

Are you still running that generator? Cut down on fuel costs with solar

The talk about high fuel prices is usually focused on transportation because it is so important to our daily lives. In our world of remote site industrial power we also have a fuel price concern since fossil-fueled generators typically use diesel or propane. Engine generator sites that may have been running economically are now getting much more expensive to operate, especially at sites where the engine is refueled frequently.

Solar electricity consumes no fuel to operate. Sunlight is the only required “fuel” and is free for the life of the system. How can we use solar as a means to combat the high cost of fuel at a site running an engine-generator?

1. Replace your fossil-fueled generator with a solar generator:

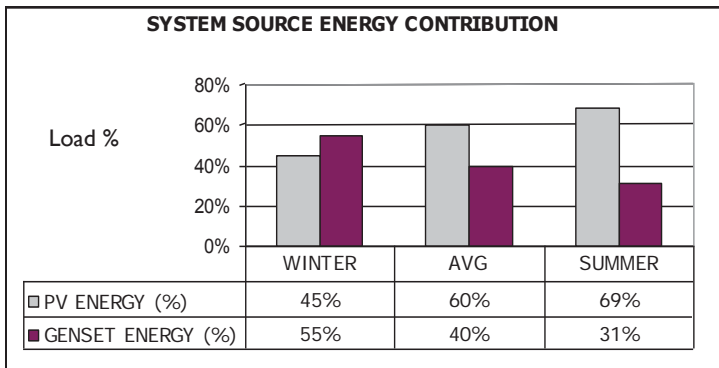
If your equipment requires 300 watts of continuous demand or less, a stand alone solar system can be a cost-effective means of powering your equipment. That 300 watts is continuous, 24/7 (300 watts x 24 hours/day = 7,200 watt-hours/day) which means the solar system can power intermittent loads greater than 300 watts.

Since an engine-generator produces AC voltage, the voltage must be rectified down to the DC voltage needed by the equipment. Solar is a DC technology so it direct-drives DC equipment with no additional power conditioning which is cost-effective.

A solar system operates at little-to-no maintenance and has zero fuel costs. While solar may be more expensive to purchase and install it costs virtually nothing to operate. Therefore, the cost of ownership over the life of the equipment may be significantly less, especially with sharply escalating fuel costs.

2. Add solar to your existing generator:

If your continuous load is greater than 300 watts, you can add solar to your engine generator to create a hybrid system. In a hybrid system each generation source contributes regularly to the load over the course of the year. Often the contribution “mix” is close to 50% each. In areas of high solar radiation, and where the load is close to the 300-watt lower limit, the solar will likely contribute the majority of the annual energy.



An 1800 watt solar /engine generator hybrid power system.

A solar /engine hybrid offers distinct advantages:

- A hybrid system “decouples” the engine from the load by using the engine to recharge a battery bank. The result is an optimally loaded engine that runs at peak fuel efficiency with minimized intervals between maintenance visits.
- Since an engine’s output is greater than the solar array output, you can gain a significant annual energy contribution from the engine while running it for a minimal amount of time. For example, an engine could contribute 50% of the annual energy while running less than 10% of the time, or less than 1,000 operating hours per year.
- A stand alone solar system must be designed for worst-case solar radiation over a 12-month operating period. At other times of the year the solar array generates excess energy that cannot be utilized beyond the amount used to recharge the battery bank. In a hybrid configuration the array is not sized to fully support the load during worst-case insolation months. So, all the solar array output is used to power the load or recharge the battery bank.

A well-designed solar/engine generator hybrid can start the engine one to three times a week, run it for 10-12 hours with each operating cycle, and consume just a few hundred of gallons of fuel per year. The intelligent control system not only dictates when the engine starts, but can override that logic and “force” the engine to operate only during certain times of the day. This feature is valuable if noise from the engine is an issue during certain times of the day or night.

As the escalating price of fossil fuel drives the cost of operating a remote-site engine generator, consider how solar can help defray high costs and save you money over the life of the system.

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