

# The Solar Magnetic Plunger Pump (SMPP) A game-changer in rural water supply



## Who We Are

[Comet-ME](#) is the “greenhouse” where the SMPP was developed, in parallel to a decade of supplying renewable energy and clean water services to more than 10,000 people in marginalized off-grid communities.

## The Team

Years of hands-on experience in the social and technical aspects of renewable energy provision, as well as in mass production and sales at different High-Tech companies.



*The team installing the SMPP*

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## The Need, the Problem, and the Potential

Solar irrigation is the most crucial step out of climate vulnerability and up the productivity ladder for the 570 million smallholder farmers in the Global South. Current products are either low-cost/low-performance and reliability; or high-end, expensive, and difficult to maintain – driving cost of ownership and ROI to prohibitive levels. 6.5 million smallholders will use solar pumps by 2030 (a ~\$20 B irrigation market).

**Despite the diversity of pumps, there is not a single submersible solar pump on the market today specifically tailored for smallholder farmers**

## Our Solution

The Solar Magnetic Plunger Pump (SMPP) is a clean-sheet design, submersible solar pump (patent granted), tailored to smallholder farmers. It is a “game-changer” as it exhibits **2-3 times** better cost-performance metrics for flow, head, PV power, and cost than any pump in the market. The unique plunger concept results in outstanding robustness, lowest cost of ownership, and fast ROI, lowering the risk for both the farmers and lenders, thus setting the ground for increasing the pace of solar pump adoption and our leadership:

- At highest flow it allows irrigation of 1/2 hectare or daily domestic use of a village.
- Unlike rotary pumps, which suffer from premature wear due to sand in the water, our slow-moving design is practically immune to sand.
- The simple, single active moving part design leads to high reliability and allows service in the field, further lowering cost of ownership and ROI.
- The linear motor/controller yields the highest efficiency and facilitates operation under lower solar conditions than rotary pumps that need minimum RPM to start.
- The remote monitoring unit identifies problems in real time for timely maintenance and includes PAYG and AI-enhanced database for statistical crop/irrigation optimizations in due course.

## Status and Plans

Engineering models have been tested for 24 months, exhibiting the best performance in the market. We have partnered with leading WW organization for co-managing a pilot project in Africa and for further collaboration. Plans are in the works to develop a family of pumps derived from the same core technology for additional diverse applications, as well as for US and EU markets. A short video can be seen [here](#).

We are seeking funds and collaborations to commercialize the products