

'SolarPump' Irrigating Crops Using Solar Power



Laverstoke Park

"The biggest small-holding in the world"

Laverstoke Park was founded in 1996 by former Formula 1 racing driver, Jody Scheckter. The 2500 acre farm comprises of a mixture of traditional and rare breed animals producing meat and dairy products together with a large fruit and vegetable nursery based in the New Forest.

Their main ethos is to farm organically to produce the healthiest, best-tasting food without compromise, and this underpins everything they do. To achieve this they are creating the most ideal, naturally healthy, environment that they possibly can, thus enabling their crops and animals to thrive.

Financial Benefits

- ✓ No mains install costs
- ✓ No mains power costs
- ✓ No diesel fuel costs
- ✓ No refueling labour costs
- ✓ No generator maintenance costs

Other Benefits

- ✓ Promotes organic and bio-diversity farming values
- ✓ No diesel generator noise
- ✓ Frees up management time



4 Elements SolarPump borehole pumping systems for Laverstoke Park Organic Farm



Robust and efficient Lorentz Borehole pump

The Challenge

One of the key tasks facing the newly formed nursery enterprise was to keep the crops trickle irrigated from a newly sunk borehole, but do this in keeping with their environmental protection guidelines and energy budget.

They needed to pump up to 20m³ per day from an unlicensed borehole that is 50m down. The water then had to travel some 200 metres to a one million litre newly excavated lagoon and from there it would be pumped through a network of soaker hoses laid across the field.

The Solution

Laverstoke Park called in 4 Elements to design a solar pumping system that would achieve their objective of getting 20m³ of water from 50m down to each lagoon every day using solar power. The system was oversized to optimise pumping during dull (but obviously not rainy!) days and uses a 900 watt solar PV panel array mounted on a twin pole frame and configured to generate 72 volts DC, enough to power the chosen Lorentz PS600 solar pump. Pump speed is monitored by a Lorentz controller which also enables Laverstoke to manually adjust output as required.

The self-cleaning pump is a robust helical rotor type (positive displacement) made of abrasion resistant rubber and stainless steel which is hard chrome plated and abrasion resistant making it more resistant to damage by sand than other pump types.

A 'Low Water' sensor was fitted to automatically switch off the pump if the water level dropped below a preset minimum.

All cabling from the solar station to the well head was run through steel reinforced conduit and buried well below plough depth.

The Result

The newly excavated lagoon acts as a buffer, capable of holding a sufficient stock of water to ensure that irrigation can continue in the event that when there is insufficient sun to power the pump. Using a lagoon or a storage tank means that the 'SolarPump' system does not need storage batteries.

The system performs admirably, harnessing the sun's energy to provide enough water to keep the lagoon full. Not only does it perform better than the customer expected, the professional installation has ensured the system looks impressive to visitors and the general public.



The newly excavated lagoon, with solar array in the background, ensures that water is always available for trickle irrigation.

A solar photovoltaic (PV) array at Laverstoke. This array provides sufficient electrical power to drive the borehole pump. Having no moving parts, the PV panels require very little maintenance and come with a 20+ yrs manufacturer performance guarantee.



The sophisticated pump controller maximises pumping capacity from the power generated by the arrays. Simple to operate, automatic restart and shutdown features with functions for low water sensor and float switch.

Our robust and galvanised mounting systems keep the solar array and pump controller protected from the extremes of weather. A safety DC disconnect switch is also fitted.



4 Elements design and integrate practical and effective renewable energy generation systems using the latest technology, providing reliable clean and green power for a variety of applications. 4 Elements provide high quality branded products, such as Sharp Solar PV panels, Scheuco Solar Thermal panels and Lorentz Solar Pumps. All our products come with a guarantee that underpins our commitment to quality.

Typical Applications include:

- Water pumping for farm water supply and crop irrigation
- Hot Water supply for dairy wash-throughs, general cleaning and also farm houses
- Wind Turbines for farm and farm house electricity
- Electricity for remote agricultural buildings such as poultry sheds, shelters and stables

4 Elements can design and install a system to suit your precise needs. Please call 01844 210960 to talk through your requirements and see what they can do for you.