



About **ennos** ag

Having an impact

ennos brings innovative solar technologies to farmers and communities.

What motivates is to see how the living conditions of the sunlight pump users improve.

Every kind of specialist

ennos is an interdisciplinary team of engineers and marketing experts.

The close collaboration between disciplines allows ennos to continuously improve the design and functionalities of the sunlight pump to better meet the needs of the users.

ennos has more than 12 years of experience in developing the most efficient solar pumps



Key components of the sunlight pump

The **sunlight pump**: a highly efficient surface solar water pump for various applications

Motor

Highly efficient, maintenance-free motor, 100-500W

Controller

User interface and connection to sunlight pump App

Pump head

Robust eccentric screw pump



Performance of the **sunlight pump** powered by solar panel

Sunlight pump performance powered by solar panel

Discharge in liter per minute (L/Min)

Head	150W	200W	300W	320W	400W
10 Metres	24	32	42	43	45
20 Metres	15	22	33	34	40
30 Metres	- *	13	24	25	32
40 Metres	-	-	17	18	24

Discharge in liter per hour (L/Hour)

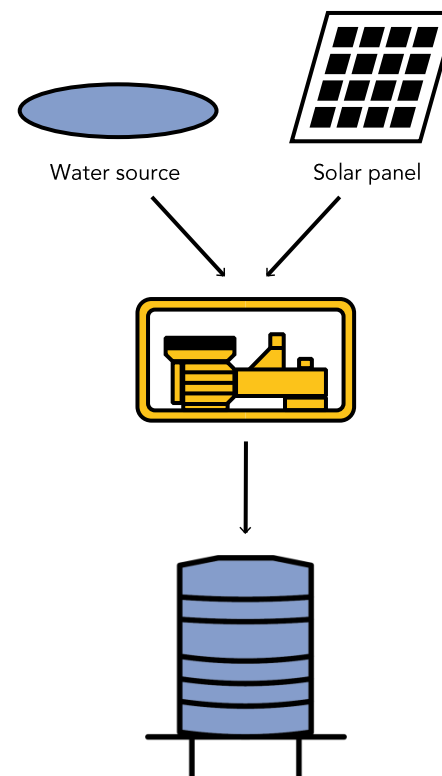
Head	150W	200W	300W	320W	400W
10 Meters	1400	1900	2500	2600	2700
20 Metres	900	1300	2000	2000	2400
30 Metres	-	800	1400	1500	1900
40 Metres	-	-	1000	1100	1400

Discharge in liter per day (L/Day)

Head	150W	200W	300W	320W	400W
10 Meters	11400	15100	18000	19000	19500
20 Metres	6600	9200	14500	15400	17300
30 Metres	-	6000	10100	10800	13500
40 Metres	-	-	7700	8200	10500

* Cells without value do not fulfil SLP requirement of minimum 10L/Min

All Information given is intended as a reference and was determined under laboratory conditions - same performance in the field is not guaranteed. This applies to all further information.



Performance of the sunlight pump powered by battery

Sunlight pump performance powered by led acid battery*

Maximum Water flow possible (L/Min)

Head	12V / 100Ah*	12V / 200Ah*	24V / 100Ah*	24V / 200Ah*	36V / 100Ah*
10 Metres	19	19	38	38	45
20 Metres	14	14	28	28	42
30 Metres	-	-	19	19	28
40 Metres	-	-	14	14	21

Maximum Water flow possible (L/Hour)

Head	12V / 100Ah*	12V / 200Ah*	24V / 100Ah*	24V / 200Ah*	36V / 100Ah*
10 Metres	1100	1100	2300	2300	2700
20 Metres	800	800	1700	1700	2500
30 Metres	-	-	1100	1100	1700
40 Metres	-	-	800	800	1300

Runtime with maximum available input power (Hours):

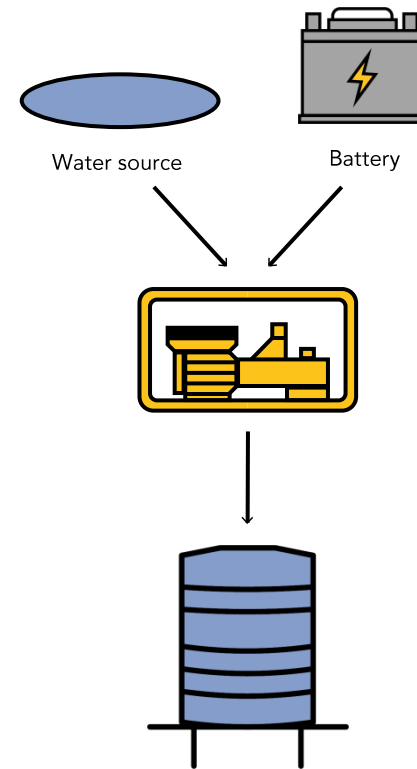
Head	12V / 100Ah*	12V / 200Ah*	24V / 100Ah*	24V / 200Ah*	36V / 100Ah*
10 Metres	7.4 h	14.7 h	7.4 h	14.7 h	9.2 h
20 Metres	7.4 h	14.7 h	7.4 h	14.7 h	7.4 h
30 Metres	-	-	7.4 h	14.7 h	7.4 h
40 Metres	-	-	7.4 h	14.7 h	7.4 h

Discharge in liter per cycle (L/Cycle)

Head	12V / 100Ah*	12V / 200Ah*	24V / 100Ah*	24V / 200Ah*	36V / 100Ah*
10 Metres	8300	16600	16600	33300	25000
20 Metres	6200	12300	12300	24700	18500
30 Metres	-	-	8200	16400	12300
40 Metres	-	-	6200	12300	9200

*Led acid battery with 70% depth of discharge (DoD)

*The Information given is an example and intended as a reference.
Results in the field vary according to your choice of battery.



Gravity drip irrigation powered by the sunlight pump & solar panels

Jain turbo excel & jain turbo slim TE

Water required (L/Hour)

Height of tank	1m ²	250m ²	500m ²	1000m ²	2000m ²
1.5 Metres	2	470	940	-	-
2.0 Metres	2.2	550	1100	-	-
2.5 Metres	2.4 / 2.1	620	1240	1040	2070
3.0 Metres	2.7 / 2.3	690	1380	1150	2290
4.0 Metres	3.2 / 2.7	810	1610	1340	2690

*line spacing: 1m up to 500m² / 1.2m for 1'000 and 2'000m². emitter spacing: 0.3m
 *1000m² & 2000 m² systems irrigate only half of the area at once

Sunlight pump performance powered by solar panel

Water required (L/Hour)

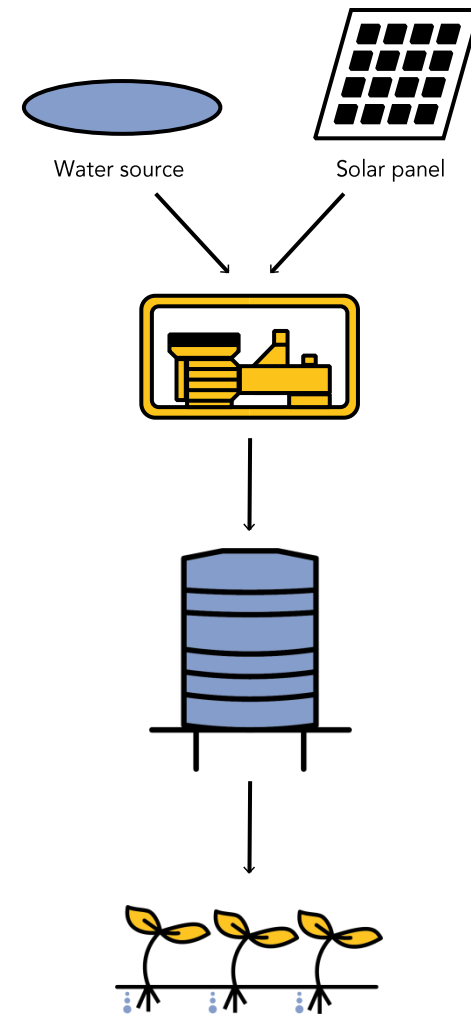
Head	150W	200W	300W	320W	400W
10 Meters	1400	1900	2500	2600	2700
20 Metres	900	1300	2000	2000	2400
30 Metres	-	800	1400	1500	1900
40 Metres	-	-	1000	1100	1400

Example

Choose area	Output	Power required
2000m ²	2290 L/Hour	300W

Maximum output

Area covered	Output	Power required
2000m ²	2700 L/Hour	400W



Drip irrigation powered by the sunlight pump & solar panels

Jain turbo excel & jain turbo slim TE

Water required (L/Hour)

Pressure/ eq. pr. head	1m ²	250m ²	500m ²	1000m ²	2000m ²
0.25 bar/ 2.5m	2.4 / 2.1	620	1240	1040	2070
0.3 bar/ 3.0m	2.7 / 2.3	690	1380	1150	2290
0.4 bar/ 4.0m	3.2 / 2.7	810	1610	1340	2690
1.0 bar/ 10m	5.3/4.4	1330	2660	2220	4430*
2.0 bar/ 20m	6.7/5.5	1660	3330*	2780*	5540*

Sunlight pump performance powered by solar panel

Water required (L/Hour)

Head	150W	200W	300W	320W	400W
10 Metres	1400	1900	2500	2600	2700
20 Metres	900	1300	2000	2000	2400
30 Metres	-	800	1400	1500	1900
40 Metres	-	-	1000	1100	1400

Calculate system setup

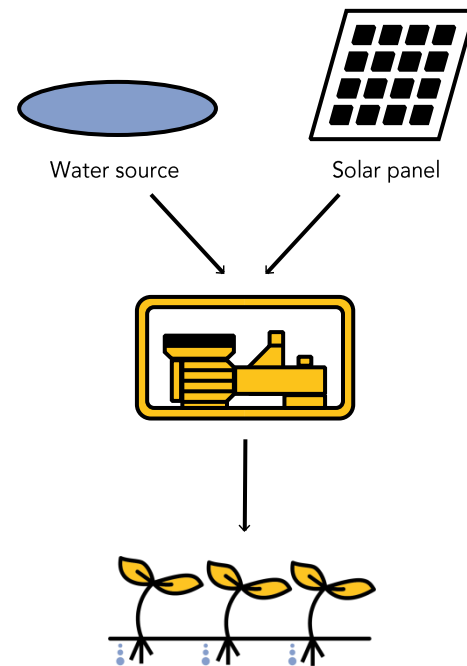
Step I	Step II	Step III	Step IV
Choose area which is to be irrigated	Choose desired water flow per hour	physical head + eq. pressure head	Read out power needed
Area covered	Required output	Physical head/ Pressure head	= Total head Required power
1000m ²	2220 L/Hour	10m 1 bar = 10m	20m 400W

*line spacing: 1m up to 500m² / 1.2m for 1'000 and 2'000m². emitter spacing: 0.3m

*marked values require higher discharge than one sunlight pump can deliver

*1000m² & 2000 m² systems irrigate only half of the area at once

*do not operate at pressures higher than 2 bar



Gravity drip irrigation powered by the sunlight pump & battery

Jain turbo excel & jain turbo slim TE

Water required (L/Hour)

Height of tank	1m ²	250m ²	500m ²	1000m ²	2000m ²
1.5 Metres	2	470	940	-	-
2.0 Metres	2.2	550	1100	-	-
2.5 Metres	2.4 / 2.1	620	1240	1040	2070
3.0 Metres	2.7 / 2.3	690	1380	1150	2290
4.0 Metres	3.2 / 2.7	810	1610	1340	2690

*line spacing: 1m up to 500m² / 1.2m for 1'000 and 2'000m². emitter spacing: 0.3m
 *1000m² & 2000 m² systems irrigate only half of the area at once

Sunlight pump performance powered by led acid battery

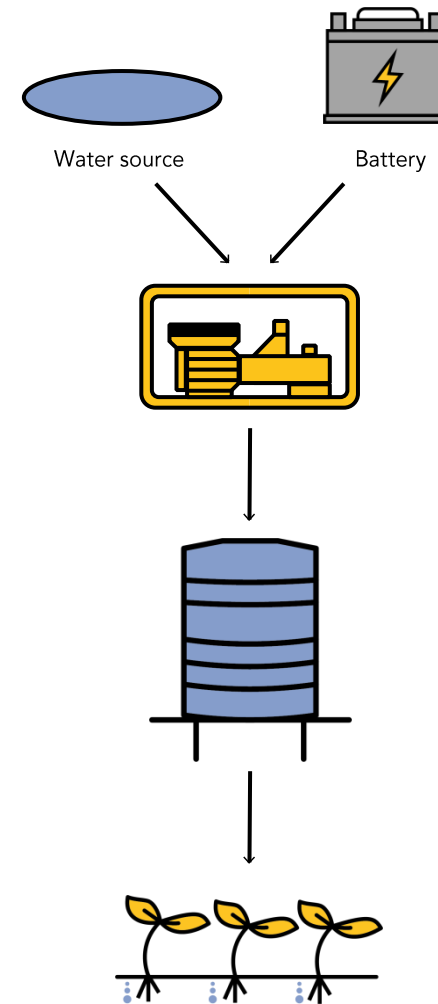
Maximum water flow possible (L/Hour)

Head	12V / 100Ah*	12V / 200Ah*	24V / 100Ah*	24V / 200Ah*	36V / 100Ah*
10 Metres	1100	1100	2300	2300	2700
20 Metres	800	800	1700	1700	2500
30 Metres	-	-	1100	1100	1700
40 Metres	-	-	800	800	1300

*Led acid battery with 70% depth of discharge (DoD)

Maximum output

Area covered	Output	Current required
2000m ²	2700 L/Hour	36V



Drip irrigation powered by the sunlight pump & battery

Jain turbo excel & jain turbo slim TE

Water required (L/Hour)

Pressure/ eq. pr. head	1m ²	250m ²	500m ²	1000m ²	2000m ²
0.25 bar/ 2.5m	2.4 / 2.1	620	1240	1040	2070
0.3 bar/ 3.0m	2.7 / 2.3	690	1380	1150	2290
0.4 bar/ 4.0m	3.2 / 2.7	810	1610	1340	2690
1.0 bar/ 10m	5.3/4.4	1330	2660	2220	4430*
2.0 bar/ 20m	6.7/5.5	1660	3330*	2780*	5540*

Sunlight pump performance powered by led acid battery

Maximum water flow possible (L/Hour)

Head	12V / 100Ah*	12V / 200Ah*	24V / 100Ah*	24V / 200Ah*	36V / 100Ah*
10 Metres	1100	1100	2300	2300	2700
20 Metres	800	800	1700	1700	2500
30 Metres	-	-	1100	1100	1700
40 Metres	-	-	800	800	1300

*70% depth of discharge (DoD)

Calculate system setup: an example

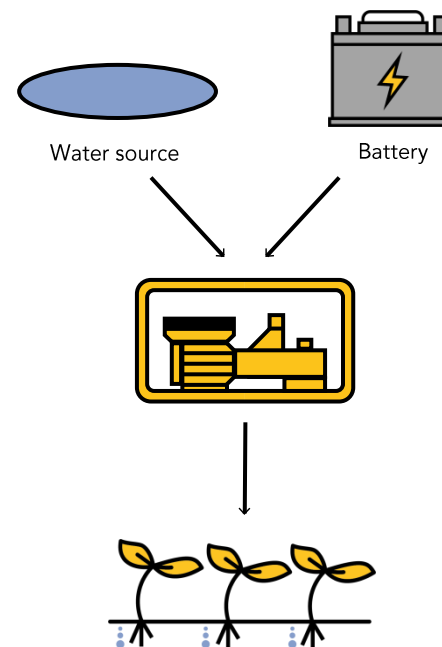
Step I	Step II	Step III	Step IV
Choose area which is to be irrigated	Choose desired water flow per hour	physical head + eq. pressure head	Read out power needed
Area covered	Required output	Physical head/ Pressure head	= Total head Required battery
2000m ²	2290 L/Hour	10m 0.3 bar = 4m	13m (use 20m) 36V/ 100Ah

*line spacing: 1m up to 500m² / 1.2m for 1'000 and 2'000m². emitter spacing: 0.3m

*marked values require higher discharge than one sunlight pump can deliver

*1000m² & 2000 m² systems irrigate only half of the area at once

*do not operate at pressures higher than 2 bar



Sprinkler irrigation powered by the sunlight pump

Water required by jain sprinkler system

Maximum capacity: 2000m² with sprinkler 5022 U Purple 2.5x1.8

Pressure (bar)	Spacing (m)	Output per m ² (L/Hour)	Output per sprinkler (L/Hour)	Lines / sprinklers	Output per line (L/Hour)
2 bar	10x10	4.8 L/Hour	480 L/Hour	4L* / 5S	2400 L/Hour

Sunlight Pump Performance required

Equivalent head (m)	Litres per hour required	Required solar input (W)	OR	Required battery (V)
20 Metres	2400 L/Hour	400 W		36 V

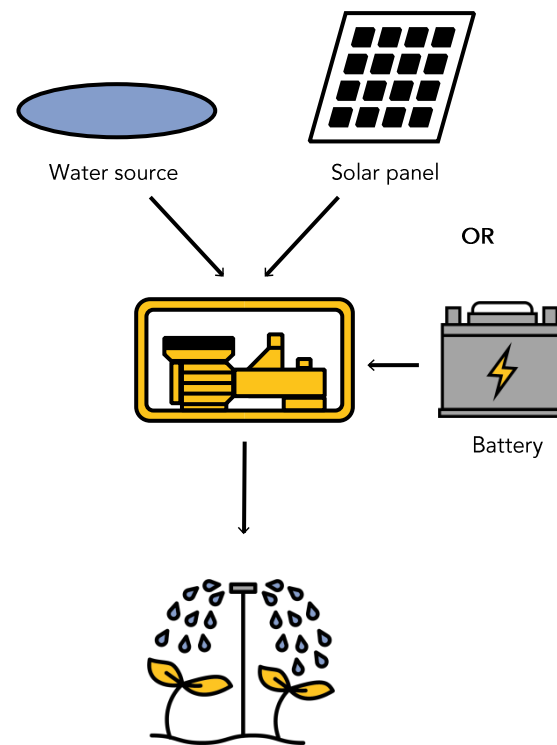
*One sprinkler line operating at once, others line valves closed

Minimum: two sprinklers 5022 U Purple 2.5x1.8

Pressure (bar)	Spacing (m)	Output per m ² (L/Hour)	Output per sprinkler (L/Hour)	Lines / sprinklers	Total output (L/Hour)
2.5 bar	10x10	5.4 L/Hour	540 L/Hour	1L / 2S	1080 L/Hour

Sunlight pump performance required

Equivalent head (m)	Litres per hour required	Required solar input (W)	OR	Required battery (V)
25 Metres	0 L/Hour	300 W		24 V



sunlight pump gives more water

Global LEAP Awards 2019 Buyer's Guide for Solar Water Pumps



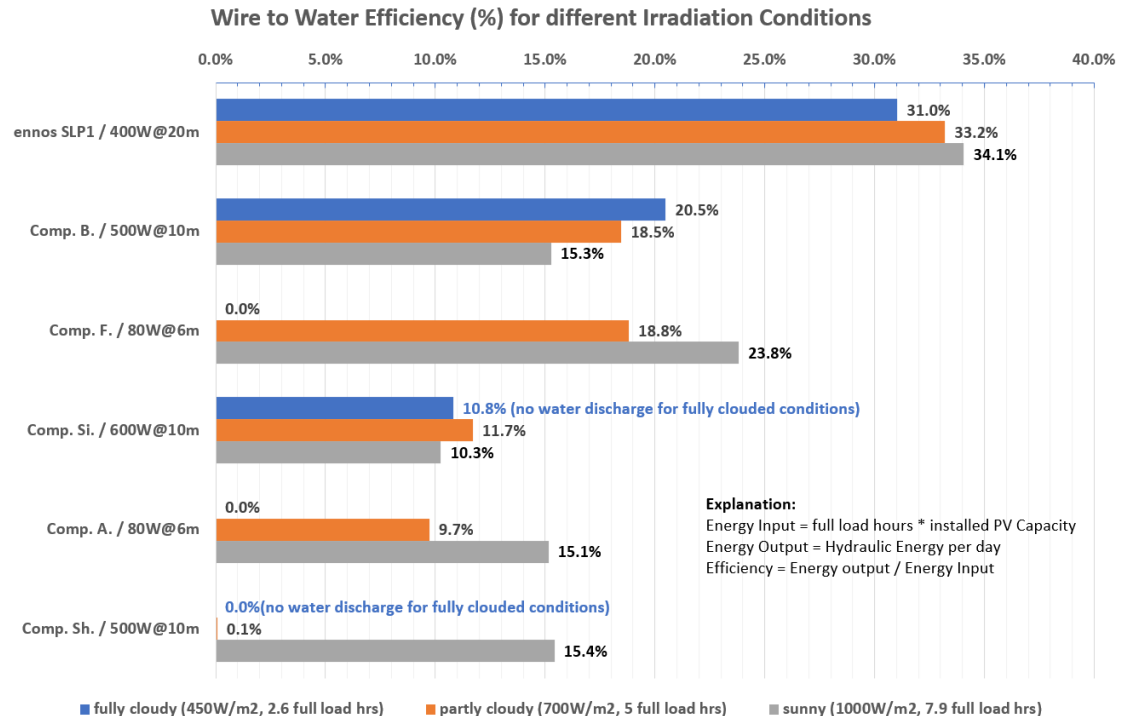
Highest Efficiency Overall

A recent comparison between the best in class surface solar pumps carried out by the Global LEAP Awards showed that the sunlight pump beats its closest competitors by a margin of more than 50% under all conditions (cloudy or sunny). This means that the sunlight pump will deliver more water every day!

sunlight pump advantage

ennos has designed all components with maximum efficiency in mind. As a result, the sunlight pump has a maintenance-free, highly efficient motor, a solar power optimizing electronic controller and a pump able to pump even dirty water higher than the competition.

Better means also lower cost due to smaller panels for the same water requirements and a compact and portable pump, which can easily be brought to the field.



sunlight pump pumps water higher

Global LEAP Awards 2019 Buyer's Guide for Solar Water Pumps



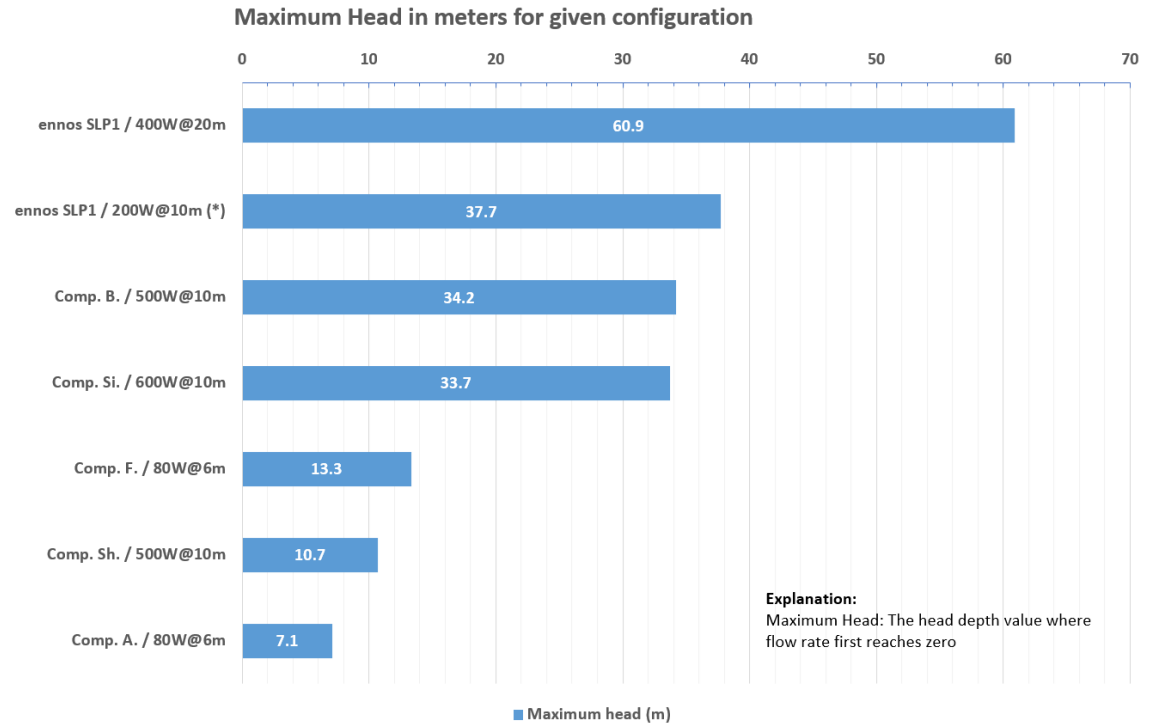
Highest Maximum Head

The sunlight pump starts pumping at very low sunlight but can do this reliably with full flow of 45 litres/minute up to a guaranteed level of 30 metres. The Global LEAP Awards measured the maximum head where the flow rate reaches zero and showed the sunlight pump outperforming its competitors by far.

sunlight pump advantage

ennos has developed its own progressive cavity displacement pump head including an integrated flow switch to protect the pump against running dry.

Due to the careful selection of materials and dimensions of the pump, ennos has obtained an optimal design which is able to reach a delivery head of up to 40m total static head.



Get in touch

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