LORENTZ APPLICATION GUIDE
Water Management for Livestock using Solar Pumps

Every year thousands of cattle farmers are changing out their old wind pumps and diesel equipment to benefit from solar pumping technology. Solar water pumping is a well established technology in the livestock sector that reliably provides the needed water, without the costs and effort of using fossil fuels, improving livestock business profitability and not having a negative impact on the environment. This guide explains how solar water pumping and the application of good livestock farming practices can make a significant and positive change to the livestock sector and how LORENTZ technology helps you to provide the best outcomes for your animals and your profitability.

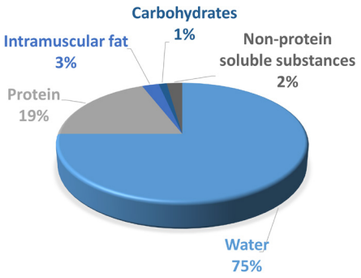


- **Provide water in the most cost effective way using solar power**
- **Monitor, manage and plan your water resources and production using state of the art tools, reducing time**
- **Ensure forage availability and its efficient production**
- **Improve the quality of water supplied to livestock (avoid diseases)**
- **Design efficient irrigation systems (avoid transporting water in vehicles)**
- **Apply good water distribution practices (Avoid wasting energy with livestock traveling long distances)**
- **Employ hygiene and washing routines to minimize contamination**



Importance of water management in livestock

Water is indispensable for life, serving crucial functions such as regulating body temperature, aiding digestion, and facilitating the absorption and utilization of nutrients in organisms. To underscore its significance, it's essential for every cattle farmer to grasp the typical chemical makeup of their cattle's muscle tissue. For instance, in beef cattle, the composition of meat is approximately:

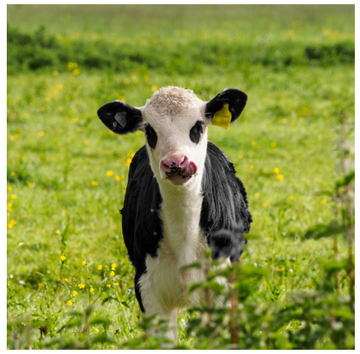


Therefore, providing sufficient water to cattle is an essential part of weight gain.

There are some important water management issues to consider in order to maximize your livestock production:

- If water supply is limited, cattle will limit forage intake, this is because water is key to digestion
- Water must be of good quality and taste, otherwise it can affect the health of the cattle and lower their performance
- The water supply must be fast, otherwise it generates stress and competition within the herd
- The maximum water demand must be met, otherwise the cattle will spend more time in the water trough and grazing time will decrease
- If water troughs are not designed according to the demand, the amount of water the animal must drink in a day is reduced
- Regular hygiene of stables and watering troughs should be done to avoid diseases and additional costs
- If the number of animals increases, the maximum water demand calculations should be redone
- The water assimilated by the livestock comes partly from grass as a feed source and partly from water in liquid form







Water consumption requirements for livestock

How much water do animals need?

Depending on the type of livestock, identify the amount of water required per day. These figures are guides only as individual requirements will vary depending on individual circumstances, environment and diet:

Cattle	Amount of water l/day [US gal/day]
Cow with calf	50 [13]
Dairy cow in milk	68 - 155 [18 - 41]
2 year old	36 - 50 [10 - 13]

Sheep	Amount of water l/day [US gal/day]
Ewe with lamb	9 - 10.5 [2.5 - 3]
Pregnant ewe / ram	4 - 6.5 [1 - 2]



Multiply this value by the number of Livestock:

Water per day =
Amount of water l/day [US gal/day] × Qty of livestock

"Store water, not energy
Benefit from free energy of the Sun"









Planning your solar pumping installation for livestock

Piping
(From the pump outlet at the water source to the main storage system)

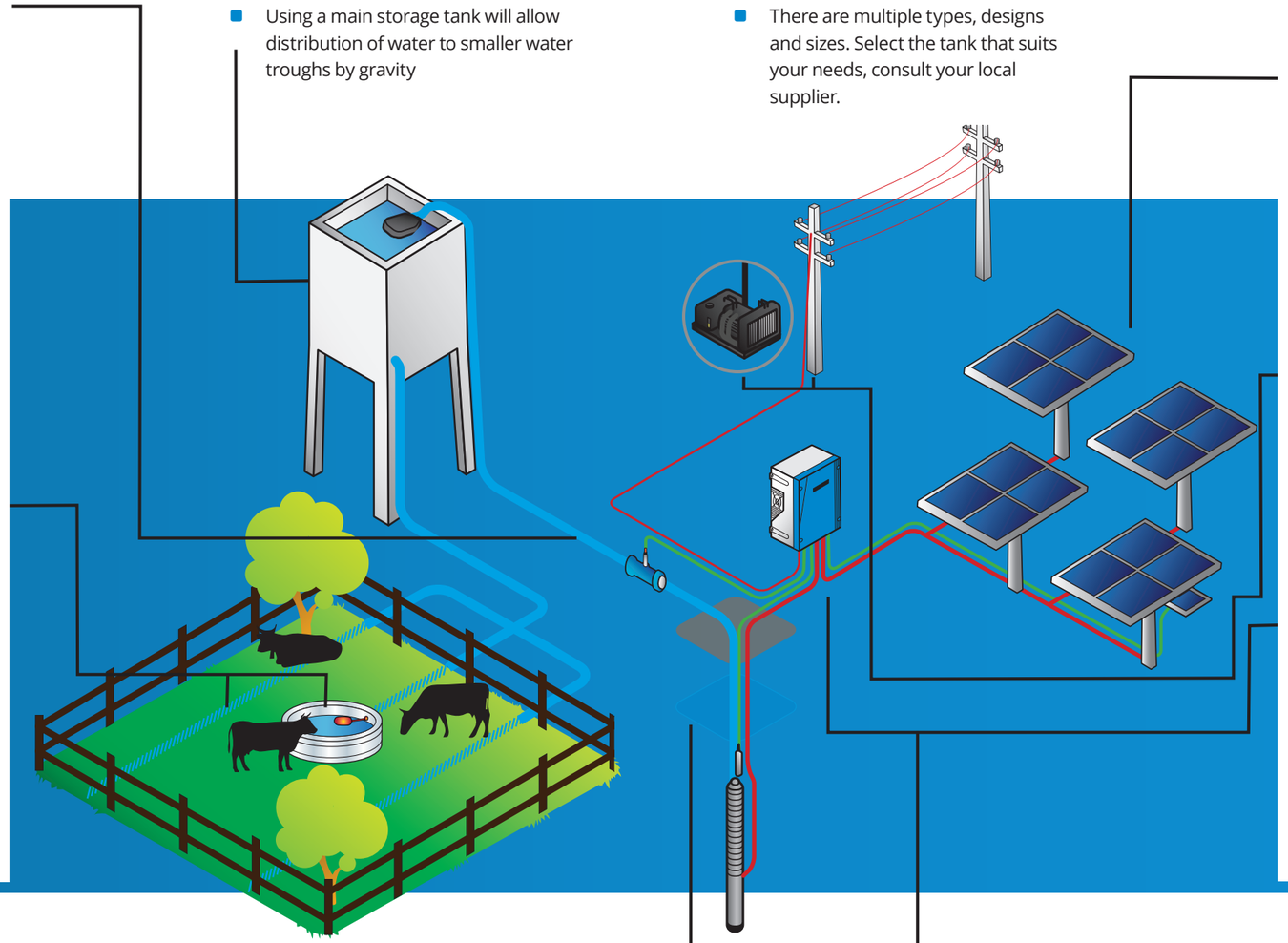
- Determine the length and material of piping from the pump outlet to the delivery point.
- The pipe diameter will be determined by the required flow rates of water. Your LORENTZ local partner has access to sophisticated planning tools required and will make a complete analysis in seconds, defining the best option for your installation. Contact your local LORENTZ Partner.
- Consider installing elbsows, tees, valves, fittings, among other pipe fittings you may need.

Distribution system
(From main storage system outlet to distribution points)

- Design the piping layout based on the terrain plan, considering the number of hydrants, drinking troughs and irrigation system, it is recommended not to install drinking troughs at distances greater than 200 m [656 ft] to avoid animal movement and optimize pasture time. Installing float switches at each trough will allow management of the water level according to demand.

Main storage system (tanks)

- Using a main storage tank will allow distribution of water to smaller water troughs by gravity
- There are multiple types, designs and sizes. Select the tank that suits your needs, consult your local supplier.



Energy power sources

Solar power (PV generator)

- Pumping water with solar energy will always be the most cost effective option, 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.

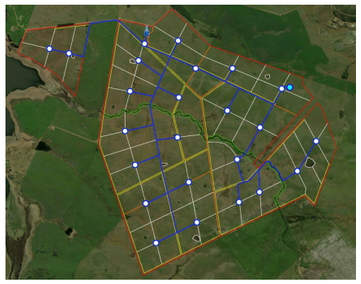
Alternative Power Source

Grid / Diesel generator

- Use alternative energy sources installing a PowerPack accesory in your PS2 Systems either directly from the mains (AC) or with a diesel generator pumping 24 hours daily.

Hybrid operation

- Where water demand cannot be met by solar power alone, the LORENTZ hybrid system will give priority to cheap/clean solar power and supplement operation with grid or generator power automatically, meaning that LORENTZ PSk offers the best of both worlds.

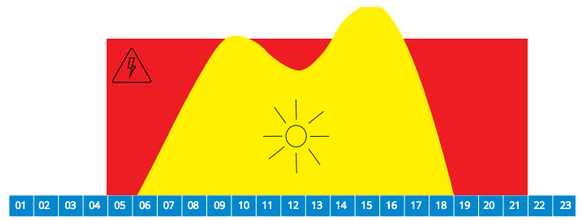


Water source

- Define the best source of natural or artificial water supply for your system, either surface as a cistern, pond, river or subway as a drilled well.
- In the case of a drilled well, determine: performance, maximum capacity, levels (static, dynamic, abatement), water quality. Consult your drilled well expert for more information.

Control system

- The controller is the brain of the system, managing both system operations, power sources and constantly optimizing the system for maximum water output.



The best of both worlds - solar power (yellow) blended with grid or generator power (red) when you need it.

Solar water pumping systems based on volume of water per day

Overview

		System size		Small		Medium		Large	
		Diagram page		**Page 8**	**Page 10**	**Page 12**	**Page 14**	**Page 16**	**Page 18**
		System #.		**1.**	**2.**	**3.**	**4.**	**5.**	**6.**
		System name		**S1-200**	**PS2-150**	**PS2-1800**	**PS2-4000**	**PSk3-15**	**PSk2-25**
Initial parameters required		Max. water volume per day	m^3 [US gal]	10 [2,640]	20 [5,283]	50 [13,208]	70 [18,492]	200 [52,834]	400 [105,668]
		Pumping height	m [ft]	15 [49]	15 [49]	50 [164]	75 [246]	80 [262]	80 [262]
		Horizontal distance	m [ft]	50 [164]	200 [656]	200 [656]	600 [1,968]	1,500 [4,921]	1,500 [4,921]
		PV generator size	kWp	0.2	0.6	3.9	7.9	17.8	33.6
Componets	**Pos.**			**LORENTZ Accesories of installation**					
PV generator power source	1	**PV modules**		Yes	Yes	Yes	Yes	Yes	Yes
	2	**PV mounting**		Yes	Yes	Yes	Yes	Yes	Yes
	3	**PV Disconnect**		No	Yes	Yes	Yes	Yes	Yes
	4	**Surge Protection Device (SPD)**		No	Included	Included	Included	Yes	Yes
	5	**Grounding**		No	Yes	Yes	Yes	Yes	Yes
	6	**Sun Sensor**		No	No	Yes	Yes	Yes	Yes
Alternative power source	7	**Power Pack (Grid)**		Optional	Yes	Yes	Yes	Yes (Hybrid)	Yes (Hybrid)
		Alternative generator		Optional	Optional	Optional	Optional	Optional	Optional
Control system	8	**Controller**		S1-200	PS2-150	PS2-1800	PS2-4000	PSk3-15	PSk2-25
	9	**SPD (Inside controller)**		No	Yes	Yes	Yes	Yes	Yes
Water source	10	**Submersible pump + motor**		Yes	Yes	Yes	Yes	Yes	Yes
	11	**Mechanical dry run protection**		Yes	Yes	Yes	Optional	Optional	Optional
	12	**Level measurement solution (WLMS or LLS)**		No	Optional	Optional	Yes	Yes	Yes
Discharge pipe	13	**Pressure sensor**		No	Yes	NRE	Yes	Yes	Yes
Main storage system	14	**Tank full switch** [(1)]		Yes	NRE	Yes	NRE	NRE	NRE
Local and remote management	15	**Connection apps (Local)**		S-Connect		PumpScanner		LORENTZ Assistant	Pump Scanner
	16	**Commander Cell or Sat (Remote)**		No	NRE	NRE	Yes	Yes	Yes
	17	**LORENTZ Global (Remote)**		No	NRE	NRE	Yes	Yes	Yes

NRE = Not required in this example

[(1)] Instead of a Tank full switch, a Level measurement solution (WLMS or LLS) can also be installed as an option, depending on the installation, see Pos. 12.

The data provided is the annual daily average based on the use of 205 Wp (small systems) and 330 Wp (medium-large systems) PV modules at location 15N 0E.









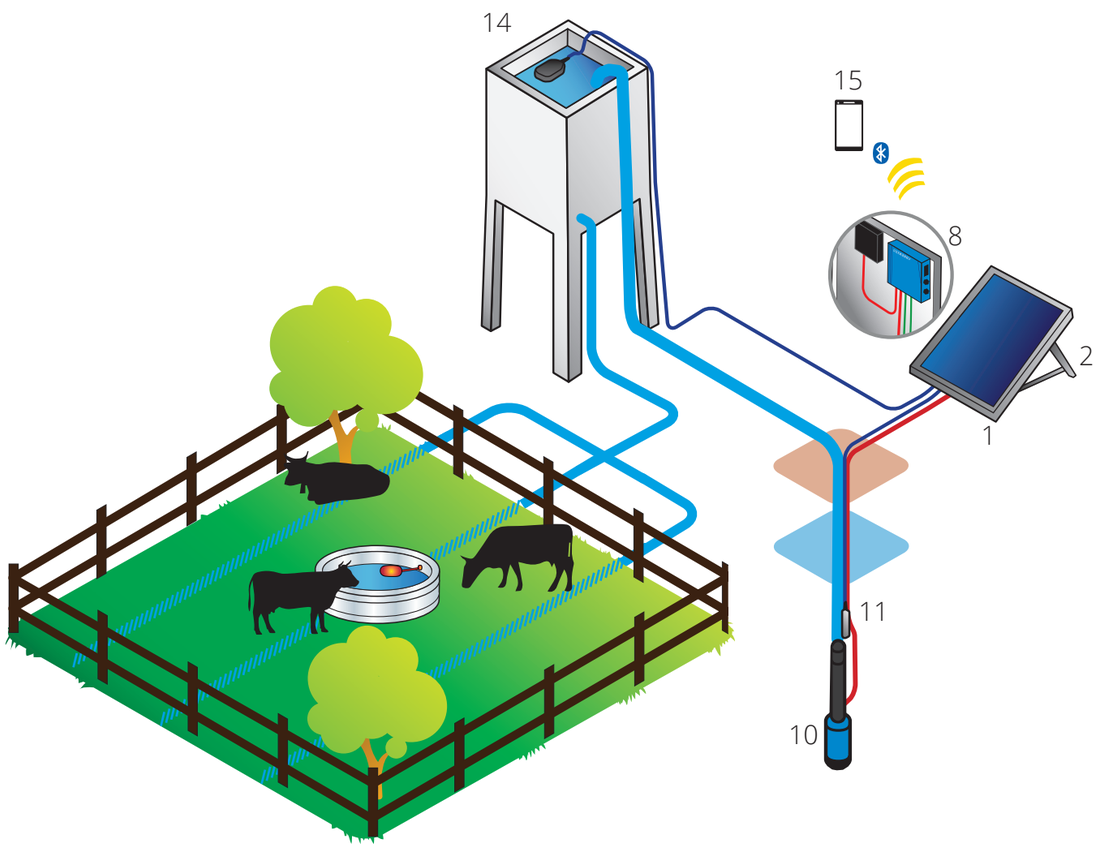


1. Small system: S1-200

Description of installation

- Pumping from the water source (pump protected by a [11] dry run protection),
- to an elevated tank automatically controlled by a [14] tank-full switch,
- distribution system by gravity.
- Configure and control the pumping system using the [15] S-Connect app on your smartphone.

10 m³ [2,640 US gal]



Pumping height	15 m [49 ft]	Horizontal distance	50 m [164 ft]	PV size	0.2 kWp

System components

1. PV modules
2. PV mounting
8. S1-200 Controller
10. Submersible LORENTZ pump
11. Mechanical dry run protection
14. Tank full switch
15. S-Connect App

For a detailed "Description of the pumping system components", see **Page 20**.

Water consumption

Up to 100 LSU*

* Quantity of LSU (livestock units) based on the consumption of 100 L [26.4 US gal] of water per day

Irrigation

Up to 0.6 ha [1.5 acres] / q3day**

** Example for irrigation of 5 mm per hectare [0.2 in per acre] every 3 days. This value depends on the type of soil, pasture and climatic conditions.

Power-grid savings

Up to 411 kWh / year

CO_2 savings

Up to 156 Kg [344 lbs] / year

Diesel savings

Up to 164 L [43 US gal] / year

Up to 395 Kg [871 lbs] / year

Initial investment cost***

Pump system	$ 900
PV generator	$ 200
Total initial investment	$ 1,100

*** Estimated price in USD, not including local taxes and transport.

"Animals that drink good quality water are generally less susceptible to disease, gain more weight and produce more milk"

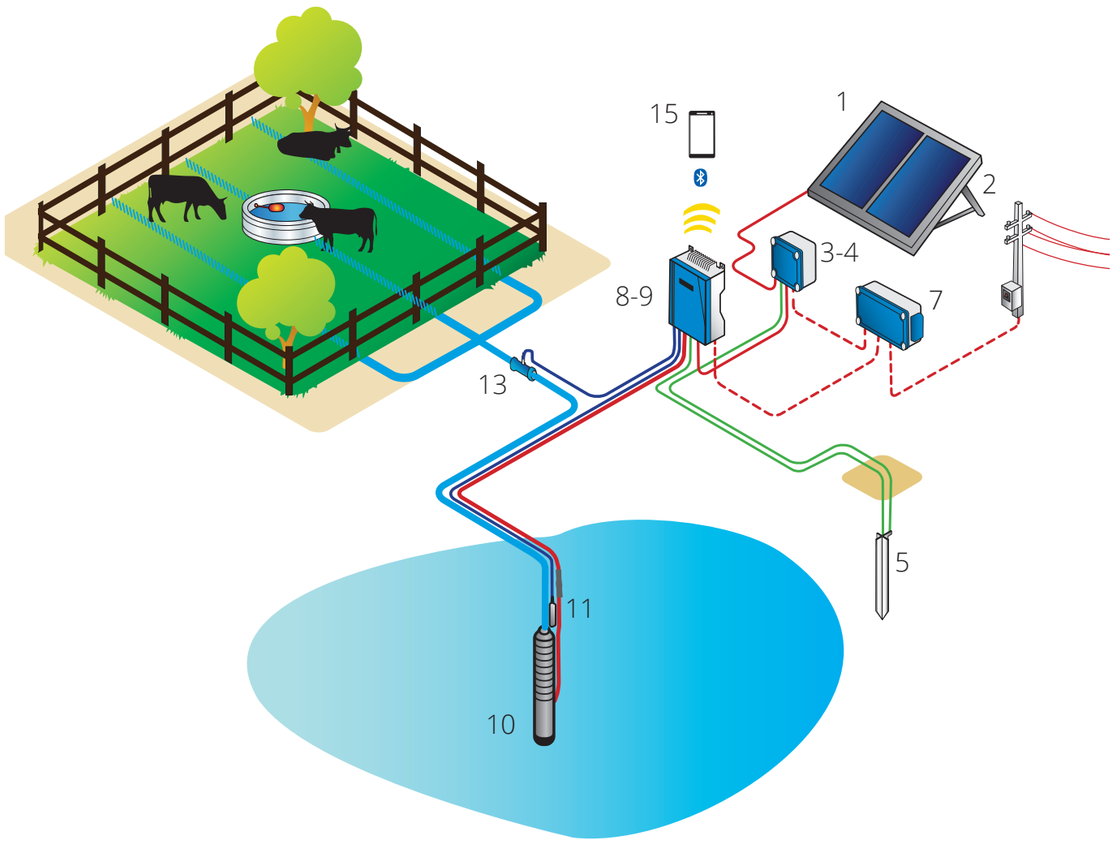
Average system life 15 years

2. Small system: PS2-150

Description of installation

- Pumping from the water source (pump protected by a [11] dry run protection),
- supplies water to the distribution system and controls the water level in the trough by using a [13] pressure sensor with a mechanical float switch.
- Possibility to use with alternative energy sources (grid / generator) using the [7] PowerPack accessory.
- Configure and control the pumping system using the [15] PumpScanner app on your smartphone.

20 m^3 [5,283 US gal]



Pumping height	15 m [49 ft]	Horizontal distance	200 m [656 ft]	PV size	0.6 kWp

System components

1. PV modules
2. PV mounting
3. PV Disconnect (4. SPD included)
5. Grounding rod
7. Alternative grid power source (PowerPack)
8. PS2-150 Controller
9. Surge protection device for accesories installed inside the controller
10. Submersible LORENTZ pump
11. Mechanical dry run protection
13. Pressure sensor
15. PumpScanner App

For a detailed "Description of the pumping system components", see **Page 20**.

Water consumption

Up to 200 LSU*

* Quantity of LSU (livestock units) based on the consumption of 100 L [26.4 US gal] of water per day

Irrigation

Up to 1.2 ha [3 acres] / q3day**

** Example for irrigation of 5 mm per hectare [0.2 in per acre] every 3 days. This value depends on the type of soil, pasture and climatic conditions.

Power-grid savings

Up to 1,233 kWh / year

CO_2 savings

Up to 469 Kg [1,034 lbs] / year

Diesel savings

Up to 493 L [130 US gal] / year

Up to 1,184 Kg [2,610 lbs] / year

"A cattle can survive without feed for up to a week, but without drinking liquid for no more than 48 hours"

Initial investment cost***

Pump system	$ 2,900
PV generator	$ 600
Total initial investment	$ 3,500

*** Estimated price in USD, not including local taxes and transport.

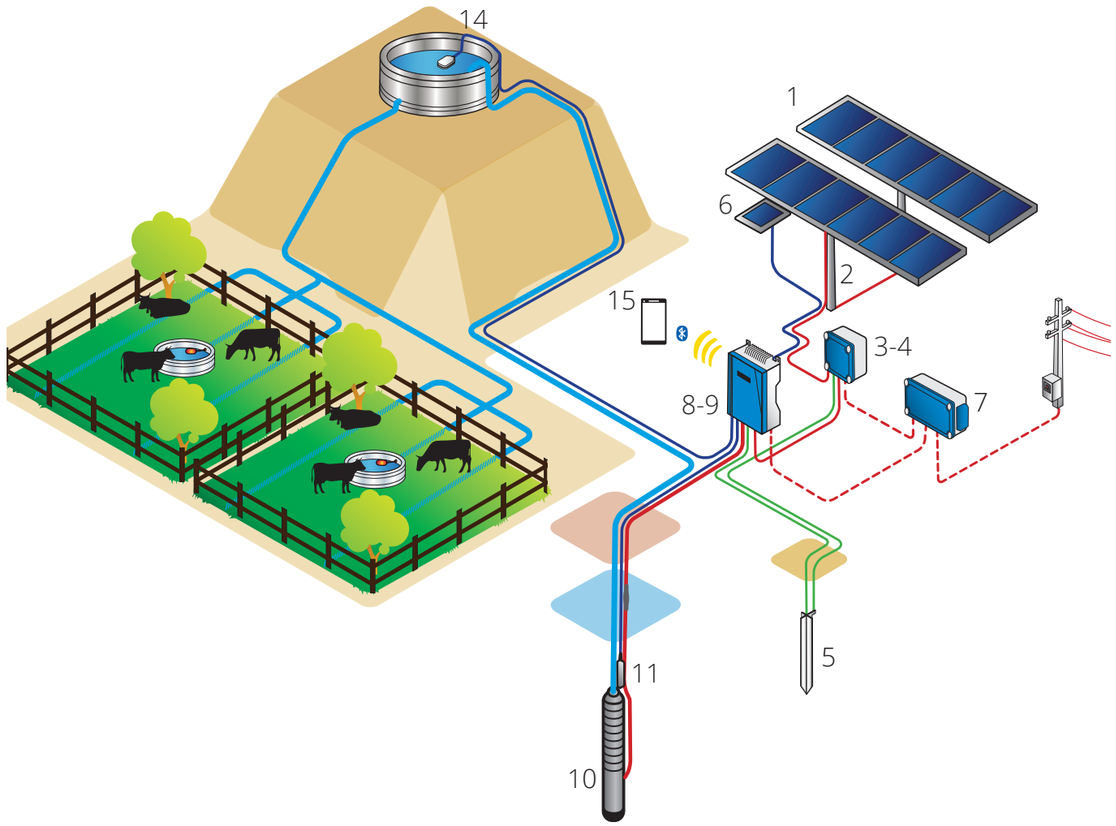
Average system life 15 years

3. Medium system: PS2-1800

Description of installation

- Pumping from the water source (pump protected by a [11] dry run protection),
- to an elevated australian tank, the water level is automatically controlled by a [14] tank full switch,
- the distribution system is done by gravity action.
- Possibility to use with alternative energy sources (grid / generator) using the [7] PowerPack accessory,
- Configure and control the pumping system using the [15] PumpScanner app on your smartphone.

50 m^3 [13,208 US gal]



Pumping height	50 m [164 ft]	Horizontal distance	200 m [656 ft]	PV size	3.9 kWp

System components

1. PV modules
2. PV mounting
3. PV Disconnect (4. SPD included)
5. Grounding rod
6. Sun Sensor
7. Alternative grid power source (PowerPack)
8. PS2-1800 Controller
9. Surge protection device for accesories installed inside the controller
10. Submersible LORENTZ pump
11. Mechanical dry run protection
14. Tank full switch
15. PumpScanner App

For a detailed "Description of the pumping system components", see **Page 20**.

Water consumption

Up to 500 LSU*

* Quantity of LSU (livestock units) based on the consumption of 100 L [26.4 US gal] of water per day

Irrigation

Up to 3 ha [7.4 acres]/ q3day**

** Example for irrigation of 5 mm per hectare [0.2 in per acre] every 3 days. This value depends on the type of soil, pasture and climatic conditions.

"When sending water to cattle and not cattle to water, meat/ milk production is increased by 40 - 60 %"

Power-grid savings

Up to 7,940 kWh / year

CO_2 savings

Up to 3,017 Kg [6,651 lbs] / year

Diesel savings

Up to 3,176 L [839 US gal] / year

Up to 7,622 Kg [16,804 lbs] / year

Initial investment cost***

Pump system	$ 5,000
PV generator	$ 4,400
Total initial investment	$ 9,400

*** Estimated price in USD, not including local taxes and transport.

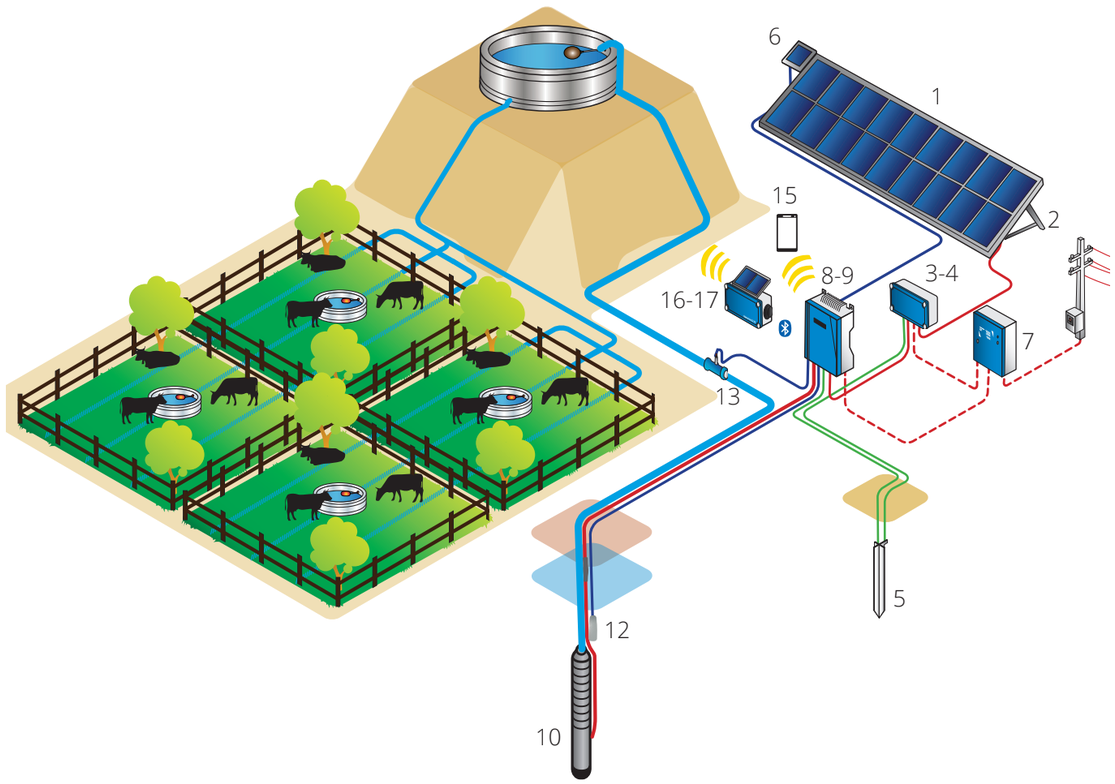
Average system life 15 years

4. Medium system: PS2-4000

Description of installation

- Pumping from the water source (well level controlled and pump protected by a [12] level measurement solution (WLMS or LLS),
- to an elevated australian tank, the water level is controlled by a [13] pressure sensor installed in the pipeline in conjunction with a mechanical float switch,
- the distribution system is done by gravity action.
- Possibility of use with alternative power sources (mains / generator) using the [7] PowerPack accessory.
- Configure and control the pumping system using the [15] PumpScanner app on your smartphone.
- Control your pumping system in real time remotely from any computer using [16 - 17] LORENTZ Global platform.

70 m^3 [18,492 US gal]



Pumping height	75 m [246 ft]	Horizontal distance	600 m [1,968 ft]	PV size	7.9 kWp

System components

1. PV modules
2. PV mounting
3. PV Disconnect (4. SPD included)
5. Grounding rod
6. Sun Sensor
7. Alternative grid power source (PowerPack)
8. PS2-4000 Controller
9. Surge protection device for accesories installed inside the controller
10. Submersible LORENTZ pump
12. Level measurement solution (WLMS or LLS)
13. Pressure sensor
15. PumpScanner App
16. Commander Cell or Sat
17. LORENTZ Global

For a detailed "Description of the pumping system components", see **Page 20**.

Water consumption

Up to 700 LSU*

* Quantity of LSU (livestock units) based on the consumption of 100 L [26.4 US gal] of water per day

Irrigation

Up to 4.2 ha [10 acres] / q3day**

** Example for irrigation of 5 mm per hectare [0.2 in per acre] every 3 days. This value depends on the type of soil, pasture and climatic conditions.

Power-grid savings

Up to 15,880 kWh / year

CO_2 savings

Up to 6,034 Kg [13,303 lbs] / year

Diesel savings

Up to 6,352 L [1,678 US gal] / year

Up to 15,244 Kg [33,607 lbs] / year

Initial investment cost***

Pump system	$ 6,800
PV generator	$ 8,900
Remote control	$ 1,200
Total initial investment	$ 16,900

*** Estimated price in USD, not including local taxes and transport.

"Up to 25% of the cattle's body weight can be lost due to lack of water"

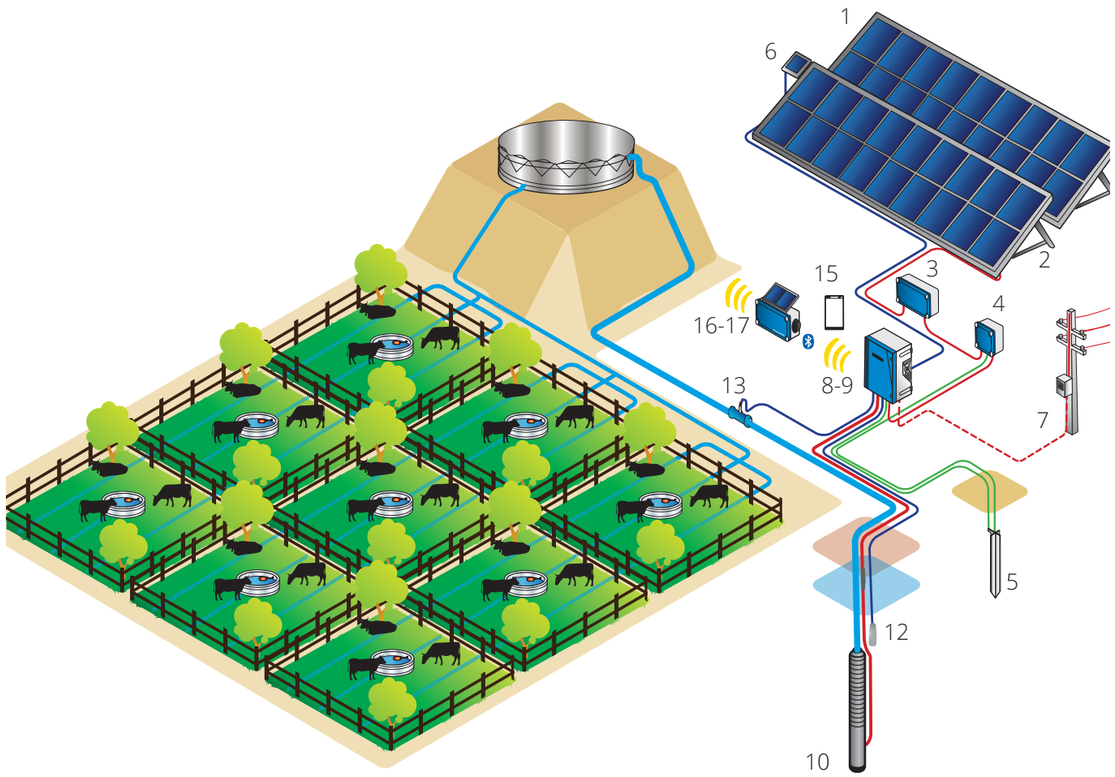
Average system life 15 years

5. Large system: PSk3-15

Description of installation

- Pumping from the water source (well level controlled and pump protected by a [12] level measurement solution (WLMS or LLS),
- to an elevated australian tank, the water level is controlled by a [13] pressure sensor installed in the pipeline together with a mechanical float switch inside the tank,
- the distribution system is gravity driven.
- [8] Controller with hybrid technology that makes possible the use with alternative energy sources [7] (grid / diesel generator), given priority to solar energy.
- Configure and control the pumping system using the [15] LORENTZ Assistant app on your smartphone.
- Control your pumping system in real time remotely from any computer using [16 - 17] LORENTZ Global platform.

200 m^3 [52,834 US gal]



Pumping height	80 m [262 ft]	Horizontal distance	1,500 m [4,921 ft]	PV size	17.8 kWp

System components

1. PV modules
2. PV mounting
3. PV Disconnect
4. PV Protect (SPD)
5. Grounding rod
6. Sun Sensor
7. Alternative grid power source
8. PSk3-15 Controller (hybrid tech)
9. Surge protection device for accesories installed inside the controller
10. Submersible LORENTZ pump
12. Level measurement solution (WLMS or LLS)
13. Pressure sensor
15. LORENTZ Assistant App
16. Commander Cell or Sat
17. LORENTZ Global

For a detailed "Description of the pumping system components", see **Page 20**.

Water consumption

Up to 2,000 LSU*

* Quantity of LSU (livestock units) based on the consumption of 100 L [26.4 US gal] of water per day

Irrigation

Up to 12 ha [30 acres] / q3day**

** Example for irrigation of 5 mm per hectare [0.2 in per acre] every 3 days. This value depends on the type of soil, pasture and climatic conditions.

Power-grid savings

Up to 35,729 kWh / year

CO_2 savings

Up to 13,577 Kg [29,932 lbs] / year

Diesel savings

Up to 14,292 L [3,776 US gal] / year

Up to 34,300 Kg [75,618 lbs] / year

Initial investment cost***

Pump system	$ 10,100
PV generator	$ 20,000
Remote control	$ 1,200
Total initial investment	$ 31,300

*** Estimated price in USD, not including local taxes and transport.

"A farmer should not only be a good farmer but also a good water harvester"

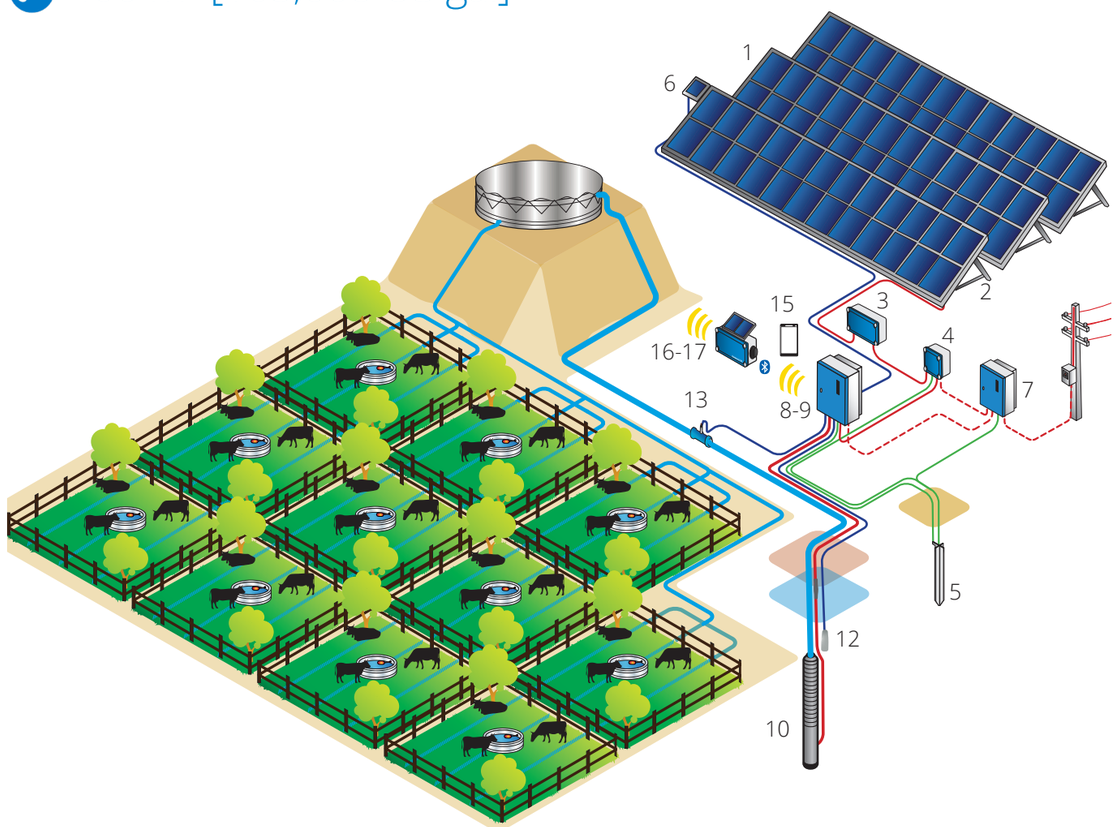
Average system life 15 years

6. Large system: PSk2-25

Description of installation

- Pumping from the water source (well level controlled and pump protected by a [12] level measurement solution (WLMS or LLS),
- to an elevated australian tank, the water level is controlled by a [13] pressure sensor installed in the pipeline together with a mechanical float switch inside the tank,
- the distribution system is gravity driven.
- Hybrid technology that makes possible the use with alternative energy sources (grid / diesel generator), given priority to solar energy using the [7] SmartPSU accessory.
- Configure and control the pumping system using the [15] PumpScanner app on your smartphone.
- Control your pumping system in real time remotely from any computer using [16 - 17] LORENTZ Global platform.

400 m³ [105,668 US gal]



Pumping height	80 m [262 ft]	Horizontal distance	1,500 m [4,921 ft]	PV size	33.6 kWp

System components

1. PV modules
2. PV mounting
3. PV Disconnect
4. PV Protect (SPD)
5. Grounding rod
6. Sun Sensor
7. Alternative grid power source (SmartPSU)
8. PSk2-25 Controller
9. Surge protection device for accesories installed inside the controller
10. Submersible LORENTZ pump
12. Level measurement solution (WLMS or LLS)
13. Pressure sensor
15. PumpScanner App
16. Commander Cell or Sat
17. LORENTZ Global

For a detailed "Description of the pumping system components", see **Page 20**.

Water consumption

Up to 4,000 LSU*

* Quantity of LSU (livestock units) based on the consumption of 100 L [26.4 US gal] of water per day

Irrigation

Up to 24 ha [59 acres] / q3day**

** Example for irrigation of 5 mm per hectare [0.2 in per acre] every 3 days. This value depends on the type of soil, pasture and climatic conditions.

Power-grid savings

Up to 67,488 kWh / year

CO_2 savings

Up to 25,646 Kg [56,540 lbs] / year

Diesel savings

Up to 26,995 L [7,131 US gal] / year

Up to 64,789 Kg [142,835 lbs]/ year

Initial investment cost***

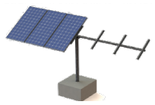
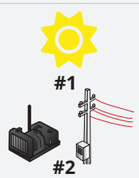
Pump system	$ 17,600
PV generator	$ 37,700
Remote control	$ 1,200
Total initial investment	$ 56,500

*** Estimated price in USD, not including local taxes and transport.

" Store water, not energy - Harness free energy from the Sun"

Average system life 15 years

Description of system components

Componets	Pos.	LORENTZ Accesories of installation		
PV generator power source	1	PV modules		A wide range of PV modules to fit local market conditions
	2	PV mounting		Range of mounting options to meet field installation requirements
	3	PV Disconnect		For connecting multiple PV modules together and to provide safety isolation.
	4	Surge Protection Device (SPD)		Manage external voltage spikes on the incoming solar power supply. Included in PV Disconnects for PS2 systems. Named PV Protect in PSk systems
	5	Grounding		Used to protect against indirect lightning strikes and induced electrical potential during operation of the pump system.
	6	Sun Sensor		Irradiation measurement module. Provides protection to the pump against wear due to repeated starts and stops caused by low irradiance.
Alternative power source	7	Power Pack		To convert AC power to DC to run the LORENTZ pump systems (from 0.15 to 4 kW) in PS2 systems.
		Hybrid function		In PSk systems, the primary source will be solar energy and the secondary source will be grid or generator power. For power ranges above 15 kW use the SmartPSU as an accessory in your pumping system.
Control system	8	Controller		The controller is the brain of the system, managing both system operations, power sources and constantly optimizing the system for maximum water output.
	9	Surge Protection Devices (SPD) for accesories		To provide galvanic separation between the pump controller and any sensors or switches. Accessory installed inside the controller.

Componets	Pos.	LORENTZ Accesories of installation		
Water source	10	Submersible pump + motor		LORENTZ has a wide range of submersible pumps systems available to meet your water needs.
	11	Dry run protection		Detects that water is present within a well, tank or other water source. Use it for dry work protection in submersible pumps.
	12	Level Measurement Solution		Install a Level Measurement Solution - (WLMS or LLS) - to measure/optimize well/tank levels and its recovery, it also works as a dry run protection.
Pipe from the pump outlet to the main storage system	13	Pressure sensor		Suitable for pressure measurement and for pressure switching or constant pressure applications. Use it when the main tank is located 600 m (2,000 ft) or more away from the controller.
Main storage system (tanks)	14	Full tank switch		LORENTZ Full tank switch that will signal the controller to turn off the pump when the tank reaches maximum capacity. Used when the main tank is located up to 200 m (660 ft) away from the controller.
Local and remote management	15	Local connection Apps		The system is configured on site using LORENTZ CONNECTED apps, S-Connect for S1, PumpScanner for PS2/PSk2 and LORENTZ Assistant for PSk3.
	16	Interface for remote management: Commander Cell or Sat		Cellular or satellite communication device to collect data from pump controllers and sensors.
	17	Remote management via LORENTZ Global		Remote monitoring service that stores data in the cloud. Manage your pumps and check your water levels from anywhere.

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.

Signal output
For controlling externally connected devices.

SmartPSU connection (PSk2 only, integrated in PSk3)
To automatically control operation of the SmartPSUk2 when in hybrid pumping mode.

Low voltage input for configuration
Low voltage DC input to allow bench / field configuration when 3 phase power is not available.

Electrical Features

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

Variable frequency output
Variable frequency output to allow maximum water to be pumped based on available power.

Soft start
Soft start and infinite control of motor speeds for long life and low generator loads.

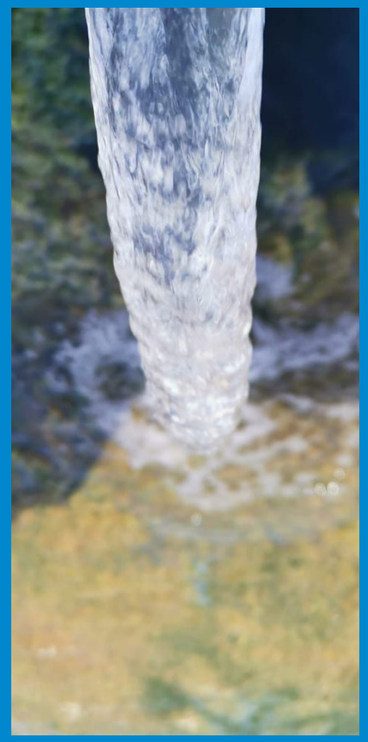
Active power management for temperature
Automatic power management to ensure the system continues to run in even the most extreme temperature conditions. At ambient temperatures up to 50°C [122°F] the system operates on full power and then actively manages power above that temperature.













What makes PSk better for you ?




Designed for Solar water pumping

LORENTZ PSk has been designed from the first whiteboard 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.

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. LORENTZ PSk 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.

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




Hybrid power

LORENTZ PSk can be powered by solar alone or be configured as a hybrid system. With LORENTZ, hybrid means seamlessly blending solar power with grid or diesel generator power sources.

The LORENTZ PSk becomes the brain of your water system, looking at what power is available, using solar power wherever possible and only starting a diesel generator or putting a load on the power grid when there is not enough sun. This function is not a switching system, but rather an active blending of power sources. This means that your solar investment is fully utilized and that the use of expensive, non-renewable power is minimized.

The LORENTZ PSk hybrid system manages all of this for you, including generator auto start and stop, timed starts and also volume based decision making. This flexibility means that the most efficient and effective solutions can be built to meet any water need.

Automatic blending of power sources based on your water requirements.




The complete solution

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

LORENTZ PSk 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 Sun Sensor also avoids unnecessary stop start cycles which increase pump wear.

LORENTZ PSk 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

Every LORENTZ PSk system is CONNECTED.

The system is configured on site using LORENTZ CONNECTED apps, PumpScanner for PSk2 and LORENTZ Assistant for PSk3. Common configuration is done with three clicks and there is full access to configure system behavior based on additional sensor inputs.

The LORENTZ PSk constantly records operational data and provides access to rich information for both customers and technicians via rights managed and user friendly apps.

The LORENTZ PSk systems can also be connected to LORENTZ Global, our industry leading cloud based management service. This is a simple to use but powerful, monthly service that takes away the complexity of remote monitoring and management. One low monthly fee means that you can see exactly what the system is doing, make changes to settings, export data and receive proactive alerts irrespective of location.

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

Good practices to face livestock challenges

Planning and definition of areas

Based on the area of your farm, divide the pastures in order to guarantee soil conservation. Apply Voisin Rational Grazing practices.



Type of Soil

Perform specialized precision topography with an expert in the field, defining the soil type and its water needs. For droughts, there are forages that do not need so much water.



Be prepared to face droughts

It is essential that livestock farmers implement different strategies to maintain water in their territories. Build deep wells or jagüeyes if your soil allows it before winter begins.



A farmer, in addition to being a good agriculturist, must be a good "harvester" of water.

Harvest rainwater in australian tanks / plastic, learn about the latest water storage technologies.



Design and planning an integrated irrigation system

Choose the appropriate based on the type of soil, terrain and livestock needs, evaluate if it can be managed by sprinkling, drip or flooding.



By sending the water to the cattle and not the cattle to the water, meat / milk production is increased by 40 - 60%

Avoid moving cattle long distances to give them water; the best way to supply the liquid is to leave water troughs with clean water for each one to consume at will.



LORENTZ

Water management

Take care of water sources and the collection, storage and rational use of water, provide water troughs for livestock. Prevent animals from consuming water from puddles.



When you want a quality grass-based production, you must first of all have quality grass

A productive pasture must be given a rest period between two grazing. This allows it to store reserves in its roots and develop rapidly to produce the greatest amount of green mass per unit area (Voisin's first law).



Water quality

Make sure the water is always clean and fresh; water contaminated by bacteria affects the health of livestock. When infected with feces, it transmits diseases such as Salmonella, Cryptosporidium and E. coli.



Water quality has an impact on animal and humans

The correct administration of water with the best possible quality for cattle is a great source of human health, by reducing the incidence and/ or multiplication of parasites such as Hepatic Fasciola in areas where cows and humans coexist on a daily basis.



Manure management

Plan adequate manure management, using animal excreta and urine, which are left daily in each division. Organic fertilizers are a source of soil bacterial life, without which plants cannot be nourished.



Importance of trees

Trees control temperature, making heat waves more pleasant. They regulate the water cycle, retaining water and humidity and protect the grass from strong winds, preserving its nutritional content.



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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