**Standards in Power Electronics**

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Standards exist “for confirming that products conform to the latest levels of functional interoperability, performance, safety, and reliability.” [1] This is true not only for power electronics but all products in general. There can be a great many standards that govern certain products and those that can successfully conform to those standards, whether recommended or required, can be reasonably assured a successful product. Given the number of standards that govern power electronics, it can be hard for engineers to know which ones apply to the product let alone how to find them. “An IEEE standard is often the de facto global standard,” [1] but many other agencies can have equally important standards as well. Standards ensure uniformity in documentation, proper operation, and most importantly safe operation.

Standards are needed for power electronics due to the increased interest in the field combined with the higher need for safety with these devices. They help to govern the way products are developed and how their information is presented. Standards help to “provide a framework for the implementation of good practice or furnish information to consumers to assist them in making informed choices.” [1] A companies adherence to standards not only gives reassurance to the consumer of its safety and reliability, but allows the consumer to accurately assess whether the product will meet their needs. The declining cost and increased installation of photovoltaic systems, both privately and commercially, and given the danger that these systems could pose, especially if the system is grid connected, is a perfect example of why standards are needed in power electronics. IEEE has several standards relating to PV systems, both recommended and mandatory to ensure the safe operation of these systems. For example, all grid connected systems must be disconnected from the grid if there is a power failure on the line. This is done to ensure the safety of the power company crews that work to restore power. It also increases the speed of repair as the crews would need to check that the line is dead and then track down the PV system supplying power if it wasn’t.

More examples of standards concerning PV systems can be seen in Europe. The 4 standards listed in the article [1] cover a wide range of details associated with PV systems. They even cover things that may seem trivial like a name plate to ensure uniformity in the information contained on an inverter name plate and datasheet. The others relate to safety of components and operation of the system as a whole as well as how the efficiency of a system is measured. Many other standards exist governing these systems but those listed above provide an idea of the range and scope of the standards involved. Standards in other sectors may also apply depending on how the system is connected.

The author of [1], Peter Wilson, is the executive vice president for standards in power electronics and proposes some suggested standards relating to wide band gap semiconductor devices. These proposed standards would essentially provide a benchmark on which to test and compare the performance of semiconductor devices. Given the wide range of materials used in fabricating semiconductors, each of which with their own properties it is imperative to have all the necessary information presented to the consumer or engineer in order to make the best choice of which device to use and when.

1. P. Wilson, "Standards in Power Electronics: Insight on handling current standards," in IEEE Power Electronics Magazine, vol. 4, no. 1, pp. 14-18, March 2017.