# Grounding an essential part of energy transfer

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Grounding is the most overlooked wiring of a solar power system. It is not needed to make the system work, but may cause problems when absent.

The do-it-yourselfer often neglects grounding.

Equipment can become energized when not grounded. Also, without a proper ground, some equipment may not function properly. One example is a generator with a remote start that does not start or shut down because of electricity being back fed. Another problem could be electronic parts continually burning out. These issues may not present immediately, but happen over time. To avoid this, all the components of a solar power system should be grounded.

Underwriters Laboratories is the trusted source across the globe for product compliance. They are not the only certifiers, but are the most recognized. When UL tests a product, it tests as it is marketed and built.

Intertex ETL also provides electrical equipment certification.

ETL has a long history that began shortly after Thomas Edison's invention of electrical light. Since that time, both the electrical product and electrical product testing industries have grown significantly.

Today we find all electrical equipment marked with some type of trademark. Building inspectors and utility personnel look for these certifications.

The panels have marked grounding points that are tested at the lab. These marked points should be used and no other point of grounding is acceptable.

A No. 10 solid grounding wire should be run from each panel to a grounding electrode. This can be done by running the wire from one panel to the next in a continuous loop. Grounding the inverter is done either internally or externally at a marked point.

A No. 6 solid ground should be run from the inverter to a ground electrode. In off-grid systems, use a separate grounding electrode for the panel grounding.

When lightning strikes, the solar panels can become energized and this helps to quickly dissipate the electrical charge.

Nothing will save the equipment from a direct hit, but there is a good chance that a near miss can be discharged without hurting the equipment. Always use lightning arrestors rated for the voltage of the panels. Some panels are wired in series to a voltage as high as 600 volts.

If the panels are in a series, make sure the rating of the arrestor is for the voltage of the panel array. Grounding cannot be emphasized enough when installing anything that deals with electricity. Always look for the grounding points. Every metal box and all the equipment should be grounded. In a utility-connected system, the neutral is connected to the ground at a single point. This process is called bonding. When a solar power system is installed off-grid, a bond will have to be done at a single point on the AC side of the inverter. This point should be in the main distribution panel in the house. In some cases, there is not a distribution panel so the next best place is in the first AC panel after of the inverter.

If you have any question on grounding a solar power system please feel free to call Alternative Power Systems, Inc. Solar is our business and staying up on all the new National Electrical Code requirements are a priority. The new NEC comes out next year and there are some changes that everyone must be made aware of. So get grounded and be safe.

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