

Harvesting Sunshine From the Barn

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«A major advantage of the SolarEdge system is this: with snow accumulation on the panels, conventional string inverter production will be significantly compromised; with the SolarEdge system, those panels not affected by snow coverage can continue at full production. This has much the same advantage as we see with microinverter systems but at a lower cost as we deploy larger systems and realize a higher energy yield. I'm looking at deploying many more systems using SolarEdge technologies for years to come.»

George denHaan, Professional Engineer and owner of Sashaan Solar, Toronto

When George denHaan's brother asked him to help install a PV solar system at his church in 2009, he had no idea that experience would inspire a whole new business for him.

"As an engineer, I found the entire PV solar system design and process fascinating," he shared.

Now three years and 30 installations later, George denHaan is at the forefront of the photovoltaic solar frenzy in the Ontario area. Since the Ontario Power Authority (OPA) introduced its new FIT 2.0 program guidelines this year (microFIT for systems up to 10kW and the FIT program for up to 500kW), more Ontarians have decided to adopt renewable energy sources to sell to the power grid. Bringing his years of high-tech engineering experience to the fast-growing industry segment of PV solar, George and his company Sashaan Solar specialize in the deployment of solar systems for farming families. His firm has also designed and installed residential and commercial systems.

Take for example the 90kW project he completed in August at the farm of John and Linda Donkers in Moncton, Ontario. The Donkers' desire to install a solar energy system also inspired their relatives to do so. Matt and Frances Roelands own a family farm in North Middlesex, with their son Daniel and his wife Janet. The Roelands installed a 60kW system that went live within a few days of the Donkers' system. Both families were involved in the planning process with Mr. denHaan.

Why the Installer & Property Owners Selected Solaredge Technologies

The challenges posed by both sites were how to design and install systems to cover different farm buildings, with rooftops at different orientations that could experience snow accumulation for up to a third of the year.

"We made a group decision to use power optimizers and inverters from SolarEdge Technologies at both farms," shared denHaan. "There were four reasons for this. First, this technology will deliver a higher energy production during the winter season."

"Here in the Toronto area, we can have winter conditions for a full four months of the year," denHaan explained. "That means shorter days (only 7 hours of sunshine) and snow. Additionally, uneven snow accumulation on the modules causes high levels of mismatch between modules. A SolarEdge-optimized PV solar system will harvest more energy by eliminating this mismatch, harvesting the maximum power from each module. The result is larger overall energy production compared to other options available."



Figure 1: The Donkers installation in Monkton, Ontario - a 90kW harvest from three buildings. | Photo by Sashaan Solar

The second reason denHaan offered is this: "The SolarEdge system has a higher efficiency than the available microinverter system. When a customer is making money on these installed systems, the more energy they make, the more money they make --so efficiency is very important."

The third reason SolarEdge components were selected was the excellent fire safety feature engineered in the system.

"The Donkers were impressed by the SolarEdge fire safety solution. The SafeDC™ feature built into the module-level electronics that ensures safety during installation, maintenance, firefighting and other emergencies, was important to them. They took the paper about the safety benefits to their local fire department to educate them about the system on their property. It helped the firefighters understand how the rooftop system would behave, how it would shut down DC voltage if a fire started and spread to the buildings. They also sent a copy to their insurance agent to educate him too."

The fourth reason the property owners and Mr. denHaan selected SolarEdge for their module-level electronics was the monitoring system, a standard option with every SolarEdge installation.

"A microFIT or FIT system is no different than running an additional business, so owners want to know exactly what is happening to their investment, by tracking energy production of each module through the monitoring system. It is an important benefit to my customers," he explained.

The Installed Systems

At the Donkers property, Sashaan Solar installed 417 Eclipsall solar modules, 417 SolarEdge power optimizers and 15 inverters from SolarEdge. The equipment was installed on three separate buildings.

"We installed 36kW on the implement shed in the back, 12kW on the weaner barn in the middle and 42kW on the finishing barn at the front," stated the engineer.

"In the utility room in the finishing barn, at the control and connection equipment to the grid, we installed a total of nine SolarEdge 6kW inverters supporting the finishing barn and the weaner barn," he continued.

"We also installed an additional six SolarEdge 6kW inverters inside the implement shed, with the AC power from that system brought forward to the utility room."

That system now produces 90 kW of power on the Donkers property. With the income stream provided by Ontario's FIT program, this means the Donkers system has a short 6-7 year payback period then excellent income for the remainder of the 20-year FIT contract.

Over at the Roelands' property, Sashaan Solar installed 284 modules, 284 SolarEdge power optimizers and 10 SolarEdge inverters to create a 60kW system on two buildings.



Figure 2: The SolarEdge power optimizers that harvest maximum energy from each module on the Donkers' barn.
Photo by Sashaan Solar



Figure 3: The SolarEdge inverters in the Donkers' utility room.
Photo by Sashaan Solar

Sashaan Solar's Approach and Value

George denHaan personally hires each of the electricians and carpenters to do the installations he designs. He designs the complete system, does the engineering of the system and has the dialogue with the regulatory bodies, etc. As he states on his website, "With all FIT applications, you require qualified engineering support and project management to work through the OPA and Hydro One application and installation process - this is not a situation for amateur installers or slick sales people to try on their own."

He enjoys being a key player in the fast-growing Ontario PV Solar market. He likes bringing more clean energy production to farms, while helping property owners benefit with cash from their investments.

"One of my first FIT customers made \$52,000 from his 50kW PV solar system last year; he's a pretty happy guy," denHaan stated.

George denHaan is a happy guy too. With 30 installations under his belt and with the latest in power optimization electronics in his portfolio, Sashaan Solar will certainly continue to bring solar energy and all its benefits to farms, businesses and homes in the Toronto area for years to come.