

# Solar-powered Water Pumping for Vineyard Irrigation



<b>Subject</b>	Tom Peters, Deere Run Farms	<b>Location</b>	Dufur, Oregon, USA
<b>Application</b>	Vineyard irrigation	<b>Irrigation method</b>	Drip system
<b>Size</b>	12 hectares	<b>Installation</b>	August 2011

**The application of LORENTZ solar-powered water pumping systems for vineyard irrigation has resulted in greater cost efficiency, reliability, independence and sustainability when compared to a grid-tied power installation, generators or windmills.**

**PROBLEM:** The vineyard site is two miles from grid-power. Cost of grid-tied installation estimated at US\$ 200,000 plus US\$ 1,000 a month service fee and 15 cents per kilowatt-hour. Occasional grid-power outages in area are known to last up to a week, sometimes more. Diesel generators are expensive considering rising fuel prices and risk fuel-spill pollution. Alternatives such as windmill pumps impose other challenges.

**SOLUTION:** Solar-powered pumping systems are reliable, cost-effective, high-performance, and low-maintenance. LORENTZ solar pumps have the advantage over competing solar pumps, offering pumping systems for a wide range of applications, with brushless design for improved efficiency, modular design for customized installations, easy set-up, and a reputation for longevity. In many cases this solution offers a comparable or lower cost compared to a grid-power installation, as well as offering energy independence with a low environmental impact.



**“Solar power is the perfect solution for irrigation.”**

– Tom Peters, Deere Run Farms

When Tom Peters began investigating irrigation solutions for Deere Run Farms’ vineyards, he first considered having the local power company route a power installation to the site. The cost of this was estimated at US\$ 200,000 for the installation, plus a US\$ 1,000 monthly service and a rate of 15 cents per kilowatt-hour. These costs being considered, alternatives such as AC-powered pumps with diesel generators, windmills, or solar-powered pumping systems needed to be considered.

Mr. Peters calculated the costs and benefits of these alternatives. The expense of fuel and associated labor for refueling was a big negative when consider-

ing diesel generators, whereas windmills produce too low a volume for watering the acreage required. The solution had to be either grid-tied or solar-power, the initial costs of which were similar. In considering the pros and cons of each, it was apparent that solar-powered pumping systems were the best choice for being cost-effective, low-maintenance, reliable and long-lasting.

When comparing the various solar-powered pumps on the market, LORENTZ stood out above their competitors. Mr. Peters found that LORENTZ offers a much wider range of pumping systems to satisfy the high-lift and high-volume requirements of the vineyard. He also favored the LORENTZ design, having the electronics available at the surface (rather than attached to the pump in the well), to allow visual inspection of the electronics if ever needed. Other benefits of the LORENTZ system include the adjustable flow rate, brushless motor design, and ease of installation.

In comparison, Mr. Peters found that the AC pumps he would otherwise need were not only more expensive than LORENTZ pumps, but more and/or larger AC pumps would have been required to match the production and lift of the LORENTZ systems. Even though

the solar array added about 20% to the overall cost, considering the longevity of solar modules compared to the continuous costs for diesel or grid-power, solar still remained the most favorable and cost-effective solution.

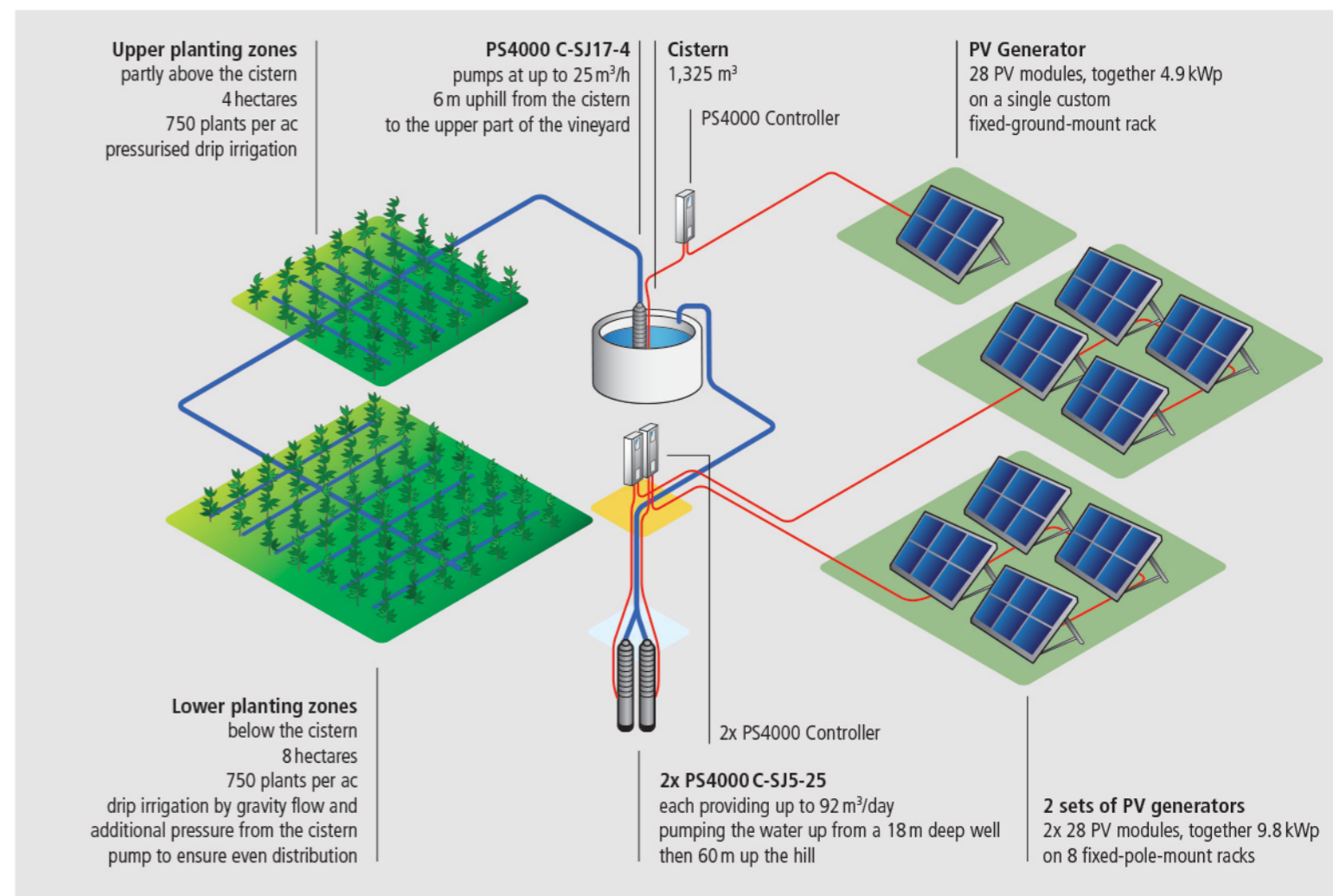
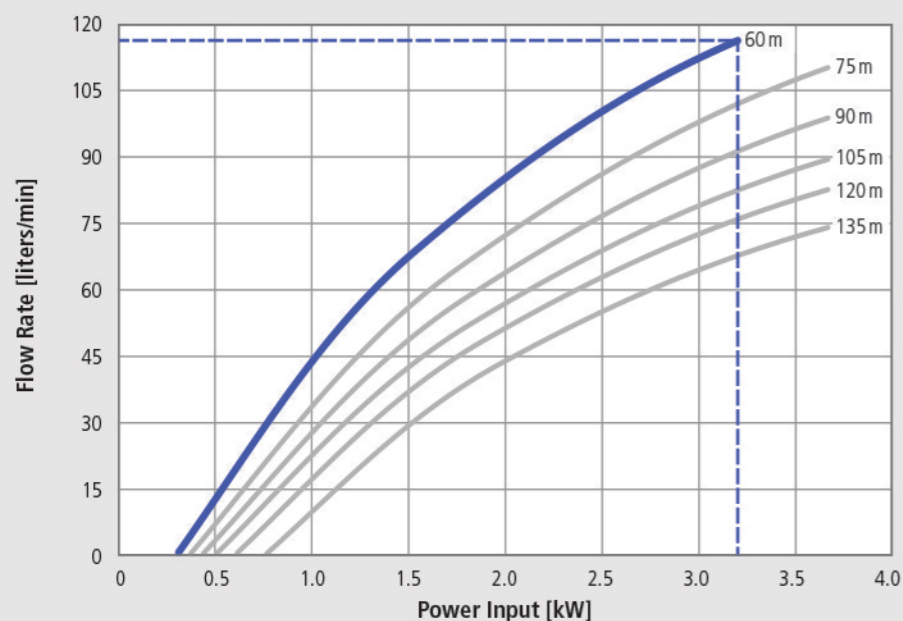
Deere Run Farms is located in an area of low rolling hills and valleys. Water is pumped from the wells in the valley, up the hillside about 60 m, to where the water is stored in a 1,325 m<sup>3</sup> concrete cistern. Using 4,900 Wp solar arrays, two LORENTZ pumps are used, which can together lift over 92 m<sup>3</sup> per

day (yearly average) up the hill and into the cistern. From the cistern an additional LORENTZ pump is used to pressurize the drip irrigation on 12 hectares of 2-month-old vines, with an additional lift of 6 m.

While it was possible to pump directly from the well, up the hill, and into the drip system, Mr. Peters opted to implement a cistern for additional benefits including storing a large volume of water and gravity feeding for irrigation of the lower parts of the vineyard. Future developments at the site including bot-

tling facilities and a house will be able to benefit from the stored water.

Mr. Peters also opted to integrate back-up power accessories with his LORENTZ systems. The use of the LORENTZ AC Power Packs allows both the potential to boost the production of his system in the event of inclement weather or atmospheric attenuation, or to pump outside of sunlight hours if necessary. Whenever this may be the case a diesel generator will provide power to the Power Pack, which converts the power to DC for the pump systems.



**“LORENTZ has more pumps to choose from, especially for higher lift and volume. Other solar-pumps seem limited in scope - more for domestic use.”**

– Tom Peters

Mr. Peters has put LORENTZ to the test, giving him the confidence he needs to expand his vineyard with the help of these systems. Additional pump systems will be installed to provide water for additional acreage, and in two to three years Deere Run Farms will be producing some of its first grapes.

**Thanks to the success of LORENTZ pumping systems, Deere Run Farms is now the first 100% solar-powered vineyard in the state of Oregon.**



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## About LORENTZ

**LORENTZ is a market leader in solar powered water pumping solutions.** Founded in Germany during 1993 LORENTZ has pioneered, innovated and excelled in the engineering and manufacturing of solar powered water pumping. Today LORENTZ is active in over 120 countries through a dedicated network of professional partners. LORENTZ technology uses the power of the sun to pump water, sustaining and enhancing the life of millions of people, their livestock and crops. **Simply – Sun. Water. Life.**

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