop cable
4. Subrotor pump (wet end) direct-coupled to submersible motor

Additional items such as bore caps, termination kits, bore probes, and float switches may also be supplied with the system.

It is critical that you install the right solar pumping system for your specific situation. Our Computer Aided Solar Selection (CASS) software, available at www.solarcass.com, can help to determine the right system for you.

### Key features and specifications

The SUN-SUB X1 submersible pump systems have high daily flows with discharge pressures up to 150 metres.

The systems can be easily automated using a float switch, pressure kit or built in electronic pressure control and are suitable for use in 100 mm (4”) or larger boreholes.

SUN-SUB X1 systems come in three motor sizes – Series 1000 (300W output power rating), Series 2000 (600W output power rating) and Series 3000 (1200 W output power rating) and can operate in -10–50 °C temperatures and in water with a PH of 6.0–8.5.

### Solar array

Range of output power from 285 Watts to 2565 Watts.

Available in either stationary or GPS tracking. The Mono™ patented GPS tracker can potentially increase flows by 30 per cent.

Designed to withstand 140 km/hr winds and can be easily modified to withstand 210 km/hr winds.

### ControllerX series Solar Motor Controller (SMC)

Solar maximum power point tracker (MPPT) and brushless DC motor control electronics are combined in the one enclosure.

MPPT adjusts the voltage on the solar array to maximise power generation and increases or reduces voltage to suit the demands of the controller.

AC/DC Power compatible, inbuilt in all SUN SMC2200X controllers.

Variable speed control for easy regulation of pump flow – ideal for low yield bores. Electronic pressure control enables automatic pump shutdown once tanks and troughs are full. Thermal overload protection is also in place.

Low motor speed cut-off to reduce pump and motor wear.

Easily accessible on/off switch and MonoVue App diagnostics compatible via bluetooth or dongle (previous controller models).

### Brushless DC submersible motor

Purpose-built motor for us in solar pumps.

High torque, high efficiency, brushless and sensorless DC submersible motor for coupling to the submersible pump.

No sensor is needed to determine rotor position within the motor and without brushes to wear out, no on-going maintenance is required.

Manufactured with 316 stainless steel, fully sealed, and filled with environmentally friendly oil.

Sealed, permanent magnet rotor supported by rolling element bearings.

ozsales@nov.com

mono-pumps.com

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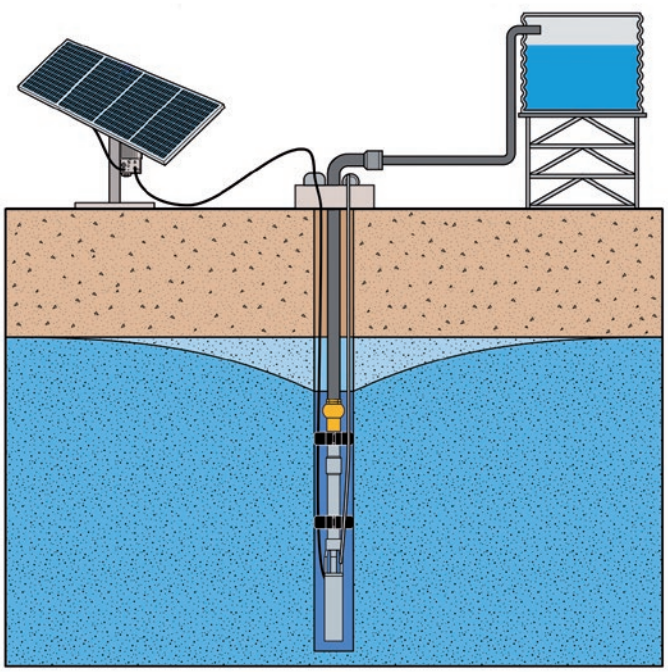
# SUN-SUB X1 Water Pumping Systems

## Subrotor pump, wet end

Progressing cavity pump designed specifically for the SUN-SUB X1 system.

Helical rotor pump element provides maximum water output even when the water contains silt or iron oxide. Low pump speed means extended rotor and stator life in abrasive bores.

High operating efficiency of pump and SMC ensures maximum amount of water can be pumped over whole day and during cloudy conditions.





## SUN-SUB X1 performance characteristics*

| Flow estimates (m³/day) based on average daylight | | | | | | |
|---|---|---|---|---|---|---|
| System size (watts ) | 285 | 570 | 855 | 1140 | 1710 | 2565 |
| Head (m) | | | | | | |
| 5 | 25 | 105 | 115 | 116 | 117 | 118 |
| 10 | 23 | 92 | 108 | 113 | 115 | 116 |
| 15 | 20 | 72 | 97 | 107 | 113 | 114 |
| 20 | 18 | 57 | 82 | 99 | 110 | 113 |
| 25 | 15 | 47 | 65 | 90 | 105 | 111 |
| 30 | 13 | 39 | 58 | 68 | 99 | 108 |
| 35 | 11 | 27 | 49 | 64 | 93 | 105 |
| 40 | 9 | 25 | 40 | 58 | 86 | 101 |
| 45 | 8 | 24 | 37 | 52 | 77 | 96 |
| 50 | 8 | 22 | 34 | 41 | 64 | 72 |
| 55 | 7 | 20 | 30 | 40 | 60 | 70 |
| 60 | 6 | 19 | 26 | 37 | 56 | 68 |
| 65 | 6 | 17 | 24 | 35 | 52 | 65 |
| 70 | 5 | 14 | 23 | 32 | 42 | 62 |
| 75 | 5 | 13 | 22 | 26 | 41 | 45 |
| 80 | 4 | 12 | 20 | 25 | 39 | 44 |
| 85 | - | 12 | 19 | 24 | 39 | 43 |
| 90 | - | 11 | 17 | 23 | 36 | 42 |
| 95 | - | 10 | 16 | 22 | 26 | 41 |
| 100 | - | 10 | 14 | 20 | 26 | 28 |
| 105 | - | 9 | 12 | 19 | 25 | 27 |
| 110 | - | 9 | 12 | 18 | 24 | 26 |
| 115 | - | 8 | 11 | 17 | 23 | 26 |
| 120 | - | 7 | 10 | 15 | 22 | 25 |
| 125 | - | 6 | 10 | 12 | 21 | 24 |
| 130 | - | 6 | 9 | 11 | 20 | 24 |
| 135 | - | 5 | 8 | 11 | 19 | 23 |
| 140 | - | 5 | 8 | 10 | 18 | 22 |
| 145 | - | 4 | 7 | 9 | 17 | 21 |
| 150 | - | 3 | 7 | 9 | 15 | 20 |

| 1000 Series | 2000 Series | 3000 Series |
|---|---|---|

| Array structure | | | | | | |
|---|---|---|---|---|---|---|
| System power (watts) | 285 | 570 | 855 | 1140 | 1710 | 2565 |
| No. of 285W module | 1 | 2 | 3 | 4 | 6 | 9 |
| No. of array frames | 1 | 1 | 1 | 2 | 2 | 3 |

*Based on tracking systems and for reference purposes only. Use CASS or consult with an NOV dealer representative to obtain location specific average flows.

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