

CASE STUDY

REOLAB Test Technology by REO



Precise high-current testing up to 10.000 A: The use of REO's REOLAB test technology in a British test laboratory



Initial Situation / Challenge

Independent testing facilities play a crucial role in evaluating the electrical safety and performance of switchgear, power distribution panels, and control cabinets.

For certifications according to EN 61439-1/2, assemblies must be tested under realistic high current conditions.

The following factors come into play simultaneously:

- Thermal stresses due to intense heating
- Mechanical stresses resulting from high electromagnetic forces
- High demands for measurement accuracy, repeatability and safety

As the current increases, the electrodynamic forces intensify, putting significant strain on busbars, bolted points and insulation systems.

The existing infrastructure of the test laboratory was unable to reliably, stably and safely provide the high currents of up to 10.000 A required for reproducible certification tests.



Objective

The test laboratory required a high current solution with the following characteristics:

- Continuous current supply up to 3×10.000 A
- Precise control and stable waveform characteristics
- Automated test procedures and integration into laboratory control systems
- Compliance with the requirements of EN 61439-1/2
- Maximum operational and personnel safety

In addition, depending on the grid situation, there was a desire for:

- Reduction of reactive power
- Improved energy efficiency of the testing infrastructure

Summary

Application: Test laboratory / Testing technology / High-current certification testing

Country: UK

Product: REOLAB 220 PF – Three-phase high current power supply system, customized design

Objective: Safe, stable and reproducible high current tests up to 10.000 A according to EN 61439-1/2

Outcome: Reliable high current testing, reduced certification times, and improved energy efficiency and grid stability



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Solution

REO engineered a custom three-phase high current supply system based on the REOLAB 220 PF, with a total power of 300 kVA, precisely tailored to the requirements of the test laboratory. The system not only provides power but also forms a fully integrated, automatable high current testing environment.

Key technical features of the solution:

- **Power & Control:**
Three-phase high current supply up to 3×10.000 A with separate electronic current control per phase and an additional fine-control stage between the variable and high current transformer
- **Automation & Integration:**
Ethernet interface and OPC connection for transmitting setpoint values and measurements to higher-level systems
- **Operation & Visualization:**
Integrated REO PowerFormer controller and 12" TFT touch HMI to display set and actual currents per phase, switching states, temperature and position signals and operating modes
- **Safety:**
Integration of motorized circuit breakers with thermal, magnetic and undervoltage tripping, as well as main switch, overcurrent and temperature monitoring, and emergency stop system



Results

The use of the REOLAB high current supply enabled smooth and efficient test operations:

- Precise and repeatable high current testing up to 10.000A
- Compliance with EN 61439-1/2 requirements
- Reduced time to certification and improved test efficiency
- Optional reduction in energy consumption and grid load
- Increased operational and process reliability



Conclusion

With REOLAB test technology, REO confirms its expertise as a system provider for customized high current testing solutions. The combination of:

- High-precision current control
- Integrated PLC automation
- HMI visualization and bus communication
- Comprehensive safety concept
- Modular high current system architecture

enables reliable, standard-compliant and future-proof high current testing – even under extreme conditions.

By using the system, the test laboratory was able to not only meet the EN 61439-1/2 requirements but also significantly improve the efficiency and reliability of high current testing.

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FAQ's

What is a high-current test and what is it used for?

High-current testing is used to evaluate the thermal, mechanical and electrical endurance of components and parts under high current conditions. They are a central part of EN 61439.

Why are high-current tests up to 10.000 A required?

Only real high currents allow for the safe verification of:

- Mechanical strength
- Thermal stability
- Operational safety

How are test procedures controlled?

The test procedures are controlled via an integrated PLC system with HMI. Test sequences are automated and measurement data is collected and transmitted via Ethernet/OPC.

Is the system customizable?

Yes. Current strength, control behavior, interfaces, safety technology and integration are all tailored to the specific project.

Where is REOLAB used?

- Testing laboratories & certification bodies
- Development and industrial applications
- Research, universities and energy projects

What is the REOLAB system by REO?

REOLAB is a modular test technology platform by REO for demanding electrical tests. It includes adjustable and constant voltage supply systems. The testing devices are used in test fields, development laboratories, institutes, schools and universities, as well as in industry and mobile stations.



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