

The Next Technology in Well Pumping Solar Energy



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Windmills on every farm and in remote pastures were a necessity for producers in the past. These units provided the pumping action for pump jacks to pull water to the surface to be used or stored for a later date. The desire and needs of having utility power on every farm changed the way water was brought to use. Now, windmills are not being used as generators of water but as novelty pieces. Their replacement is an electric motor that will pump the water whenever it is needed.

The AC motor is a consistent unit that does not need the wind to blow for the pump to bring water to the surface. The times are still changing with the introduction of solar well pumping.

Photovoltaic Technology or PV describes technology in which radiant light energy from the sun (not heat) is converted to direct current electrical energy. For example, think of those solar power calculators that we all probably have in our drawers at home. These PV concepts have been around for many years but have only been used on very small production items. Today, efficiencies in the production of PV panels has allowed the production cost to decrease.

Due to the cost of construction and maintenance of utility lines, solar well pumping becomes a cost effective option. The ideal place has been remote areas where utility power is not as accessible. This is not anything new since there are producers who are currently using this technology as we speak—man’s ability to overcome adversity, just like our founders did who brought power to rural communities.

I had the opportunity to help install and commission three new solar well pumps. These units all have the ability to run on the solar power of a direct current voltage like a battery or the alternating current power source being produced by a generator. You might ask, “why do you need a generator?” The sun doesn’t always shine in South Dakota, so the ability to connect a generator to the system provides assurance that you can pump water.

The design and specification of the system is based upon the customer’s needs; therefore, the cost varies. The key components are the pump, solar panel, disconnect/generator controller, float control unit, level switch, and well cable. Other parts include

the well pipe, electric connectors, boxes, and some additional wire and miscellaneous hardware for mounting the unit. The array that holds the panels in place is mounted to a 3” metal pipe that is encased in concrete (18” diameter and 5’ deep) so it is ready for South Dakota weather. Once the unit is mounted and the bolts are tightened, the unit is quite secure.

This solar well pump installation was a great opportunity for your cooperative. Those who installed the solar well pumps were Rodney Weber, Ryan Bigge, and Darren Hoffer. The experience we gain will continually be shared with members as we bring solar power to others. Solar collection is still very new to us all in the Midwest, but it is here to stay.

If you have any questions about these units or the cost, please give us a call at 605-996-7516.

Stay tuned for upcoming dates for an open house and solar presentation at our Betts Road Office!



**Above: Solar unit enclosed by panels with tank in the background
Below: Rodney Weber and Ryan Bigge installing solar well pump unit as owner Richard Burghardt looks on**

