**Variable 10000 Amp Test Supply**

**REOLAB Enables High-Current Testing at a Globally Recognised Test House for Switchgear Compliance**

REO has recently supplied a tailored REOLAB high-current power supply system to a globally recognised test house. Installed at the organisation's dedicated electrical testing laboratory, the system provides stable, controlled current up to 10,000 A for the certification of low-voltage switchgear and control gear assemblies.

These high-current tests are essential to meet the requirements of EN 61439-1/2, which governs the performance and safety of distribution panels, switchboards, and control cabinets. Where these assemblies are part of machinery, testing may also relate to EN 60204-1, the standard for electrical equipment of machines. The test house's procedures focus on two key areas: thermal performance under full load and mechanical integrity under extreme electrical stress conditions.

Panels and assemblies carrying high fault or rated currents are subject to significant electromagnetic forces. When large currents pass through conductors, strong magnetic fields are generated, and these magnetic fields interact, especially in closely spaced or parallel conductors, resulting in Lorentz forces—rapid, high-magnitude forces that act on the conductors in milliseconds.

The magnitude of these forces increases with the square of the current, meaning that at fault levels or during high-load testing, they can reach several kilonewtons. This can lead to severe mechanical stresses on components such as busbars, terminals, insulation supports, and fixing brackets. Without sufficient mechanical reinforcement or bracing, these components may bend, shift, or even break free from their mounting positions.

Additionally, any slight movement under high current can result in the loosening of bolted connections, leading to resistive heating, localised arcing, or progressive failure. In worst-case scenarios, this could compromise the safety of the entire electrical assembly.

Mechanical strength testing, as specified in EN 61439-1 Clause 10.2, is designed to assess the panel's structural integrity under these extreme conditions. It ensures that the assembly maintains its form and function without permanent deformation, insulation damage, or safety risk during and after exposure to high electromagnetic forces.

The test house required a power source capable of delivering high current continuously and safely for type testing. However, their internal infrastructure was not equipped to provide 10,000 A. REO developed a REOLAB system with a dedicated compensation unit to bridge this gap. The compensation unit ensures current stability, reduces reactive losses, and enables precise control during test cycles.

The supplied system includes high-current transformers, inductive components, thermal management systems, and digital interfaces for integration with the test house's automated test platforms. It allows repeatable, accurate testing aligned with the verification requirements defined in Annex D and F of EN 61439-1, covering temperature rise and dielectric performance.

Beyond supplying the hardware, REO collaborated closely with the test house's engineers to tailor the system's operational envelope to their test protocols. This included managing waveform stability, current ramp profiles, and safety interlocks, all critical for reliable and reproducible results.

The REOLAB installation supports the test house's clients in verifying the conformity of their switchgear against European norms, enabling CE marking and reducing time-to-certification. It is particularly relevant for manufacturers developing assemblies for industrial, data centre, transport, and energy applications, where high-current distribution reliability is critical.

REO continues to work with partners across sectors to provide bespoke power and test solutions by enabling access to a consistent high-current supply. The REOLAB system supports the industry in meeting increasingly stringent safety and performance requirements without compromising on test repeatability or operational safety.

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**For further information or Press Enquiries contact:** Steve Hughes or Michelle Gillam

REO (UK) Ltd, Units 2-4 Callow Hill Road, Craven Arms Business Park,

Craven Arms, Shropshire, SY7 8NT
**Telephone:** +44 (0)1588 673411

**Fax:** +44 (0)1588 672718

**www:** http://www.reo.co.uk

**e-mail:** marketing@reo.co.uk

**Twitter:** <https://twitter.com/REO_UK>

**Facebook:** <http://www.facebook.com/pages/REO-UK-Ltd/263330563768795>

**About REO:** REO specialises in providing an extensive array of electronic power controllers and resistive and inductive wound components tailored for industrial use, particularly in demanding environments. As the company expands its footprint in renewable energy technology, ensuring exceptional power quality has become a paramount focus. With manufacturing facilities in Germany, the US, China, and India, REO stands at the forefront of innovation across the globe.