Solar Magnetic Plunger Pump – SMPP
A game changer in rural water supply

Introduction
Access to water is one of the most acute issues facing impoverished off-grid rural communities. Over 50% of the world’s food is produced by some 500 million smallholder farmers in the developing world, yet only a fraction of these benefit from irrigation. This constitutes a major barrier to economic development and food security, and at the same time a huge business opportunity for good solutions. According to the 2019 outlook by Efficiency for Access, the market is expected to grow to ca. 5 million units in 2030, to a ~$15 billion market, still far from reaching the full potential.

Scaling the use of solar water pumps will contribute to many of the development goals in these regions: greater energy access, improved productivity and access to water for households, poverty and hunger reduction, gender equality, and clean water and sanitation.

Our Solution
Among all components of a solar irrigation system, the pump has the greatest impact on the cost per m³ of water pumped and on the Cost of Ownership (CoO). These are the most important considerations for the farmer in the long run. To date there is no single solar pump on the market specifically tailored for smallholder farmers.

Over the past five years Comet-ME has developed its Solar Magnetic Plunger Pump (SMPP) – a clean-sheet design, 1st in-kind, solar-powered borehole water pump (patent pending), with the lowest CoO and cost per m³ and the highest flow-rate and efficiency in the market, tailored in every respect for off-grid rural farmers and communities in the Global South:

- 20-30 m³ per day at 15-45 head range, for irrigating 1 hectare or for daily domestic use of a small community
- Low cost and high reliability, beginning with the piston-based design, which is dramatically slower than high RPM motor pumps and therefore practically immune to sand in the water, whereas the high rotational speed results in premature wear. We allow X5 sand in the water @ 1/2 the price of the best in the market!
- A simple design with a single moving part enables field servicing with no need for accurate jigs and tools.
- Motion control allows operation under low solar conditions, while rotor pumps need high RPM for operating.
- Includes an integrated monitoring unit for PAYG and for providing solar data, soil moisture information and flow data that could potentially avoid the use of water tanks, further lowering the price.

Current status
We are currently in final development stages of the SMPP. Engineering models have been tested for the past 18 months, exhibiting high performance, exceeding that of the leading manufacturers in the field. A short video can be seen here. We plan is to establish a separate commercial entity that will produce and market the SMPP along with additional pumps on our roadmap. We are currently seeking funds for pilots and mass production preps, followed by market penetration and sales.

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