FAQ

Grid Code Compliance

Q: What are grid codes and why are they important for renewable energy integration?

A: Grid codes are technical regulations that define the requirements for the safety, security, stability, reliability and economics of a country's public electrical grid, covering aspects such as voltage regulation, power factor limits and response to system faults. Grid codes are crucial for the safe integration of decentralized power-generating units and systems based on renewable energy sources, which must operate in harmony with traditional power systems.

Q: How does UL Solutions help customers navigate compliance with specific grid codes such as the EN 50549 series?

A: UL Solutions provides expert guidance, simulation, testing, inspection and certification services to help customers demonstrate that their energy units and systems meet the requirements of specific grid codes, including the EN 50549 series, through a comprehensive evaluation process. UL Solutions is accredited by ENAC and DAkkS for the EN 50549-1 and EN 50549-2 standards, which define the technical requirements for the connection of generating plants that can be operated in parallel with a public low-voltage or medium-voltage distribution network. UL Solutions follows the EN 50549-1 and EN 50549-2 conformity evaluation scheme indicated in EN 50549-10. We can carry out tests for one specific setting to evaluate compliance with one specific grid code, and we can carry out tests for multiple settings to evaluate the overall function that may be configured by the user to a specific grid code.

Q: What changes are expected in the upcoming Requirements for Generators (RfG) regulations?

A: Following Directive EU 2016/631, the new Requirements for Generators, also known as RfG 2.0, are expected to introduce updated technical requirements for generators to maintain grid stability amid the growing share of renewable energy. The main anticipated updates will concern the integration of storage generating modules, bidirectional charging and grid-forming requirements of distributed energy resources into grid codes. UL Solutions closely monitors these changes to inform customers accordingly.

Q: Can you explain the conformity evaluation process and how long it typically takes?

A: The conformity evaluation process involves assessing the technical specifications and performance of energy systems against grid code standards. The duration can vary depending on the complexity of the system and the specific code requirements. Evaluation can be performed using the Distribution System Operator (DSO) or Transmission System Operator (TSO) method with simulations of power plants, testing and certifications of generators at accredited laboratories and certification bodies and certifications of power-generating systems by accredited certification bodies.

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Q: What types of energy generation systems does UL Solutions' Grid Code Compliance (GCC) services cover?

A: UL Solutions' GCC services cover a wide range of power-generating units and components — such as photovoltaic inverters, wind turbines, energy storage power conversion systems, bidirectional electric vehicle (EV) chargers, combined heat and power (CHP) generators, mini-hydroelectric generators, synchronous generators, automatic voltage regulators, governors, grid-feeding relays, static synchronous compensators (STATCOM) and power plant controllers — as well as power-generating systems — such as solar power parks, wind installations, energy storage applications, microgrids and distributed energy resources (DER) systems.

Q: What are the common challenges that companies face in grid code compliance, and how does UL Solutions help companies address them?

A: Common challenges include understanding complex regulations and technical requirements for different geographies. Identifying one provider that is accredited to provide GCC services for several grid codes and many types of units and systems is not easy. Moreover, the uncertainty of the time required for the grid integration impacts the return on investment for energy equipment manufacturers and power plant developers. UL Solutions helps companies address these challenges by offering engineering services such as standard gap analysis, training and tailored services to help companies navigate compliance more smoothly. Our engineering services include grid studies with power plant static and dynamic (electromechanical and electromagnetic) modeling; low- and high-voltage ride-through simulations; power quality, short-circuit, protection coordination, electrical losses, load flow grid studies; and on-field quality assurance inspections. With decades of expertise in the renewables business, having supported more than 200 renewable installations resulting in a growth in installed capacity of over 9 GW, UL Solutions is an accredited testing laboratory and certification body according to more than 60 grid codes, covering the different continents for a significant number of energy equipment and power plants. By leveraging project experience, UL Solutions offers bundles for different grid codes, which enables customers to potentially reduce testing time by up to 50% and costs by up to 30%.

Q: How does UL Solutions stay updated with the constantly changing grid code regulations?

A: UL Solutions maintains active involvement in regulatory and standardization committees, partnerships with industry stakeholders and continuous research to stay at the forefront of grid code developments.

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Q: What are the consequences of noncompliance with grid codes for energy providers?

A: Noncompliance can lead to penalties, project delays and denied grid connections, which can significantly impact the return on investment. Compliance is critical for operational permission and the long-term success of energy projects.

Q: Can UL Solutions provide ongoing support after the initial compliance assessment is completed?

A: Yes, UL Solutions offers ongoing support to help ensure that energy systems remain compliant with grid codes as regulations evolve and as the systems themselves may undergo changes or upgrades.

Q: Global Compliance Management (GCM) is made up of different modules; can I create a subscription that includes a single module or multiple modules?

A: GCM modules complement each other in their approach to providing solutions at different stages of the product life cycle. Specifically, the Regulatory Insights (GCM-RI) module aids in the initial phase of gathering Global Market Access (GMA) requirements and understanding market needs for transitioning a product from one country to another. This module also helps to keep you updated with the latest regulatory news. On the other hand, the Compliance Portfolio (GCM-CP) module comes into play when the product is already on the market. Its primary function is to help you maintain the market access readiness for your products. It achieves this by providing insights such as upcoming certification expirations and regulatory news that could impact your certifications or products. While these modules work together to provide a comprehensive solution, they can also be subscribed to individually, depending on your specific needs.

Q: How does the Global Compliance Management (GCM) tool streamline the compliance process?

A: The GCM tool by UL Solutions helps simplify your compliance efforts by providing a centralized platform for managing documentation, testing results and compliance status, making the process more efficient and transparent. It also includes information related to grid code compliance.

Q: If I have questions about the Global Compliance Management (GCM) tool contents (such as data or news), is there any way to contact UL Solutions experts directly?

A: Our platform includes the Ask an Expert feature, enabling you to access to more than 500 UL Solutions Global Market Access (GMA) experts. These experts possess knowledge specific to your question's country, product and subject area. We strive to respond to your inquiries within a 48-hour timeframe. Additionally, your account managers are available for immediate assistance in urgent situations.

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