Volanta Hand Pump

A durable, high performance hand pump for community water systems

Product Sheet

Volanta is a high-end community drinking water pump that can lift water from greater depths than many alternatives. The Volanta pump differs from other pumps with its durable and corrosion free construction, reducing maintenance and recurrent costs. It is designed for local production, increasing availability of spare parts.

The context

The Volanta pump was developed to reduce the maintenance problems associated with manual pump-based rural water supply systems. Common reasons for hand pump failures include a lack of spare parts, expensive or complex repairs and an absence of trained and qualified mechanics. It was also recognised that for community water supply, the reoccurring costs are much more important than the initial purchase cost. This is because the investment cost is usually paid for by a donor whereas ongoing costs must to be paid for by the community. In view of this, the Volanta pump was designed for minimal maintenance costs, with the following aims:

1) High durability (using oversized bearings, stainless steel parts, etc), even when used intensively and lifting water from deep aquifers. Because all its components in contact with water are corrosion free, the pump has a virtually unlimited lifetime, provided that wear parts are replaced on time through basic maintenance.

2) In-country manufacture, which helps to assure that spare parts are available and there is a local expertise in not only maintenance and repair but also further production. An added advantage is that the supply lines between the manufacturers and users are short so that any manufacturing or design faults can be communicated easily and problems can be addressed. Establishing production near end-users encourages sustainable solutions that respond to local needs.

The technology

The 'volant' (flywheel) makes the pump easy to operate and suitable for depths up to 80m. As additional advantage, the large wheel can be used for electric or engine drive, increasing the functionality possible and adding redundancy.

The facts	
Depth range	10-80m water table
Capacities	Hand operated (short time): 30l/min at 15m, 6l/min at 80m. Engine/motor driven, 45l/min at any depth.
Cost	Depending on country of manufacture and installation depth, varies from €1200 to €1700.
Recurrent costs	At present €80 per year, calculated over a 25 year period in which major components such as the riser pipe are occasionally replaced. Newly developed improvements are expected to reduce this cost to €45 per year as dissemination across Africa continues.

Maintenance of the pump cylinder is simple, as the pump cylinder (including valves and piston) can easily be extracted from the well without dismantling the pump pipe. Furthermore the unique seal-less piston (working with a narrow gap) is virtually maintenance free where conventional pumps need frequent replacement of rubber seals. Spare parts are typically available in-country.

The application

The Volanta pump is a good choice where the water table is deep and the pump will be used intensely. It is of course an equally good choice in less demanding situations but there, other pumps can also offer reasonably good performance.

The local production of the Volanta pump makes it very suitable for situations where investments in drinking water supply can support the local private sector, further boosting the economy and increasing local technical capacity.

PRACTICA can help determine if the Volanta pump is right for your program, and assist in training local enterprises in the production, installation and maintenance of the pumps.

The experiences

Volanta pumps are reaching users in:

- **Burkina Faso,** where local production was initiated in 1982 at a mission workshop / training school. Since then over 6000 pumps have been independently manufactured. The business generates a good profit which is used to support another technical school.
- **Niger**, where local production was started in 1985. Since then over 1000 pumps have been produced.

A Dutch manufacturer of Volanta has also exported Volanta pumps to Angola, Mozambique and Cameroon, with additional countries currently planned.

PRACTICA Foundation develops and disseminates low-cost appropriate technology in water and renewable energy in developing countries. We focus on technology that responds to local cultural contexts, can be locally produced and maintained, and leverages existing market systems.

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