PS2

The complete, efficient, solar water pumping solution
Delivering you more water!





PS2 is an integrated solar water pumping system for small to medium sized applications.

PS2 provides a very efficient total solution to meet your solar water pumping needs.

Whether your need is to reduce operational costs, improve water security, or be more sustainable, PS2 provides the right solution.

LORENTZ

The Solar Water Pumping Company

The complete solution

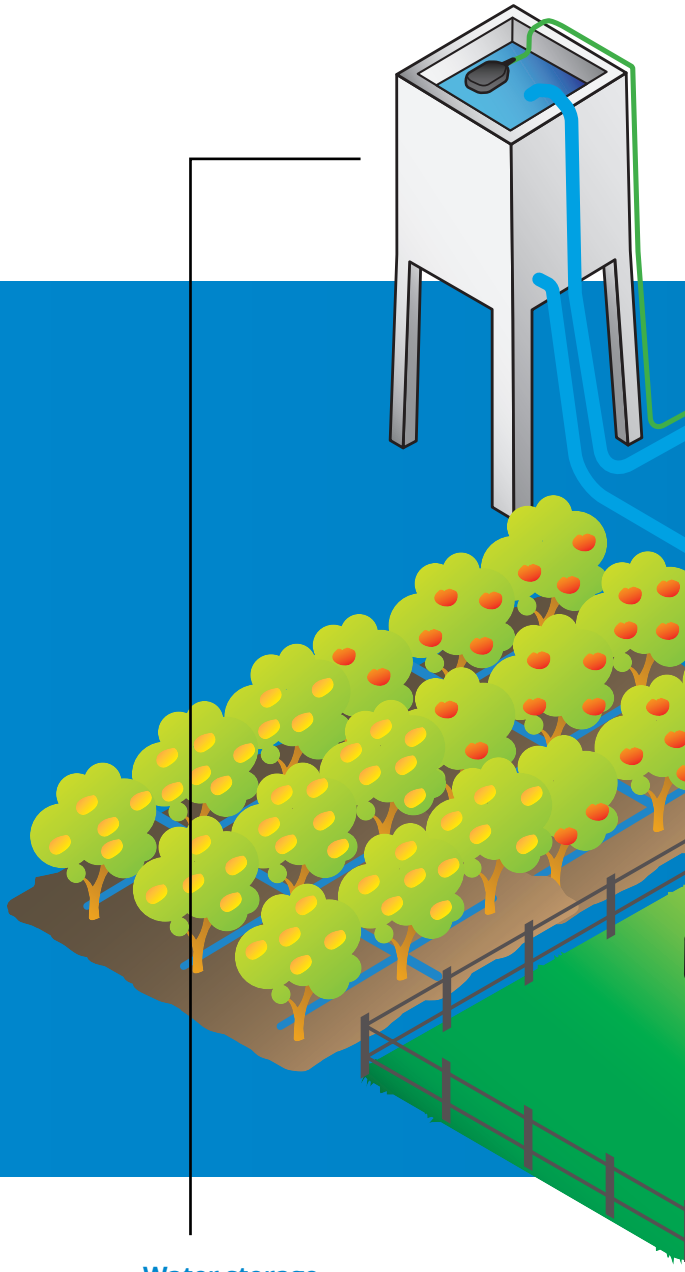
Pumping water uses a significant amount of power. The sun provides us with an almost infinite energy source that, with the right planning and equipment, means we can pump water anywhere without the needs for power infrastructure.

PS2 is an advanced solar water pumping system. The system is designed specifically to use the power of the sun to move water, so replacing the need for grid power or diesel.

As solar power is not consistent through the day then PS2 constantly changes the pump parameters to optimize the amount of water available.

Being designed as an off-grid solar water pumping system, PS2 has all of the inputs and outputs needed in an integrated self-managing system.

PS2 systems are the most efficient available, delivering 30 % to over 1,000 % more water than the competitors' products depending on weather conditions.



Water storage
Introducing water storage to a solar water pumping system allows for increased seasonal demands to be met, or simply for overnight water availability without a generator or grid power.

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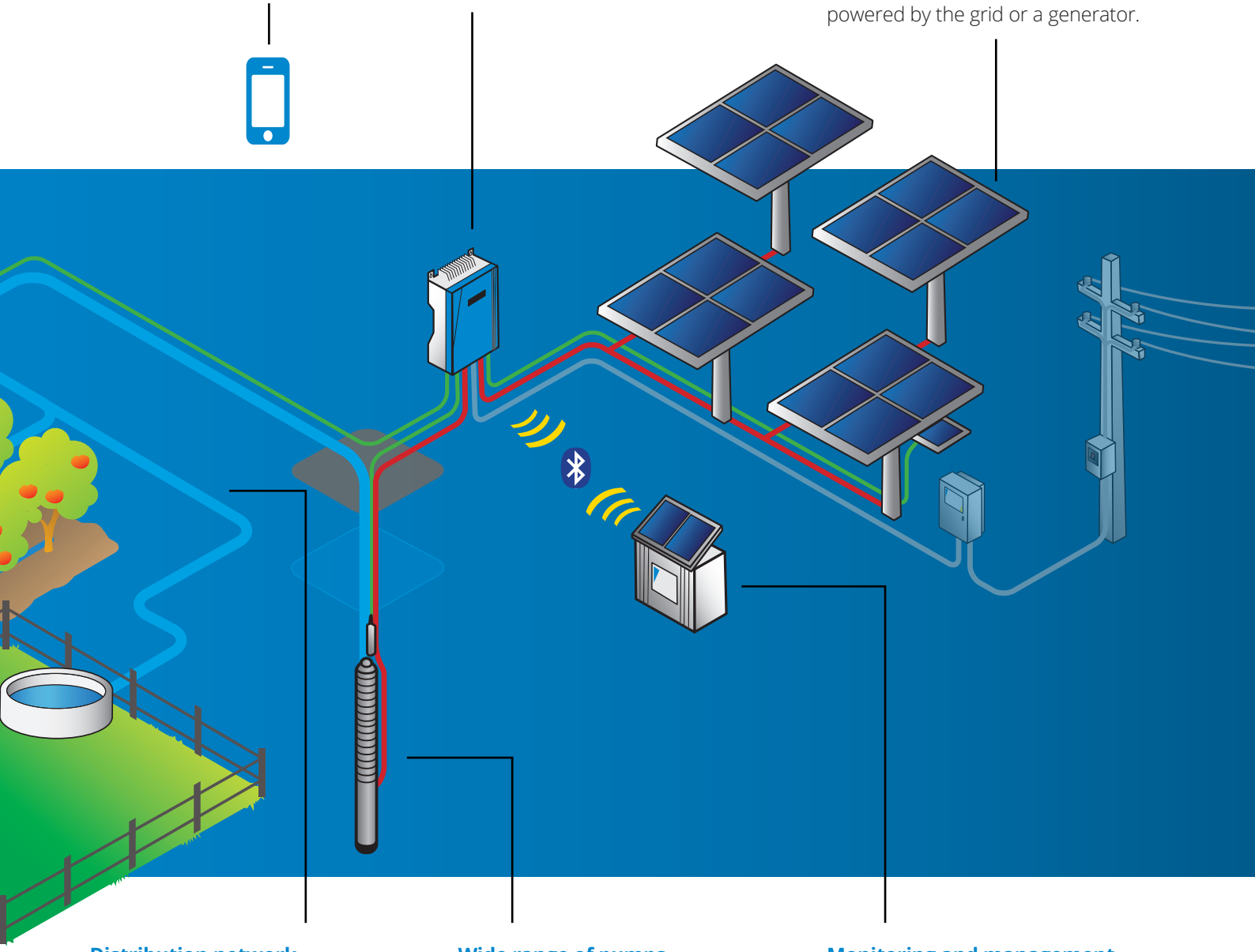
PumpScanner App
This free App allows LORENTZ service partners to simply configure and manage the system. PumpScanner also provides customers with live and historic key system data.

PS2 controller
The controller is at the heart of the system, managing both system operations, analysing inputs and constantly optimizing the system for maximum water output.

Power source
Solar power is the primary PS2 power source, in almost all cases the water requirements can be met with a well designed solar system and water storage. When needed PS2 can also be powered by the grid or a generator.



Distribution network
LORENTZ solar water pumping systems are used for drinking water, irrigation and swimming pools. Whatever the PS2 pump is connected to the system will optimize water delivery depending on the power available and inputs from the various sensors.

Wide range of pumps
PS2 has a wide range of submersible and surface pump systems available to meet your water needs. Submersible pumps are available that can pump from 450 m (1500 ft) depths and surface pumps available for flows of up to 60 m^3/h (265 US Gal./min).

Monitoring and management
All PS2 systems have inbuilt data logging and a simple management interface. All systems can also be remotely monitored and managed remotely along with any other LORENTZ systems you have via our LORENTZ Global service.

Benefits you can realize



No infrastructure to install

Using solar power means that you can install a pumping system almost anywhere, irrespective of power infrastructure availability and the associated costs. PS2 is designed for the harshest off-grid environments.

Low operational costs

Operational cost savings are achieved as the system requires no fossil fuels, can be fully remotely managed and is designed to have a long working life. The result is very low, or no operating costs.

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Low cost of water

PS2 uses brushless and sensorless DC motors for maximum efficiency, this results in significantly more water being pumped with the available power. This efficiency results in a lower unit cost of water pumped.

Lowest project risk

As PS2 is designed to be a complete system, it has all of the needed software and hardware for your water project. The result is that your projects are delivered on time, on budget and without technical risk.

How customers are using PS2



Irrigation

Solar pumps are a perfect match for irrigation – more sun equals more water.

PS2 is being used to transform unused land into productive farms. Bringing water to locations that do not have any existing infrastructure is improving food security and generating significant income for communities.

PS2 systems provide water into irrigation systems all around the world. Drip, sprinkler or flood irrigation method are all fully supported using this system. High flows and high pressures can be achieved allowing almost any existing irrigation system to be converted to solar power without replacement.

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Drinking Water

For people – PS2 has been deployed as the primary water delivery mechanism for communities in all parts of the world. By utilizing water storage, solar direct PS2 systems deliver water reliably 24 hours per day.

For livestock – PS2 is providing very economical solutions for both water abstraction and pressure boosting applications for livestock.

Farmers rely on PS2 to deliver water in remote locations reliably and cost effectively.















Swimming Pools

Pool pumps are the second biggest energy consumer in many homes after air conditioning.

PS2 solar pool pumps keep swimming pools crystal clear without any electricity costs.

LORENTZ PS2 Pool Pumps are high quality products designed for use in residential and commercial swimming pools and spas.

In most pool applications all of the filtration needs can be met directly from solar power meaning no electricity costs and significant benefits to the environment.

The LORENTZ pump uses a DC brushless motor for high efficiency and reliability.

What makes PS2 better for you ?






Designed for Solar Water Pumping

PS2 has been designed from the first white board sketches to be a solar pumping system.

The system has been designed and built by an engineering team who only focus on solar water pumping. This experience means they design, test and build systems where operation in the harshest, most remote environments is normal.

PS2 is designed to be field serviceable, the pump unit components and electronics are modular to allow for cost effective and fast replacement.

Having a great feature set is only part of being a good solar water pumping system, what really matters is how efficient the system is. Efficiency defines how much water it will pump. PS2 has class leading efficiency and optimized maximum power point tracking for best performance when conditions are not perfect. The system also has active power management to ensure that high ambient temperatures have minimal impact on water output.

PS2 makes the best use of the available power to deliver the most water possible.

Ultimate Efficiency

All PS2 systems use a unique DC brushless and sensorless motor named ECDRIVE.

This motor is a perfect match for solar applications as it has a very high efficiency across its whole operating range. This is very different to a small AC motor where maximum efficiency is only achieved in a narrow operating band.

Solar power is always changing through the day and depending on weather conditions. The LORENTZ ECDRIVE and PS2 have an average daily efficiency of above 90 %, most of our competitors achieve 65 % with clear blue skies and much less when there is cloud cover.

What this high efficiency means is that you get more water from the system from less installed PV modules. Less modules means less cost, less racking, less installation time and labor. A high efficiency system means less total investment.

Efficiency simply means pumping more water, pumping for a longer period of time and pumping after the competitors have stopped.

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The Complete Solution

PS2 is designed to be a complete solar water pumping system comprising of a specialized pump controller and carefully matched pumps.

PS2 has eight sensor inputs that allow analogue and digital sensors to be connected. This combination of sensors with the powerful inbuilt software applications allows for full pump control and water specific applications.

The system also has an inbuilt Sun Sensor which measures the available irradiation and then makes decisions of what to do based on the available power. The SunSensor also avoids unnecessary stop start cycles which increase pump wear.

PS2 is a complete solution “out of the box” without the need for building additional switching cabinets or PLC units.

Everything to deliver your projects successfully, on time and with minimal risk.

CONNECTED

The PS2 is part of the LORENTZ CONNECTED software eco system.

The system is configured on site using PumpScanner, an Android™ based App that the installer uses. Common configuration is done with three clicks and there is full access to configure system behavior based on additional sensor inputs.

The PS2 constantly records operational data and provides access to rich information for both customers and technicians.

The PS2 can also be connected to our LORENTZ managed service. This is a simple, cloud delivered, pay monthly service that takes away the complexity of remote monitoring and management. One low fee means that you can see exactly what the system is doing, make changes to settings and receive alerts irrespective of location.

Advanced, but simple monitoring and management of your system locally or remotely.

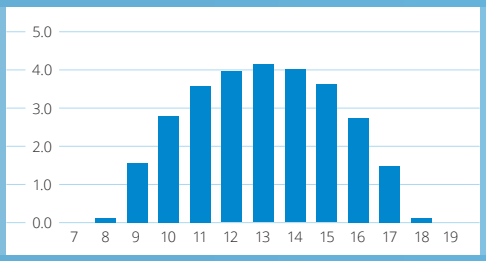
Ultimate Efficiency

Sometimes you have to look at the data

Leading Competitors AC solution

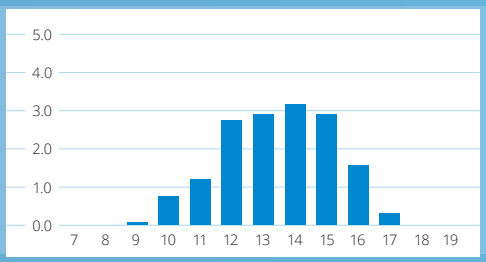


28 m³
7,500 US Gal.



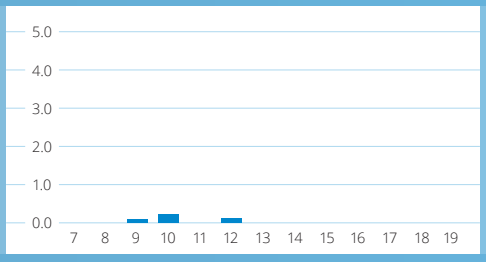


16 m³
4,200 US Gal.





0.38 m³
101 US Gal.



Look at the numbers

Sometimes the only way to make the difference clear is to look at the data. The charts above compare a leading global pump solution to the LORENTZ PS2 under the same conditions with the same solar input. These are real world tests.

The competitors pump and controller is about 15 % cheaper than the LORENTZ PS2. If you want to deliver the same amount of water in real world conditions it becomes almost 40 % more expensive!

The efficiency of PS2 means that the system starts earlier in the day, pumps more during the day and stops later. This can make a significant difference to the people, crops or animals that use the water.

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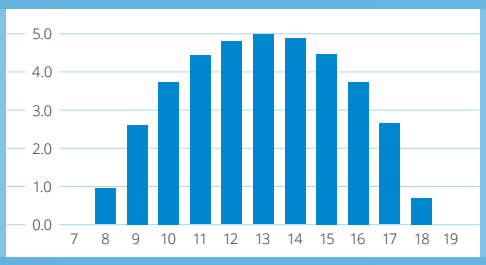
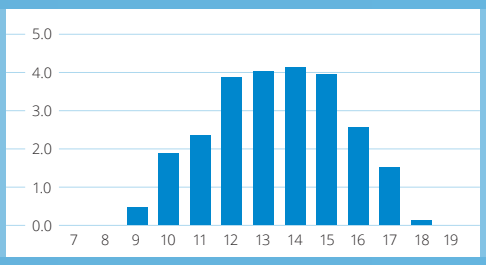
LORENTZ PS2 DC Brushless Solution



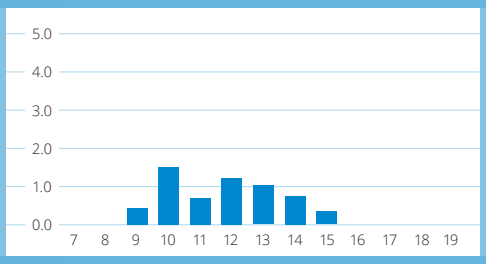
39 m³
10,300 US Gal.

+36 %
more water



25 m³
6,700 US Gal.

+60 %
more water



6.0 m³
1,600 US Gal.

+1,460 %
more water

Compare like with like

When you compare systems look at the water that is pumped for your investment. Comparing motor sizes, solar panel sizes or theoretical maximums are not good indicators of how much water you will be able to pump.

When making your comparisons look at the whole system costs. Adding extra solar modules, racking cabling and labor to get competitors' products to meet LORENTZ performance gets expensive.

COMPASS – the LORENTZ system planning software – will accurately simulate real world situations and design a system that will give you the water you need, when you need it.

A complete system







An effective solar water pumping system is made up of more than one component. When you choose a LORENTZ system you will get an integrated solution design specifically for solar water pumping from a company with absolute focus on this technology.

PS2 Controller

PS2 controllers are available from 150 W to 4 kW. The controller includes the electronic to drive the ECDRIVE brushless DC motor, software for our water applications, all the inputs you will ever need, data logging, plus intelligent control over the whole system to give you the most water possible.

PS2 Submersible Pumps

PS2 4" helical rotor pumps and 4" to 6" submersible multistage mean that your hydraulic needs can be closely matched for maximum efficiency. See the "choosing and designing your system" section. All LORENTZ pumps are pre configured in our PumpScanner App with a simple 3-click setup.

The Solar Water Pumping Company







PS2 Surface Pumps

PS2 single or multistage surface pumps perform equally well in irrigation projects and for drinking water applications where they reliably meet the most demanding requirements. All LORENTZ pumps are pre configured in our PumpScanner App for simple 3-click setup of any system.

PS2 Pool Pumps

Two sizes of pool pump system are offered on PS2. These two systems meet the requirements of most residential and small commercial pools. Due to the efficiency of the PS2 system a smaller motor size is required to keep the pool clean.

Accessories

To complete your PS2 system LORENTZ provide a wide range of compatible probes, sensors, solar power connection equipment, racking and PV modules. This enables a single source of tested, ready to integrate components to give you a complete solution.

PS2 Features

Electrical Features

MPP Tracking
Highly efficient maximum power point tracking with pump system specific algorithms.

Active power management for temperature
Automatic power management to ensure the system continues to run in even the most extreme temperature conditions. At ambient temperatures up to 50°C (122°F) the system operates on full power and then actively manages power above that temperature.

Variable speed
Electronically controlled variable speed to allow maximum water to be pumped based on available power.

Motor control
Brushless and Sensorless ECDRIVE motor contol with gentle start, very high efficiency and no stop/start restrictions.

Protection
Protection against input reverse polarity, overload, motor short circuit and over temperature.

I/O Features

Digital inputs
For connection of well probe, tank full, pressure switches, remote switches and ancillary switching.

Analogue inputs
For 2x 4-20mA sensors. Applications included for pressure and level monitoring and pump control.

Sun Sensor function
Sun Sensor module is supplied to measure irradiation and control the pump based on available solar energy.

Water meter input
Pulse water meter input for accurate collection of flow data.

Water sensor input
For use with "wet electrodes" when sensing water is present in pipelines.

Signal output
For controlling externally connected devices.

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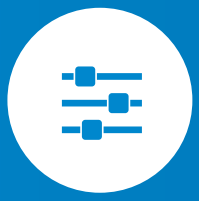




Software Applications

Constant pressure and flow
In-built applications to limit or to provide minimum pressure and flow.

Pump control on pressure or flow
Control of pump system using pressure sensors for remote control applications and pressure depended processes.

System timers
In-built timers for providing time of day or interval timing control.

Liquid level monitoring
Application software included to use pressure sensors for liquid level monitoring and pump control by level.

Speed Control
Set the maximum speed of the pump for use in low yielding water sources.

Display and Connectivity

Simple configuration
Simple system configuration and operational control from PumpScanner Smartphone App, for installers and customers.

Data logging
Automatic logging of all running pump data. Recording frequency is configurable with capacity for up to 10 years.

Customer display
Simple LED display to indicate system status.

App enabled (included)
Detailed information and configuration via PumpScanner Smartphone App.

CONNECTED
Local and remote monitoring and management with the LORENTZ CONNECTED infrastructure.

Technical Data

Controller Technical Data

Model	PS2-150	PS2-200	PS2-600	PS2-1800	PS2-4000
Power (max)	300 W	300 W	700 W	1,800 W	4,000 W
Input voltage (max) DC Voc	50 V	100 V	150 V	200 V	375 V
Input current (max)	22 A	11 A	13 A	14 A	14 A
Output voltage PWM 3 phase	4 – 36 V	10 – 60 V	10 – 60 V	30 – 130 V	60 – 240 V
Efficiency	Max 98%				
Ambient temperature	-38 ... 50 °C (-36...122F)				
Enclosure	IP 68 (NEMA 6P) outdoor housing Pressure cast aluminum and powder coated cover Pressure cast aluminum case with integrated heat sink				

ECDRIVE (motor) Technical Data

Model	ECDRIVE 150	ECDRIVE 200	ECDRIVE 600	ECDRIVE 1800	ECDRIVE 4000
Power (max)	300 W	300 W	700 W	1,800 W	4,000 W
Input voltage	18 V	45 V	45 V	95 V	240 V
Physical	Insulation class F, Max submersion 150 m, Enclosure class IP68, EN 1.4301/ AISI 304 stainless steel				

The Solar Water Pumping Company

Pump Technical Data

Submersible pumps		
Motor technology	4“ high efficiency ECDRIVE brushless DC motor	
Speed	600 to 3,300 rpm – depending on pump end	
Pump ends Helical Rotor	EN 1.4301/ AISI 304 cast Stainless steel stator housing Solid stainless steel rotor	
Pump ends Centrifugal	Multi-stage centrifugal – premium materials, EN 1.4301/ AISI 304 stainless steel	
Surface pumps		
Motor technology	4“ high efficiency air cooled ECDRIVE brushless DC motor	
Speed	600 to 3,300 rpm – depending on pump end	
Pump ends	Vertical multi-stage centrifugal premium materials, EN 1.4301/ AISI 304 stainless steel	Single stage centrifugal premium materials, cast iron body
Pool pumps		
Motor technology	4“ high efficiency air cooled ECDRIVE brushless DC motor	
Speed	900 to 3,300 rpm – depending on pump end	
Pump ends	Single stage centrifugal premium materials	

Choosing and designing your system

Partner Network

PS2 is available from approved LORENTZ partners across 130 countries. Our sales and service partners have the local knowledge, access to the right tools and information to plan a system accurately. This high degree of certainty and real world experience removes risk from your project.



To find a partner near you, visit **www.lorentz.de/partners**

COMPASS

Our industry leading COMPASS system planning software gives a detailed simulation of the water delivery through the year for your exact site location. This detailed modeling application provides a high degree of confidence that your system will perform as you require it to.



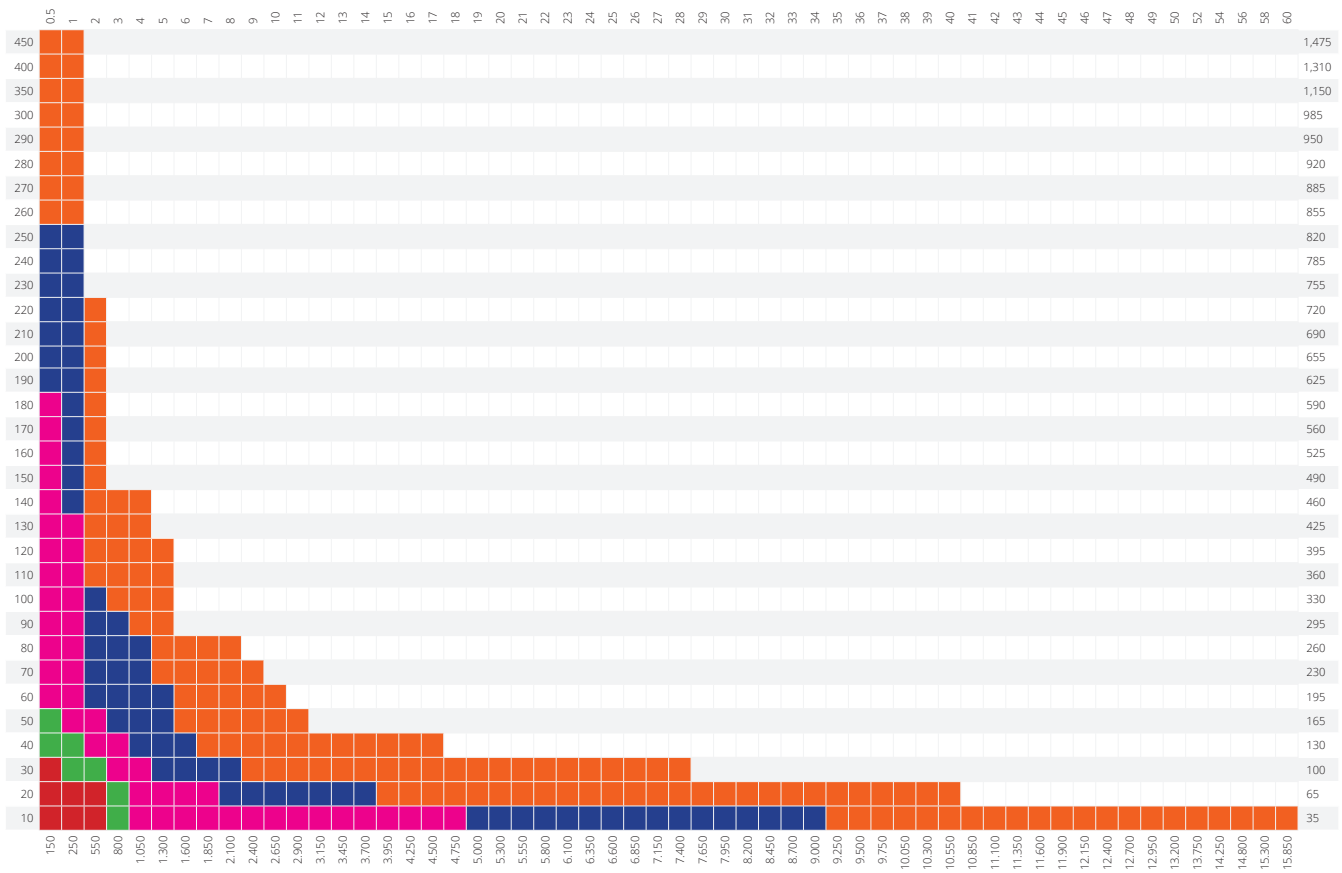
The Solar Water Pumping Company

The table below provides an indicative view of the system type that would be required to meet a specific hourly flow, and a given pumping head. Higher flow water applications are also possible, please speak to a LORENTZ partner about your specific project needs.

Performance

flow [m³/hour]

lift [m]



lift [ft]

flow [US Gal./hour]

PS2-150 PS2-200 PS2-600 PS2-1800 PS2-4000

About LORENTZ

LORENTZ is the global market leader in solar powered water pumping solutions. Founded in Germany during 1993 LORENTZ has pioneered, innovated and excelled in the engineering and manufacturing of solar powered water pumping. Today LORENTZ is active in over 130 countries through a dedicated network of professional partners. LORENTZ technology uses the power of the sun to pump water, sustaining and enhancing the life of millions of people, their livestock and crops.

Simply – ***Sun. Water. Life.***



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