



The sunlight pump models: Innovative Swiss Technology

Contributing to agricultural led growth and improved livelihoods through small-scale irrigation

Karin Jeanneret, CEO and Co-Owner, ennos ag Switzerland

ennos ag Switzerland

Spin Off Company

Based on the many years of experience of the Bern University of Applied Sciences in Biel (BFH) with solar drive systems, a highly efficient solar water pump for the needs of small farmers was developed in response to requests from India. ennos ag is a spin off company of BFH.

R&D in Switzerland / Production in India

ennos ag still works closely with the Bern University of Applied Sciences under a cooperation agreement. The production of the sunlight pump models is made in India by Jain Irrigation Systems Ltd..



Since 2016, the **sunlight pumps** have been distributed in Africa, Asia and Latin America by local dealers

Technology and license agreement with producer in India ennos in the dual role of developer and seller



ennos R&D in Switzerland
Intellectual Property belongs to ennos.



Production in India by Jain Irrigation Systems.



ennos acts as a distributor according to a B2B model and can offer all of Jain's products to its own customers.



Sales to distributors with experience in solar and pump installations in Africa, Asia and Latin America.

Key components of the sunlight pump models

0.5HP SLP: 25m³ l/d; >40m TDH; 100-500W Input Power; 14kg; eccentric screw pump

2HP SLP: 210m³ l/d; 27m TDH; 1800-2000W Input Power, 30kg; centrifugal pump

Common features of both sunlight pump models:

- ▶ **Motor:** highly efficient, maintenance-free DC brushless motor, with a durability of 10-15 years
- ▶ **Controller:** fully integrated on top of the motor, avoiding faulty connections. Combined flow and pressure sensors detect dry run and the processor enables functions as Bluetooth connection and cloud services



Relationship ennos - local distributors



What we expect from the dealer

- 100% deposit with order
- Experience of solar water pump installation
- Before and after sales support
- Purchase of spare parts

What the dealer expects from us

- Stock / Quality
- Efficient processing
- Support with technical questions
- Training and continuing education
- Warranty services
- Further development and expansion of product range

Stimulating factors for purchasing Solar Water Pumps



Increased productivity



Money savings



Water savings



Reliability



Repairability



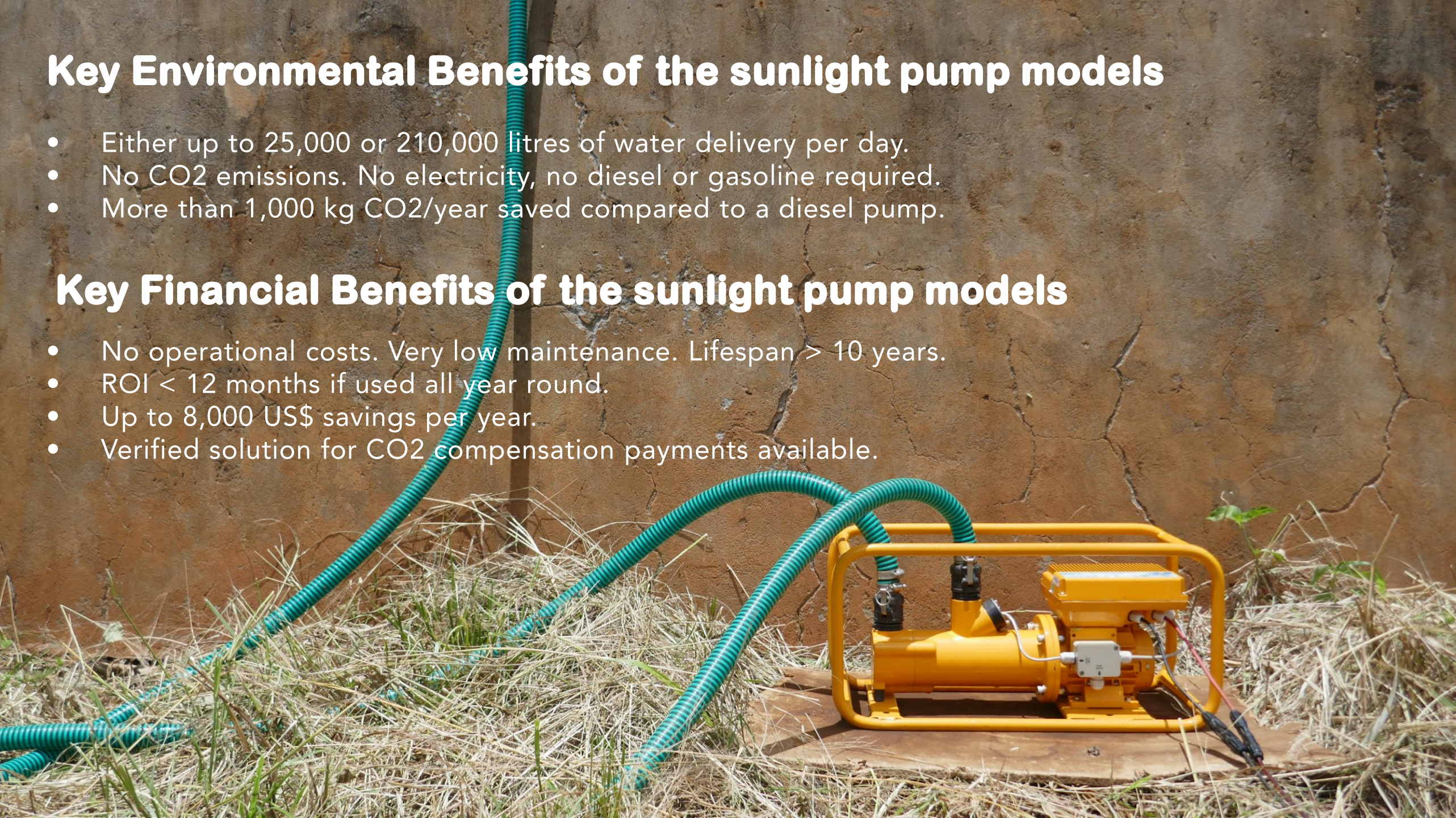
Sustainable and environmentally friendly

Key Environmental Benefits of the sunlight pump models

- Either up to 25,000 or 210,000 litres of water delivery per day.
- No CO2 emissions. No electricity, no diesel or gasoline required.
- More than 1,000 kg CO2/year saved compared to a diesel pump.

Key Financial Benefits of the sunlight pump models

- No operational costs. Very low maintenance. Lifespan > 10 years.
- ROI < 12 months if used all year round.
- Up to 8,000 US\$ savings per year.
- Verified solution for CO2 compensation payments available.



Example: overview of all data (total hours/total energy/total water, location) of a 0.5HP sunlight pump in Mali

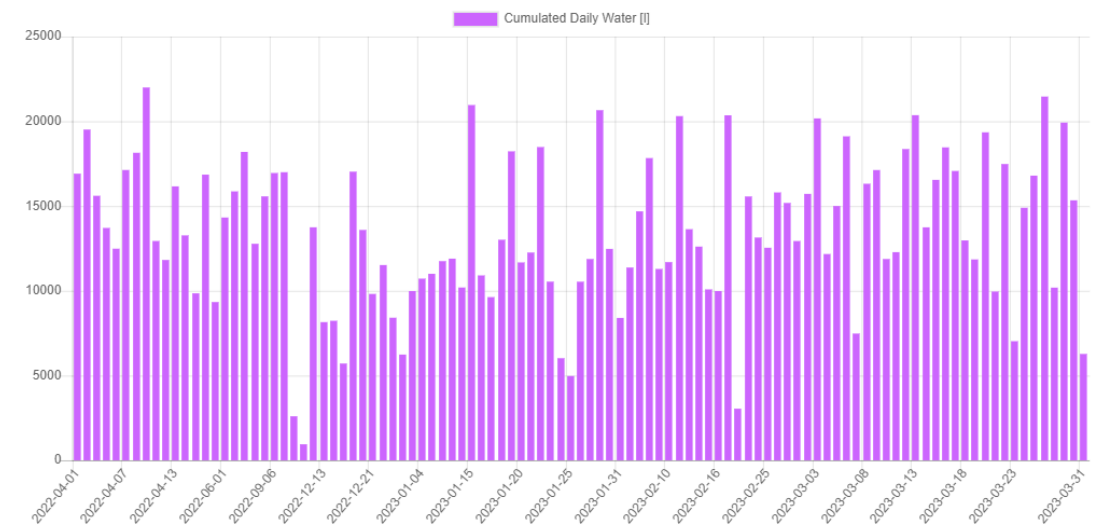
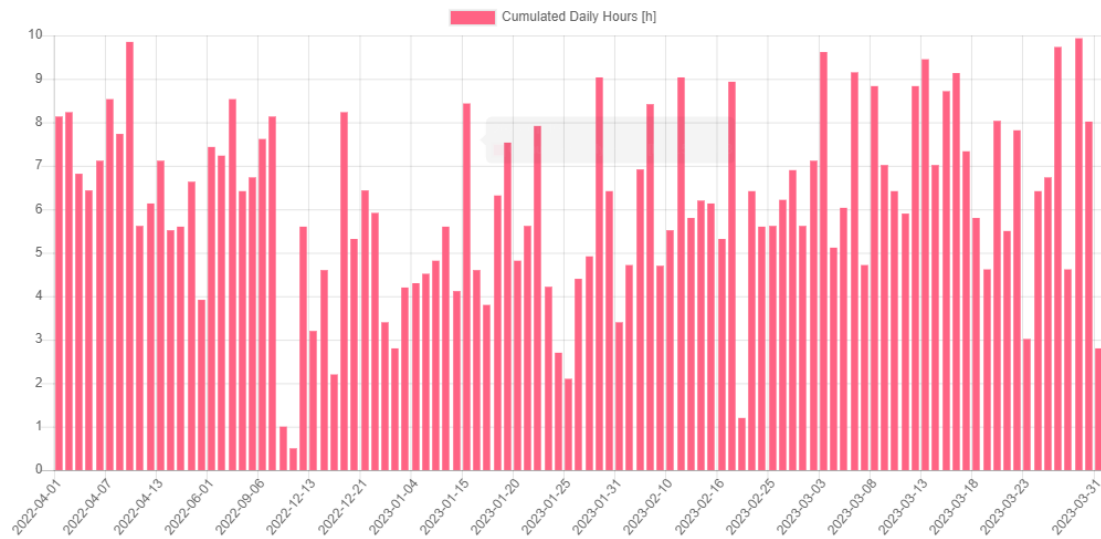
Snapshot of current data at the moment of connecting to the sunlight pump

Timestamp	2023/04/04 14:43:36
Operation Mode	PV
Ppv	150.9 W
Flow	42 l/min
Upv	35.1 V
Ipv	4.3 A
Speed	3235 rpm
Heat Sink Temperature	41 °C
Error Register	0x4
Umpt	13 V
Umot	53 V
Imot	2.4 A
Total Hours	1345.8 h
Total Energy	196540.4 Wh
Total Water	2991224 l
SWNbr	V5.0.2
Product ID	1
Source	EnnosApp
Country	Mali
State	Bamako Capital District
District	Bamako
Open Location Code	7C4HHXHP+C74



Example: use of a 0.5HP sunlight pump in Mali

A sunlight pump installed by EcoTech Mali, Région de Sikasso, Koutiala



Through the ennos App you can see for example total hours and total water pumped per pump.

Combine yield increase with environmental improvement



Eco Tech Mali reports:
Farmer increased their income by 60% after receiving agricultural advice and appropriate equipment.



EUCORD Rwanda reports: a 62.5% yield increase from 4 to 6.5 ton/ha of maize production and preventing drought stress by using the 0.5HP sunlight pump.

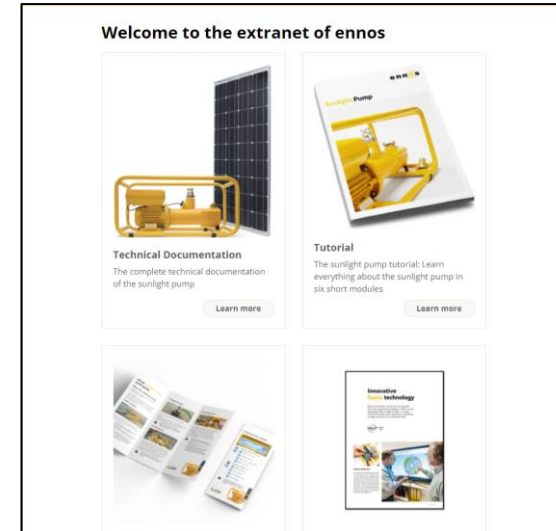
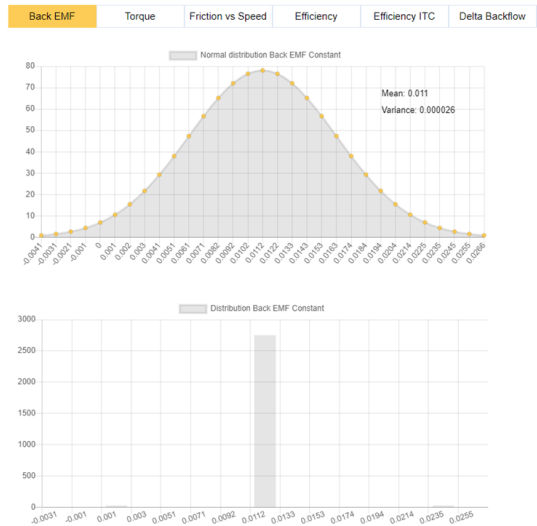


Pyflor Honduras uses since 2017 instead of Diesel pumps the 0.5HP sunlight pump to circulate water with fertilizer in hydroponic irrigation systems and saves more than 2000\$ per year on operation costs.



Mrs Gathoni Mwenja on her farm in Nairobi using the 0.5HP sunlight pump since 2020 for her 30 dairy cattle and additionally for drip irrigation of her vegetable plot.

QM / Monitoring / Data / Support



Support Request
Create a request for technical support or warranty claim

A well documented problem with pictures will make a big impact for finding a solution.

Raise this request on behalf of *
Beispielkunde (example@atlassian-demo.invalid)

Pump model as indicated on the name plate *

Serial number as indicated on the name plate of the motor *
BBA-10 digits-E
Example: BBA-1723501001-E

Problem report date *
e.g. 7/Oct/21

Authorized dealer *

Name of company that got the pump from ennos ag

Technician *
Enter first and last name
Name of technician who made the installation

Is there an existing installation report? *

All sunlight pumps undergo rigorous quality and performance testing at the point of manufacture, and the results are evaluated by ennos before a pump is shipped to the dealer. ennos can track each pump throughout its life cycle.

ennos receives statistical data on the geographical position of the pump, water performance, operating hours, faults and warnings. The data is used for monitoring, maintenance and learning.

The Extranet is a digital library on the subject of solar pumps. It provides technicians with the knowledge they need to operate, install, maintain and repair solar pump systems. This ensures that dealers always have immediate access to solutions for any technical issues that may arise.

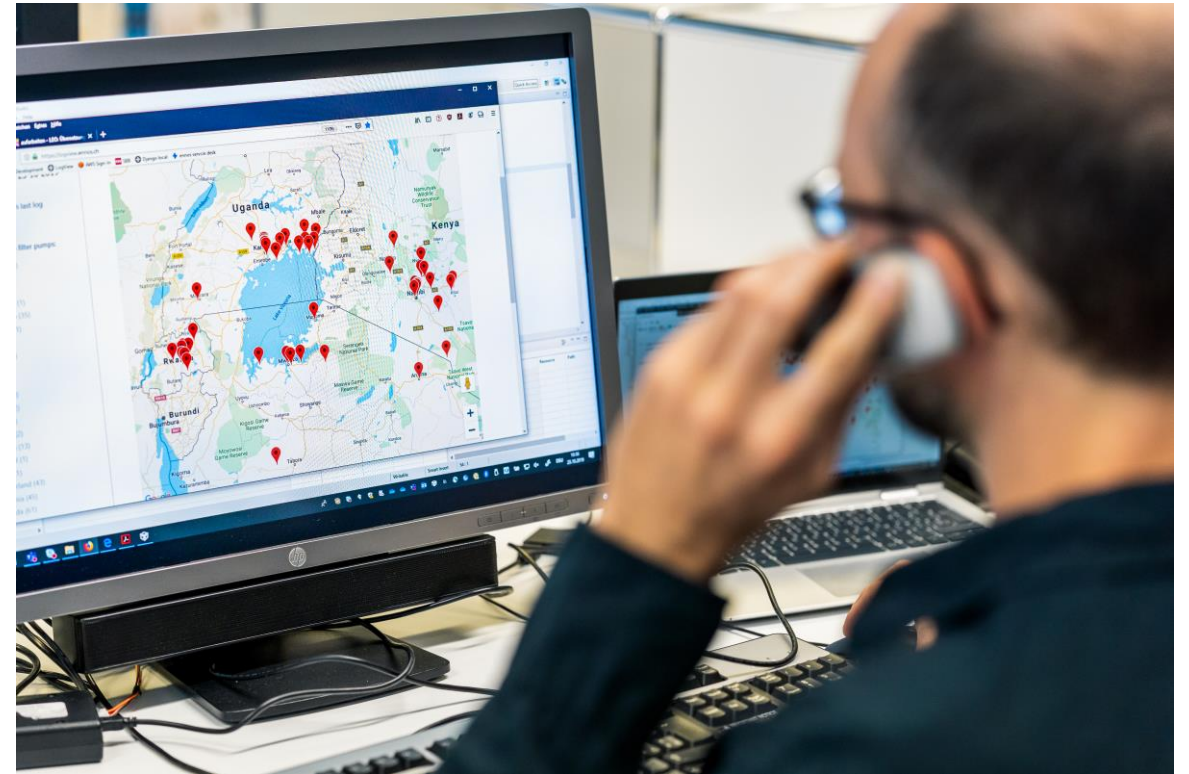
The pumps have to be registered online, which leads to a first check up if the installation was done correctly. If a technical problem arises, dealers can use the online support tool to submit a request. Problems are thus quickly addressed and at the same time all technical faults and their solutions are stored in a central database.

Part of the success story: support, repairability and training

Designed for small-holder farmers, with low maintenance and ease of repair in mind



ennos provides technical support for its dealers



Course for solar powered water pumping systems designed by ennos



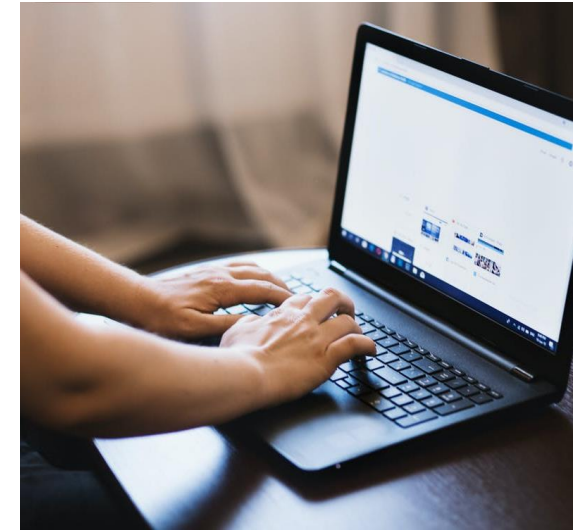
For students



For teachers



For technicians



For online audience

To keep a product long-lasting, technical knowledge must be available on site to support end users during installation, maintenance and repair. Training tools, such as an on-site and/or online course on solar water pumps in general, provide the relevant know-how.

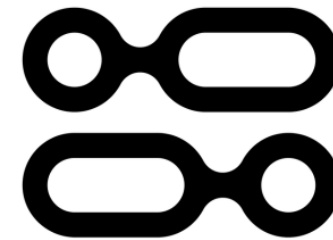
[Solar Powered Water Pumping Systems \(En\) \(thinkific.com\)](https://www.thinkific.com/courses/solar-powered-water-pumping-systems-en)

PAYG and Carbon Credit refunds

Through a collaboration with Innovex, a technology firm in Uganda, ennos can now offer the option for PAYG processing as well as compensation for CO2 savings through an Innovex device.



CarbonClear, a data-driven carbon credit standard entered a partnership with Innovex that designed and built REMOT, a leading IoT platform. Through IT integration with its monitoring software, the Innovex Device will enable its users to seamlessly generate Micro Carbon Avoidances (MCAs) from the solar pumps they operate. These MCAs will then be available to companies looking to offset their CO2 emissions.



CarbonClear

<https://www.carbonclear.earth/>

