



Drive Innovation and Streamline Advanced Inverter Market Acceptance

Enable a smarter, safer, reactive grid interconnection with UL 1741 SA advanced inverter testing and certification for the Rule 21 tariff and other grid support documents

Modernizing the world's electric grids is a critical enabler for achieving the societal benefits and avoiding brownouts or blackouts that come from optimizing the way we generate, distribute and use electricity. If implemented properly, distributed generation with advanced functionality and communications capability may even increase the reliability and stability of the grid.

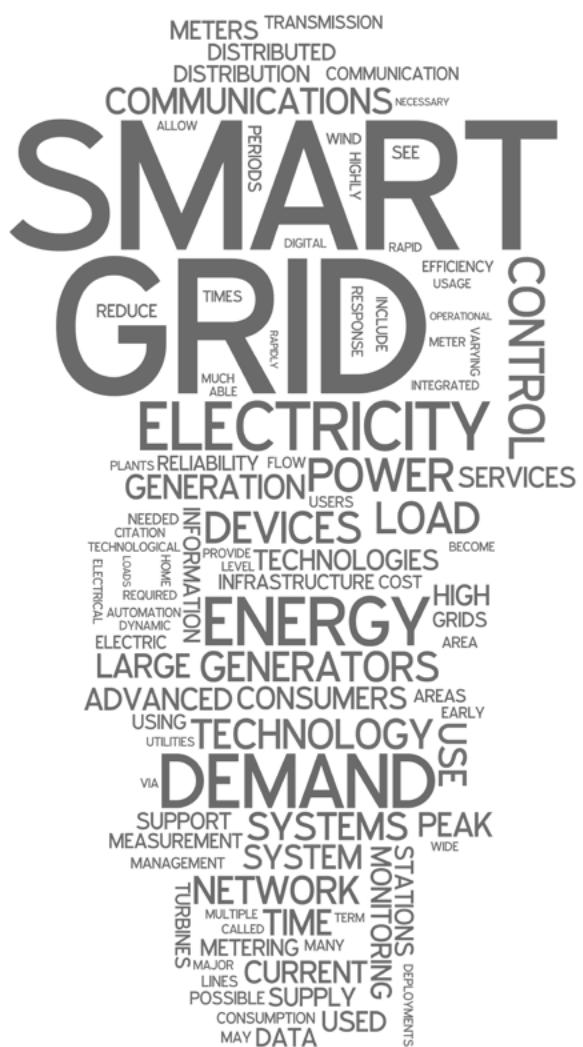
As electric utilities continue to modernize their grids through the use of larger amounts of distributed generation and renewable energy sources, the UL service portfolio expands to meet the ever-changing needs for safety, performance, and grid support functionality.

What is UL 1741 SA advanced inverter testing and Rule 21?

Advanced inverter testing is smart, reactive control of distributed generation (DG) for support of ongoing modernization of grids utilizing increasing levels of DG and renewable energy resources. Traditional utility interconnection requirements (IEEE 1547) require DG devices to disconnect when the grid is experiencing stability issues. The UL 1741 SA specifies the test methods needed to build the foundation for DG devices to stay online and adapt their output and overall behavior to stabilize the grid during abnormal operation rather than simply disconnecting.

The Rule 21 tariff is the inverter related revisions to the State of California Electric Tariff Rule 21 made by the California Public Utility Commission (CPUC). Rule 21 is a Source Requirement Document (SRD) to be used with the UL 1741 SA. SRDs set the specific parameter settings to be used with the test methods of the UL 1741 SA. Other SRDs may also be used with the UL 1741 SA as other markets look to build smart grid functionality into the modernization of their local area electrical power system.

The state of California has announced that inverters installed in the state will be required to comply with the Rule 21 tariff within one year of the publication of the UL 1741 SA. Other states are considering adopting similar installation requirements especially in areas containing high levels of DG and solar penetration.



For more information, call 1-877-UL-HELPS, email: ULHELPS@UL.com or visit www.UL.com



Speed to market through expertise and automation

UL has taken the lead working with industry to develop the UL 1741 SA to set the guidelines for modern smart grid interconnection. UL's staff has been there from the onset, drafting the requirements, leading the comment and revision process culminating the industry consensus standard, and streamlining the implementation to result in smooth, structured certifications of advanced inverters. As part of our commitment, UL has built two state of the art inverter testing laboratories for advanced inverters. These labs utilize automation to minimize time to market such that the average test time is reduced from over 2 months to less than 3 weeks. Alternatively, UL has a well versed engineering staff which can do witness testing at client's facilities already equipped with laboratory facilities able to run the required test plan.

The UL 1741 SA consists of the following advanced inverter grid support utility interactive test plan:

Required Tests (utilized by all SRDs)
Anti-Islanding (with advanced features active during test)
Low/High Voltage Ride Through
Low/High Frequency Ride Through
Must Trip Test
Ramp Rate (Normal & Soft-Start)
Specified Power Factor
Volt/Var Mode
Optional Tests (depends on SRD being utilized)
Frequency Watt
Volt Watt

Why choose UL?

UL drives global research and standards to continually advance and meet ever-evolving product safety, performance and interoperability needs. We partner with businesses, manufacturers, trade associations and international regulatory authorities to bring solutions to a more complex global supply chain. UL is committed to being a world leader in the testing of interconnected systems and products for the electric utility grid. Utilities' and consumers' familiarity with the UL brand helps manufacturers achieve higher levels of acceptance and faster time to market.

Knowledge & Experience – UL has led the effort to establish advanced inverter requirements culminating in the creation of the UL 1741 SA. Our global network of expert engineers, help you understand the various requirements for your specific market application.

Speed & Efficiency – Our cost-effective systems and state-of-the-art advanced inverter testing facilities eliminate inefficient manual test time through the use of automation and modern data acquisition methods accelerating your time to market.

Single Source Provider – UL meets all of your compliance needs and, by bundling safety, performance and interoperability services, also helps save you valuable time and money.

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