Model 9510
Regenerative Grid Simulator 50kW - 1.2MW

NH Research

Test solution for engineering development, compliance verification and manufacturing for all utility grid-tied products. Immediate applications for Distributed Energy Resources, Energy Storage Systems, Solar PV, and Vehicle to Grid test, evaluation, and certification.

Key Features & Capabilities

- Regenerative AC/DC Grid Simulator and Power Amplifier
- Optimized for PHIL applications
- 50kW, 75kW, 100kW Power Modules
- Modular & Scalable AC Power from 100kW to 1.2MW
  - Same unit can act as master or parallel auxiliary unit
  - Field expandable for future increased power demands
- AC Load option: Modules can be configured as Regenerative AC/DC Grid Simulator or 4-Q AC Load
- Fully isolated design:
  - Facility to output and channel to channel
  - High voltage remote sense up to 1286VL-L
- Widest True-Power Operating Envelope
  - Wide range of power factors
  - Wide range of voltage (150V to 350V with full power)
- Provides extra current for different voltage grid tied products
- High power density with small footprint
- Multiple phase and DC capability covers all utility source and load requirements
  - Programmable three-phase, split-phase, or single phase
- Independent voltage and current measurement range for enhancing measurement accuracy
- Powerful waveform synthesizer combined with high-resolution digitizer covers extensive test and evaluation requirements.
- Ideal for regulation testing standards: UL 1741SA, IEEE 1547, IEC 62116, IEC 61000-4-11(pre-compliance), 4-13, 4-14, 4-28, etc.

Applications

Model 9510

Introduction

The 9510 Regenerative Grid Simulator is the industry leading solution for testing and verification of high power grid-tied applications in compliance with regulatory testing standards, worldwide. The 9510 has a built-in power amplifier mode for Power Hardware in the Loop (PHIL) applications providing further testing and simulation capability ideal for research labs. Select power levels ranging from 50kW, 75kW or 100kW modules. Modular and scalable power is available in 100kW modules up to 1.2MW. Programmable frequency is between 30Hz and 120Hz. The output can be AC, DC or AC+DC and the AC can be single, split or 3-Phase. With this wide range of power, frequency, and phase configuration options, the 9510 provides the ultimate flexibility to test the broadest selection of grid-tied products.

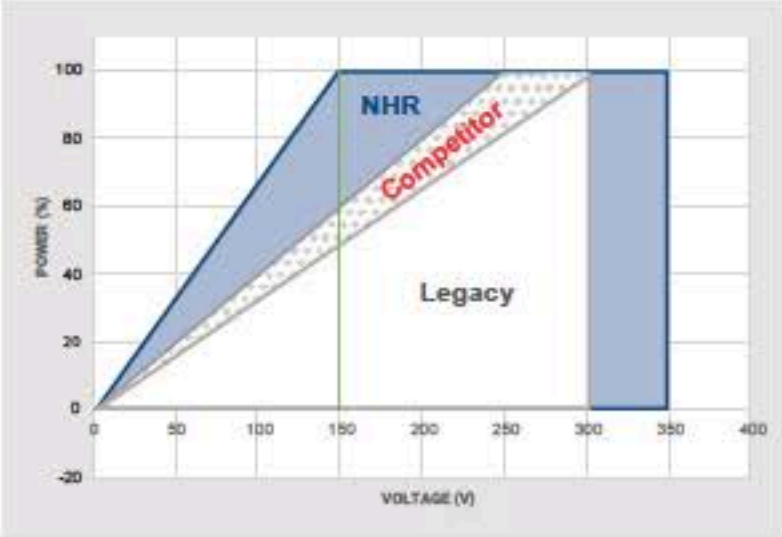


Figure 1 - Max Power Delivered at 150VAC L-N

Electric Vehicle Test Solutions

NH Research

AC Grid
V2G, EV Load Testing, Peak Shaving, Grid Utility Test

EV Charging
DC Fast Charging, Onboard Charger, EVSE

Battery
Drive Cycle, Life Cycle Performance, Charge/ Discharge, BMS Development

Powertrain
Battery Emulation, Motor Driver, Dynamometer, Alternator, Start-stop

Power Electronics
APM/DC-DC Converter, Inverter, In-vehicle Electronics

NH Research (NHR) provides Electric Vehicle (EV) test equipment and software for testing individual components and systems including battery modules/packs, electric powertrain, DC fast charging and power electronics (EVSE, APM, V2G and on-board chargers, etc.). NHR's EV test solutions include battery test systems, battery emulators, grid-simulators, AC/DC loads, AC/DC sources and test management software.

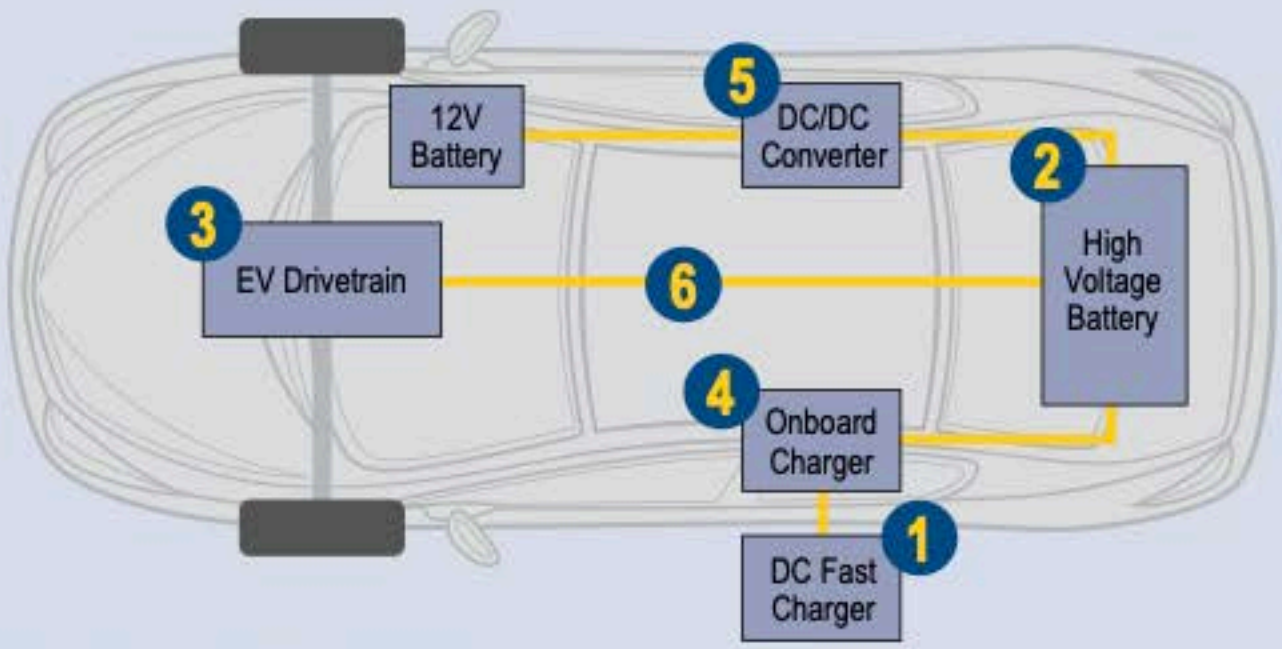
With the accelerated growth of transportation electrification, engineers must address new testing challenges. Voltage and power levels are transitioning from a traditional nominal 300/400VDC to 800/1000VDC and transients up to 1200V. Higher voltages permit faster charging and increase power transfer while reducing vehicle weight. These factors are driving development for higher performing batteries, drive-trains, power converters, inverters and faster chargers.

Today, customers desire test solutions with modular configurations, expandable power, integrated safety, wider operating envelopes, built-in measurements, and faster transient response-times for today's and tomorrow's products. NHR's advanced test solutions substantially reduce development and test time, reduce cost and increases energy efficiency.

"The NHR Advantage is scalability & flexibility. It's not an engineered solution; it's a COTS solution that allows for more use cases and makes a strong business case to purchase. When you factor in the value and excellent support from the company, it's an easy choice. We use the 9300 Series for testing in our powertrain application."

- E-mobility Subject Matter Expert, EV Industry

Figure 1: *Diagram of a typical EV electrical system.*



Complete EV Test Solutions

1. DC Fast Charger
2. High Voltage Battery
3. Powertrain
4. Onboard Charger & EVSE
5. DC/DC Converter
6. In-vehicle Power Electronics

NHR from ni

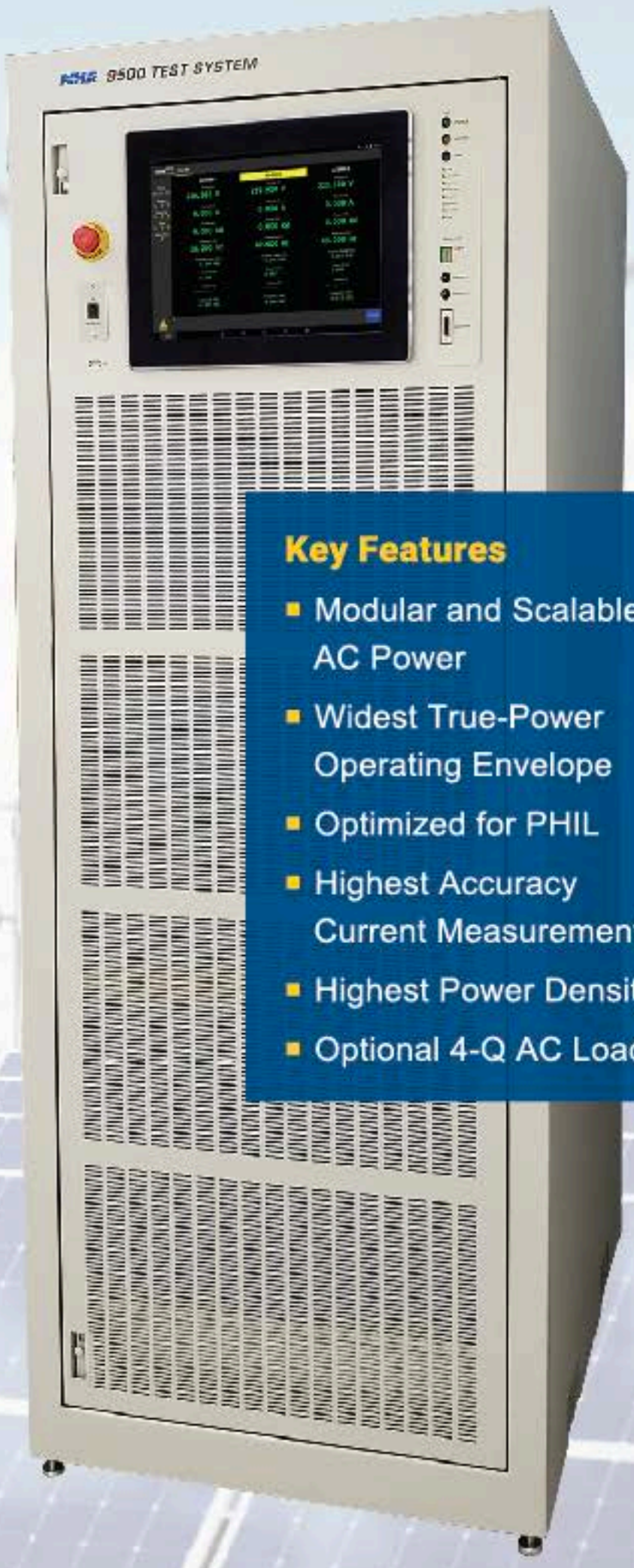
Enabling Electrification
Your Partner in Test

Regenerative Grid Simulator

Model 9510 – 50kW up to 1.2MW

Applications

- E-mobility
- Smart Grid
- Power HIL
- Utility Grid
- Photovoltaic
- Energy Storage
- IEC Testing
- Research



Key Features

- Modular and Scalable AC Power
- Widest True-Power Operating Envelope
- Optimized for PHIL
- Highest Accuracy Current Measurement
- Highest Power Density
- Optional 4-Q AC Load

NH Research

REGENERATIVE GRID SIMULATOR!
Flexibility to test the broadest selection of grid-tied products.

NHR Launches 9510 Regenerative Grid Simulator 50kw up to 1.2MW

The Next Generation Test Solution for Grid-Tied Applications: Solar PV, V2G, Energy Storage Systems, Utility Grid, EV Charging, and more!

- Optimized for PHIL
- Optional 4-Q AC Load
- Test to grid-tied standards worldwide

For additional specs visit the product webpage or contact us today!

www.nhresearch.com

Enabling Electrification

NH Research

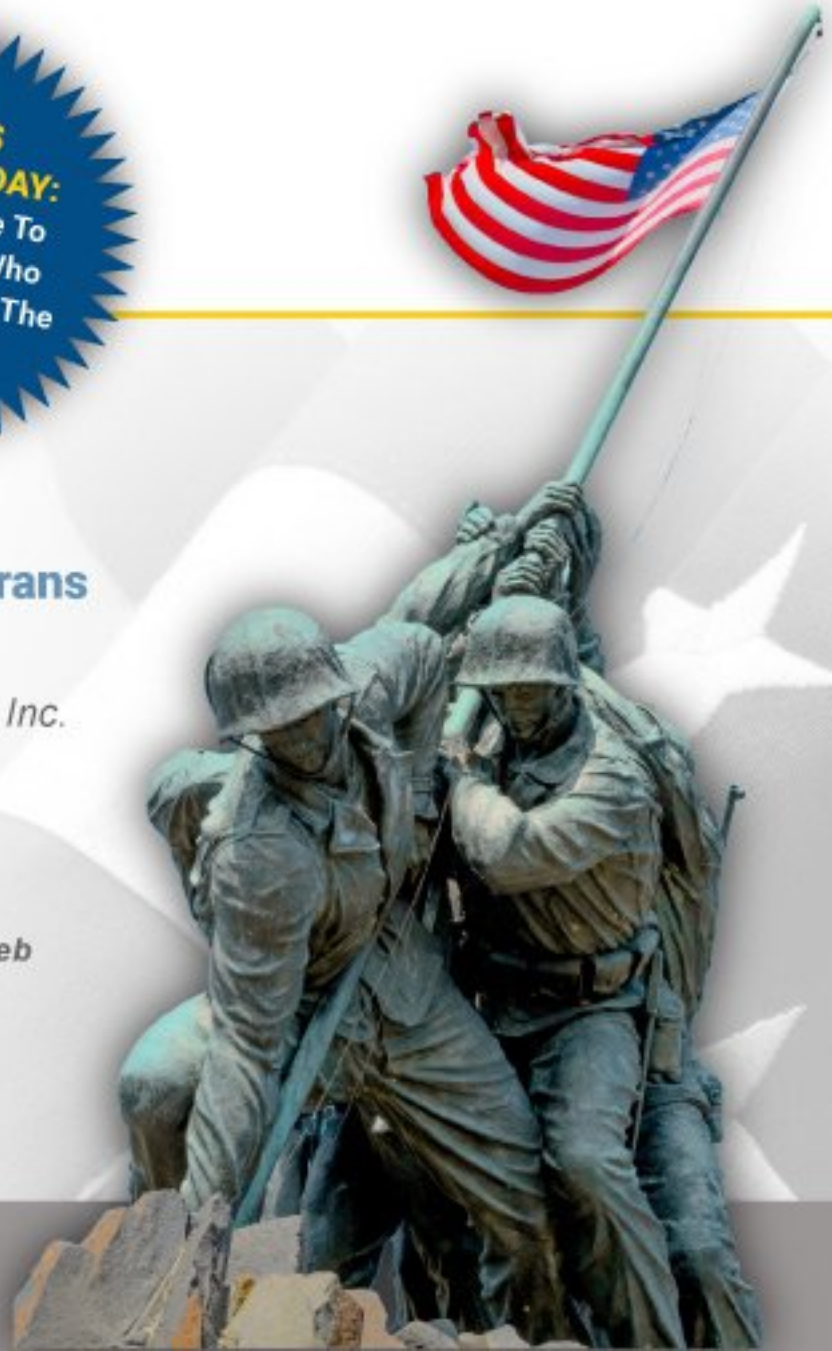
ON THIS VETERANS DAY:
Take The Time To Honor Those Who Have Serveed In The Military!

In Observance of Veteran's Day Honor Those Who Have Served

Take The Time to Remember Our Military Veterans & The Sacrifices They Have Made

In observance of Veteran's Day we here at NH Research, Inc. would like to take a moment to honor all military veterans who have served while remembering the sacrifices our military veterans have made!

For additional information on Veteran's Day visit the following web page: http://www.va.gov/opa/vetsday/vetdayhistory.asp



www.nhresearch.com

Industry Leading Electric Vehicle Test Solutions

Battery, Fuel Cell, Electric Powertrain, EV Charging, and more.

View Solutions

NHR Launches Regenerative Grid Simulator

The 9510 Regenerative Grid Simulator is the next generation AC test solution for testing and verification of all grid-tied applications in compliance with regulatory testing standards, worldwide. The built-in power amplifier mode for Power Hardware in the Loop (PHIL) applications provides further testing and simulation capability ideal for research labs.

Key Features:

- Modular and Scalable Power
- Widest True-Power Operating Envelope
- Optimized for PHIL
- High Accuracy Current Measurement
- Highest Power Density
- Optional 4-Q AC Load

Learn More

What NHR Offers

NHR's solutions provide the performance, simplicity, and safety that engineers and researchers desire. NHR is a leading manufacturer of power test instruments and systems for a variety of industries and markets.

- Reduced Testing Time
- Improved Safety
- Energy Savings

Industry Solutions

NHR enables electrification by accelerating innovation, validation and functional test of today's technologies. Backed by over 50 years of experience in power conversion and power supply test systems we provide world class test instruments and systems.

View All Solutions

Automotive & E-mobility Test

NHR provides Electric Vehicle (EV) test equipment and software for individual components and systems including EV battery modules/packs, electric powertrain, DC fast chargers and EV power electronics.

Battery

NHR is a leading manufacturer of battery test equipment and system solutions for all battery chemistries, fuel-cells, super capacitors, and energy storage systems.

Next Generation Battery Test Solutions

NHR Battery Test Systems easily integrate with your existing assets or future test requirement set-ups. Battery testing typically involves additional components such as communication modules, temperature chambers and chillers, and other power sources which factors into test requirements.

Battery Emulators

Battery test equipment and system solutions for all battery chemistries, fuel-cells, super capacitors, and energy storage systems.

View Systems

Battery Module/Pack Test Systems

Dramatically reduce testing time, provide highly repeatable test results, and create a safer test environment.

View Systems

Test & Measurement Software

Manage multiple lab and production test setups using a top level S/W solution capable of monitoring and controlling remotely.

View Software

View All Products

Succes Stories

Our engineering value to customers is the ability to benchmark an entire vehicle from the component to the system level…

E-mobility Subject Matter Expert Electric Vehicles Industry

Read More

View Success Stories

News & Resources

NH Research Launches Next Generation Regenerative Grid Simulator for Testing High Power Grid-Tied Applications

NHR Exhibits and Presents at Intersolar and Energy Storage North America 2022

NH Research Exhibits at the Advanced Automotive Battery Conference 2021

Have a Question Regarding Our Products?

Contact us today to learn how NHR can customize a test solution that fits your specific needs.

Contact Us

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Industry Test Solutions

We simplify test so you can focus on innovation.

View Test Solutions

Enabling Electrification, Your Partner in Test

NH Research (NHR) enables electrification by accelerating innovation, validation and functional test of today's technologies. Backed by over 50 years of experience in power conversion and power supply test systems we provide world class test instruments and systems. Our solutions provide the performance, simplicity, and safety that engineers and researchers desire.

Automotive & E-mobility Test

NHR provides Electric Vehicle (EV) test equipment and software for individual components and systems including EV battery modules/packs, electric powertrain, DC fast chargers and EV power electronics.

View Solutions

Electric Aircraft Test

NHR provides power test equipment for electric aircraft components and systems including battery modules/packs, electric propulsion and power electronic systems.

View Solutions

Battery

NHR is a leading manufacturer of battery test equipment and system solutions for all battery chemistries, fuel-cells, super capacitors, and energy storage systems.

View Solutions

Military & Defense

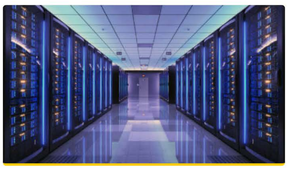
NHR provides ATE-friendly test equipment that serves both traditional and modern military and defense applications for land, air, and sea.

View Solutions

Renewable Energy & Microgrid Test

NHR provides power test solutions across the microgrid for testing new power management systems, solar (PV), energy storage systems (ESS), distribued generation (DG), electric vehicles, DC fast chargers, and the utility grid.

View Solutions



Power Conversion Test

NHR provides high performance test equipment ideal for design verification, engineering characterization and functional testing of power conversion devices which often require testing at high volumes.

View Solutions

Industrial Power

NHR provides industrial power test equipment for electric construction equipment, industrial electric utility vehicles, electric power tools, heavy duty electric machinery, and robotics.

View Solutions

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Contact us today to learn how NHR can customize a test solution that fits your specific needs.

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Automotive & E-mobility Test Solutions

We simplify test so you can focus on innovation.

Application Guide

Electric Vehicles & E-mobility Test Solutions

NH Research (NHR) provides Electric Vehicle (EV) test equipment and software for individual components and systems including EV battery modules/packs, electric powertrain, DC fast chargers and EV power electronics.

With the accelerated growth of electric vehicles, engineers must address new testing challenges. Voltage and power levels are transitioning from a traditional 300/400VDC to 800/1000VDC. Higher voltages permit faster EV charging and increase power transfer while reducing vehicle weight. These factors are driving the development of higher performing EV batteries, electric drive-trains, power converters, inverters and faster chargers. Today's EV test equipment needs to provide modular, scalable power, fast transients and integrated safety to address these changing test requirements.

Webinar: Testing EV Components Systems

App Note: Electric Powertrain

Webinar: Electric Powertrain

Electric Powertrain Test Solutions

NHR's battery emulation approach to testing the electric powertrain provides fast-transient speeds and accuracy to emulate real-world conditions for energy storage (battery) and wheel power. NHR's 9300/9200 Battery Emulator accepts back EMF and prevents safety hazards. The isolated input and output paths eliminate single points of failure and unstable conditions. This highly modular and scalable test solution meets current and future power requirements of electric powertrain systems.

- High Voltage Battery Emulator up to 2.4 MW - 9300 Series
- Med Voltage Battery Emulator up to 21 channels - 9200 Series

Learn More

Next Gen EV Battery Module/Pack Test Solutions

NHR's Battery Test Systems enable modular, scalable power for rigorous EV life-cycle, drive cycle and performance testing. NHR's **9300 High Voltage Battery Test System** provides a dual power range (600 V, 1200 V) and can be scaled up to 2.4 MW in 100 kW building blocks. NHR's **9200 Battery Test System** has a multi-channel capability (up to 21 channels) with the capability to mix and match voltage and current levels at lower power ranges.

- High Voltage Battery Test System - 9300 Series
- Med Voltage Battery Test System - 9200 Series

Learn More

App Note: Fundamentals of Battery Test

Guide: Battery Test Solutions

App Note: Battery Emulation

DC Fast Charging Test Solutions

DC fast charging infrastructure now operates at higher voltage levels to accommodate faster charge times and larger electric vehicle batteries. Using batteries as power sources for testing fast charger systems is extremely time-consuming and costly. NHR's bi-directional DC source can safely emulate an electric vehicle DC fast charger or a high voltage battery pack that can accept fast charging. The ability to emulate a wide range of vehicles, regardless of its battery characteristics and power levels, dramatically simplifies test. NHR's unique battery emulation capability can substantially reduce test time, energy consumption and operating costs.

- High Voltage Bi-directional DC Source - 9300 Series
- Med Voltage Bi-directional DC Source - 9200 Series

Learn More

EV Power Electronic Components Test Solutions

NHR provides electric vehicle test equipment for power electronic components including AC/DC loads and sources. Applications include the EV on-board charger (OBC), EVSE, APM, DC-DC converter, etc. Our AC loads are ideal for simulating any inductive, capacitive or resistive load while our DC Loads are ideal for fast transient inrush simulations. The 9430 Regenerative 4 Quadrant AC Load has the capability of simulating almost any linear or non-linear load.

- Bi-directional DC Source - 9200/9300 Series
- Regenerative Grid Sim/AC Source - Model 9410/9420
- AC Loads
- DC Loads

App Note: EV Test Solutions

Guide: Fuel Cell EVs

Guide: EV Test Solutions

Heavy Duty Electric Trucks, Buses & Fleet Test Solutions

NHR's advanced test equipment is ideal for designing, manufacturing and servicing electric and hybrid heavy duty trucks, buses and commercial fleets. Modular, scalable test solutions range from EV batteries and fuel cells, to power electronics and electric powertrain systems. As adoption increases, electric fleet service centers need to be equipped to test at higher power levels and higher volumes on demand. NHR's test solutions include battery testers, battery emulators, AC/DC loads and sources.

- Fuel Cell Test Solutions

Learn More

E-Mobility Test Solutions for Electric Utility Vehicles, Scooters & E-bikes

NHR's e-mobility test solutions are ideal for R&D and manufacturing of utility electric vehicles, scooters, golf carts, and e-bikes.

New electric transportation solutions for campus management and urban commuting require testing individual components and entire systems. Our next generation battery cyclers, battery emulators, AC/DC loads and AC/DC sources provide comprehensive test solutions for simulating real world conditions.

Applications include testing batteries, drive train/motors, power electronics, and charger technologies.

Utility Grid & V2G Test Solutions

Test the impacts of electric vehicles on the utility grid and vehicle-to-grid (V2G) technologies. Test equipment simulating the bidirectional power flows to and from the grid substantially speeds up test time and reduces energy costs. NHR's 9410 Regenerative Grid Simulator is used to simulate the utility grid while NHR's 9300 Bi-directional DC Source is used to emulate the EV battery, energy storage system, or fast charger. NHR's 9430 AC Regenerative Load is used to simulate any inductive, capacitive or resistive load. This combination is an ideal test solution for IEEE 1547, UL 1741, and similar grid-tied standards as well as impact studies around the globe.

- Regenerative Grid Simulator - Model 9410
- Regenerative 4 Quadrant Load - Model 9430
- Bi-directional DC Source - 9300 Series

Resources

Webinar Electric Powertrain

App Note: Electric Powertrain

Article: Testing Fuel Cell EV Applications

Have a Question Regarding Our Industry Test Solutions?

Contact us today to learn how NHR can customize a test solution that fits your specific needs.

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Test Instruments & Systems

We simplify test so you can focus on innovation.

View Product Guide

Power Electronics Test Instruments & Systems

NH Research (NHR) is a leading manufacturer of power electronics test instruments and systems for the automotive, aerospace and defense, battery/energy storage, renewable energy and power conversion industries. Our application test solutions provide modular configurations, expandable power, integrated safety features, wider operating envelopes, built-in measurements, and faster transient response-times. We enable you to confidently push the boundaries of test.

Battery Emulators & Simulators

NHR's battery emulators are used to emulate a battery or DC Power. Applications include testing components and systems such as powertrain, DC fast charging, satellites, solar PV, and energy storage systems.

View Systems

Battery Module Pack Test

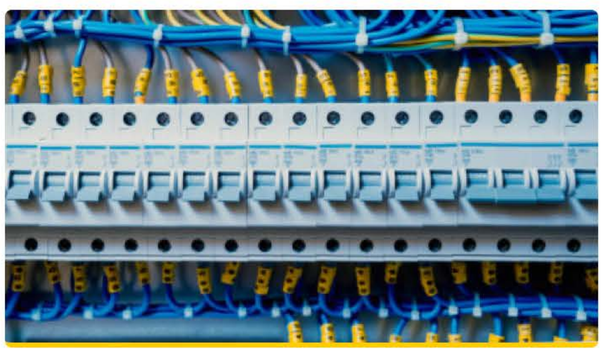
NHR's battery module and pack test systems are used to test all battery chemistries, fuel cells and super capacitors. We offer comprehensive test solutions for R&D and manufacturing.

View Systems

Battery Test Management Software

Enerchron® is a powerful but easy to use test executive created for battery testing to simplify and accelerate your test automation.

View Software



AC & DC Electronic Loads

NHR's programmable AC and DC loads are flexible instruments that can be used in customer built test systems.

View Loads

AC & DC Sources

NHR's programmable AC and DC sources are flexible instruments that can be used in customer built test systems.

View Sources

AC & DC Regenerative Loads/Sources

NHR's AC & DC regenerative loads are high performance, energy efficient test solutions that reduce energy waste and provide significant cost savings.

View Loads/Sources

Have a Question Regarding Our Products?

Contact us today to learn how NHR can customize a test solution that fits your specific needs.

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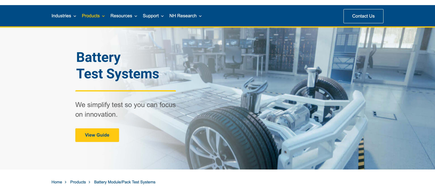


Battery Test Systems

We simplify test so you can focus on innovation.

View Guide

Battery Test Systems for R&D and Manufacturing

NH Research (NHR) is a leading manufacturer of battery test equipment and system solutions for all battery chemistries, fuel-cells, super capacitors, and energy storage systems. NHR's battery test equipment includes the 9300 High Voltage Battery Test System and 9200 Battery Test System which provides the flexibility to address today's higher voltage levels, and modularity to expand for future requirements.

NHR's battery test systems are used as battery cyclers, regenerative, bidirectional DC sources, regenerative DC loads, high power DC sources, or Battery / DC emulators.

Customers look to NHR for superior performance, ease of use, faster slew rates to match today's technology, reduced test time, improved safety, and energy savings.

Battery Test Equipment for Module and Packs

NHR's modular Battery Test Systems address the increasing power levels of battery modules and packs used in the electric vehicles and renewable energy storage industries. Battery test applications include testing battery modules and packs, fuel cells, energy storage systems, chargers, electric vehicles, micro-grid testing, vehicle to grid (V2G), solar pv testing, and more!

Key Features:

- Modular & Scalable Power
- Wide Operating Envelope
- Fast Response Times
- High Performance Hardware
- Advanced Built-in Measurements
- Multiple Control Options: Enerchron® Test Executive, integrator, write software
- Easy 3rd Party Integration (CAN, BMS, DAQ options)
- Multiple Layers of Safety

Model Comparison

Bi-directional Power Supplies vs. Battery Cyclers

The Industry's Most Flexible, Modular, Off-the-Shelf Battery Test Systems

The 9300 Battery Test System provides a dual power range that covers both lower (up to 600 V) and higher voltage (up to 1200 V) applications using a single product. This battery cycler can be scaled up to 2.4 MW in 100 kW building blocks, offering a wide operating envelope with fast transient times.

NHR's Regenerative 9200 Battery Test System includes expandable power ranges from 12kW modules up to 252 kW with 40,120 or 600V bi-directional DC loads. This battery modularized tester provides optimal configuration that enables companies the flexibility to expand their battery test system as needed. This battery cycler has a multi-channel capability (up to 21 channels) that enables you to mix and match voltage and current levels at lower power ranges. You can easily test multiple batteries with different test programs and starting times. Unlike bi-directional power supplies, our battery cyclers are designed to test batteries.

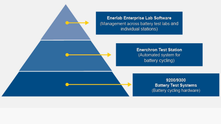
The Power of Choice: Multiple Control Options

The ability for a battery test system to interface with and control an entire test environment is critical. Engineers need to have multiple ways to control the battery test instrument. Depending on the specific need, an engineer may 1) choose to have direct access to the drivers for in-house programming, 2) choose to use an integrator, or 3) choose NHR's Enerchron Test Executive software solution.

All NHR battery test systems can be easily integrated into existing test platforms or as the power stage for new test platforms. To achieve this, NHR provides fully documented drivers using either IVI or SCPI languages along with examples, applications, and integration support. NHR also has a number of solution partners who are familiar with our hardware and can deliver a full turn key test system. These integrators develop fully custom systems using your specified hardware sensors and components.

Comprehensive Battery Test Solutions

We're your partner in test. We provide comprehensive battery test solutions for the entire product life cycle. We have solutions and in-house application experts that can help you at any design or manufacturing stage whether you're at the R&D engineering or high volume manufacturing stages.



Flexible, Modular & Scalable Power

All NHR battery test systems are designed for fully independent operation and can be paralleled, increasing the maximum power and current capability to the level required. This modular expansion ensures that you can start testing today's application levels, knowing that additional power is available in the future. Expansion of the system is as simple as adding an additional cabinet(s) to reach the desired power levels.

Fast Response Times

Voltage and current transitions, or slew rates, of the test system must be faster than the battery under test to emulate real-world settings. Our systems have fast response times and command speeds to accurately emulate real-world conditions through the hardware and software.

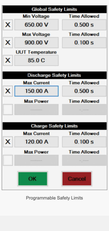
Slow rise-time of typical DC supply

Sub-millisecond rise time of NHR

Built-in, Multiple Layers of Safety

When it comes to testing new battery technologies, safety is vital. NHR solutions provide multiple layers of hardware and software protection. The combination of safety contactors, reverse polarity checker, and pre-charge circuitry are built-in automatically to the hardware and easy to control in a single solution. There are no hidden fees or added costs, and safety is designed into the product versus being an afterthought. All of these safety mechanisms are controlled and fully integrated into the automation system, providing full safety control throughout the test environment.

All Included, Plus Additional Multiple Layers of Safety



Programmable Safety Limits

Accelerate Test with Enerchron® Test Executive

The next level of NHR's solution consists of our Enerchron Test Management Software. This is a local software solution that will run on each individual test station, providing the sequence control and integration of hardware I/O, CAN, chambers/ chillers, and safety elements of the test station. Enerchron is a powerful but easy to use Test Executive created specifically for Battery Testing to simplify and accelerate your test automation. It's a comprehensive battery test environment that includes integration with IVI/VI and SW tools. Enerchron is your shortest path to market and reduces schedule risk.

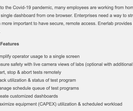
- Streamline your battery test process & workflow
- Dramatically reduce software development time for new tests
- Increase productivity & eliminate errors and repeated tests
- Save time, money, & software development resources
- Reduce stress & testing difficulties
- Stay on schedule and budget

Battery Test Involves More Than Battery Cycling

Enerlab™ Enterprise Lab Management Software

Advanced Enterprise Software to Monitor, Control & Manage NHR Enerchron Test Systems

NHR's Enerlab Enterprise Lab Management Software enables control of all test stations within a facility into one streamlined browser-based interface. Enerlab is a top-level enterprise software solution that monitors, controls and manages battery test systems using Enerchron. Key capabilities include live camera views and full control of test programs, as well as customizable dashboards and reporting tools.



Due to the Covid-19 pandemic, many employees are working from home. Enerlab provides a way to remotely manage all battery test stations within a facility, on a single dashboard from one browser. Enterprises need a way to streamline battery testing across R&D labs and production lines. Today, it has become even more important to have secure, remote access. Enerlab provides a convenient and effective way to monitor, control and manage all test stations in real-time.

Key Features

- Simplify operator usage to a single screen
- Ensure safety with live camera views of labs (optional with additional camera equipment)
- Start, stop & abort tests remotely
- Track utilization & status of test program
- Manage schedule queue of test programs
- Create customized dashboards
- Maximize equipment (CAPEX) utilization & scheduled workload

Products

High Voltage Battery Test System - 9300 Series

Battery Test System - 9200 Series

Low Voltage/High Current Battery Cycler Test System – 9220 Series

Enerchron Battery Test Software

Enerlab™ Enterprise Lab Management Software

Have a Question Regarding Our Battery Module/Pack Test Solutions?

Contact us today to learn how NHR can customize a test solution that fits your specific needs.

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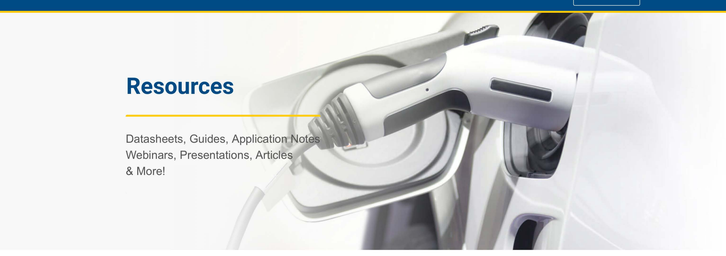

Resources

Datasheets, Guides, Application Notes, Webinars, Presentations, Articles & More!

Datasheets

View All

9510 Regenerative Grid Simulator

9430 Regenerative AC Load

9420 AC Power Source

9410 Regenerative Grid Simulator

Guides

View All

Battery Test Solutions Product Guide

Electric Vehicle Test Solutions Product Guide

Renewable Energy & Microgrid Test Solutions Product Guide

EV Charging Test Solutions Product Guide

Application Notes

View All

LVRT Testing in Solar PV Inverters and Grid Tied Systems

Bi-directional Power Supplies vs. Battery Emulator

Battery Test Safety Requirements

Battery Cycler vs. Bi-directional Power Supply for Battery Test

On Demand Webinars

View All

Selecting a Battery Cycler or Building Your Own

AC Load Testing Fundamentals

Electric Aircraft Test Solutions

Testing EV Components & Systems

Presentations

Battery Module/Pack Testing: Current Challenges & Opportunities

Using Battery/Fuel Cell Emulation for Testing DC Fast Chargers & Powertrains

Bi-directional Test Solutions to Manage the Impacts of Electrification on the Grid

Articles

View All

How is a Battery Emulator Different from Power Supplies & Electronic Loads?

Testing Electric Vehicles Using Battery Emulation

Fuel Cell Test Solutions: Hydrogen Technologies on the Rise

Fuel Cell Test Solutions: Hydrogen Technologies on the Rise

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Power Electronics Testing Webinars

Application Test Solutions & Approaches

NH Research is launching a series of webinars to help educate our customers across a wide range of markets and industry applications. Our application experts present on advanced test solutions and approaches related to electrification including electric vehicles, aerospace and defense, energy storage and renewable energy. Please contact us to request a specific topic. To register for our **live** webinars, go to the **events** page.

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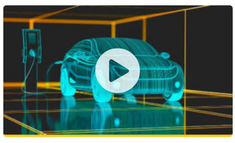
AC Grid Emulation for Smart Grid and EV Charging



Get Your Battery Project Back On Track in 2021

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Testing EV Components & Systems

Accelerate Battery Test Automation with Enerchron®

Accelerate Battery Test Automation with Enerchron® (Intl. Edition)

Electric Powertrain Next Gen Test Solutions

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The Fundamentals of Battery Module & Pack Test

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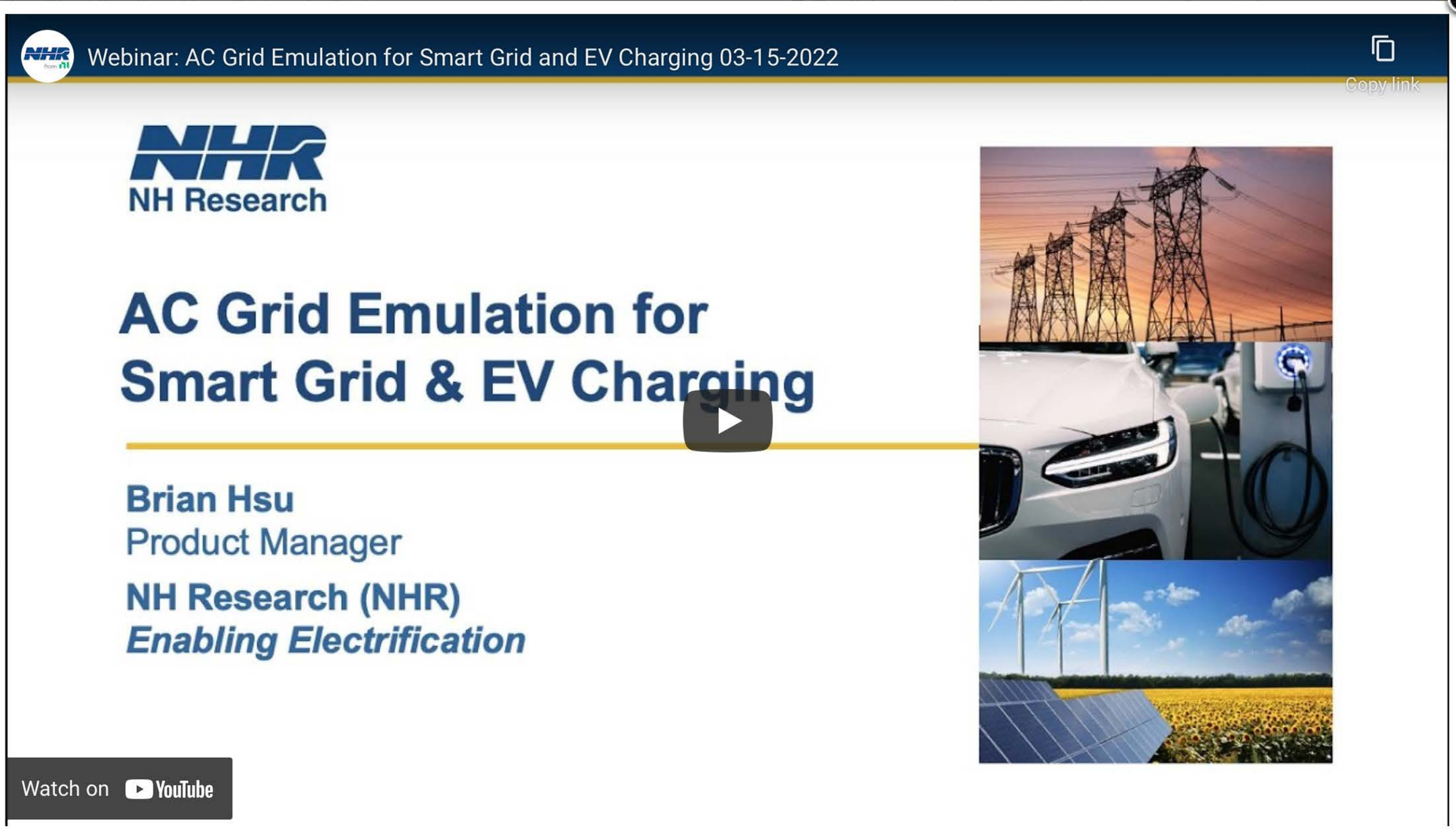

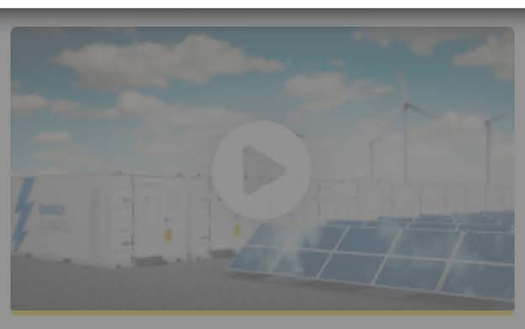

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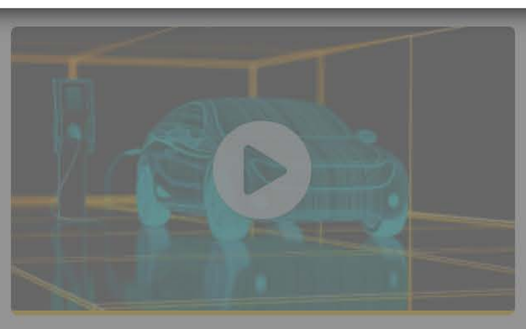

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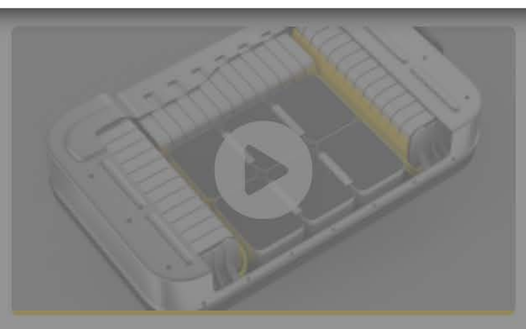
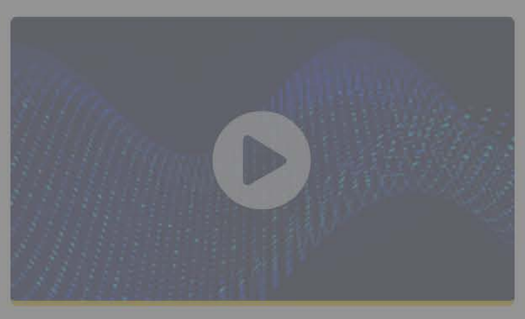
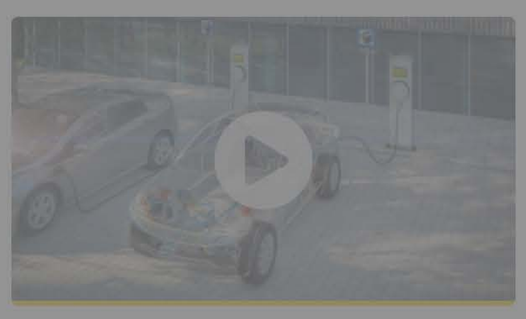


Selecting a Battery Cycler or Building Your Own



AC Load Testing Fundamentals

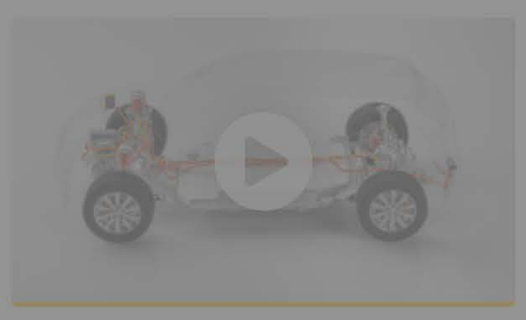
Electric Aircraft Test Solutions



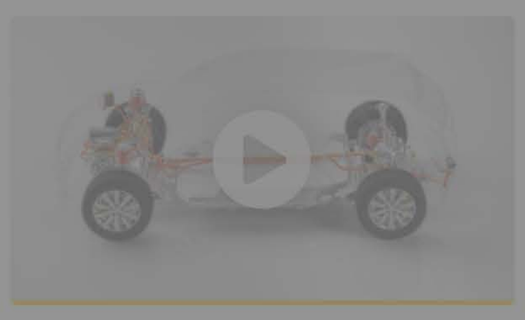
Testing EV Components & Systems

Accelerate Battery Test Automation with Enerchron®

Accelerate Battery Test Automation with Enerchron® (Intl. Edition)



Electric Powertrain Next Gen Test Solutions



Electric Powertrain Next Gen Test Solutions (Intl. Edition)

The Fundamentals of Battery Module & Pack Test

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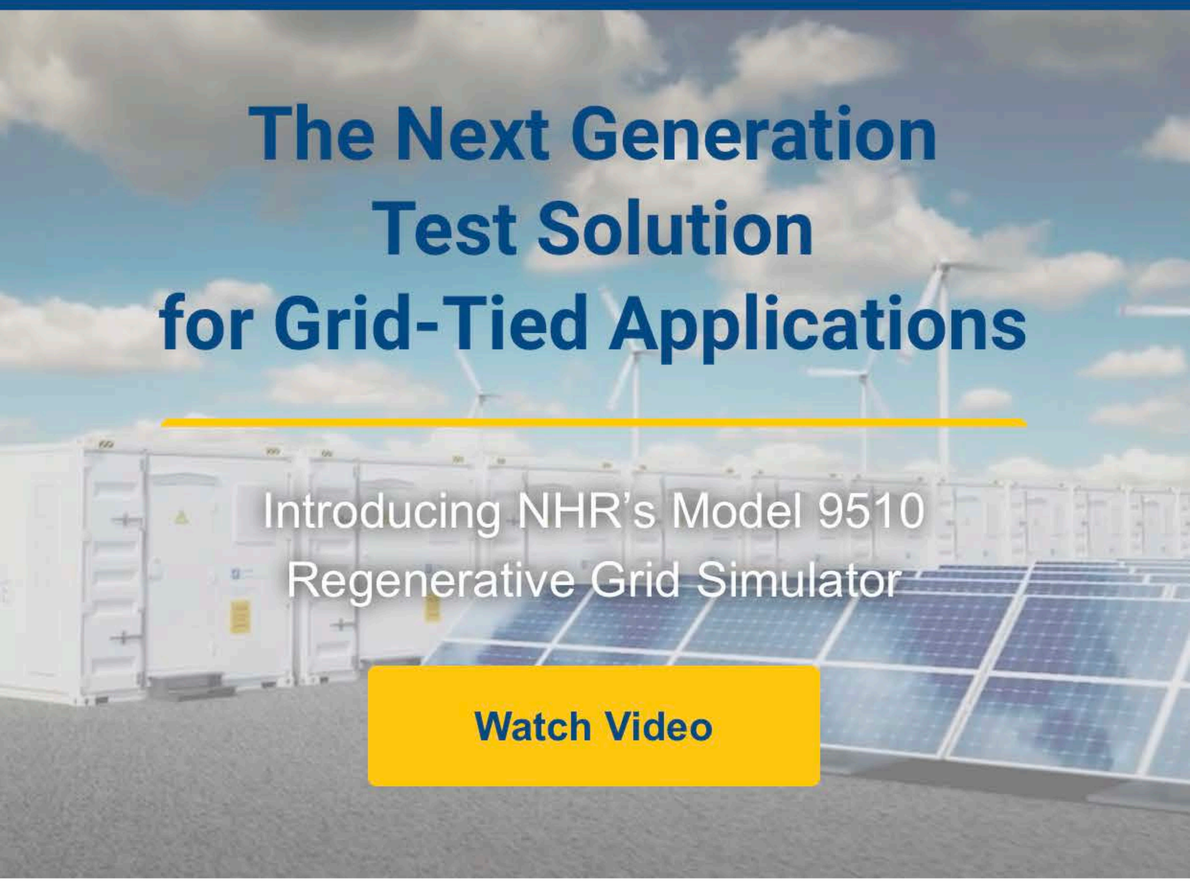

NHR Launches Regenerative Grid Simulator

The 9510 Regenerative Grid Simulator is the next generation AC test solution for testing and verification of all grid-tied applications in compliance with regulatory testing standards, worldwide. The built-in power amplifier mode