

INTEPRO SYSTEMS



Automated Test Systems & Power Test Instrumentation

www.inteprosystems.com



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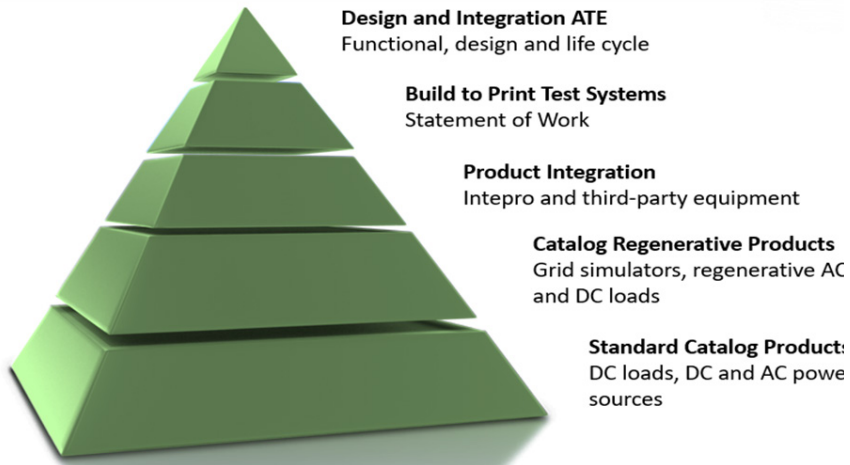
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The Power Test Experts

With more than 40 years of power testing expertise, Intepro Systems delivers quality solutions to your performance and delivery expectations.

From catalog products to integrated solutions, Intepro can simplify the testing of complex power devices to ensure our products meet or exceed the performance and reliability needed for demanding power applications.

*Allocate your resources to your products;
let Intepro handle your ATE needs.*

Intepro provides test solutions for a wide range of industries including:

- Aerospace
- Renewable energy
- Automotive
- Industrial
- Military
- OEM power supply
- Power components
- Telecommunications



Why Work with Intepro

Innovative designs that drive performance

With access to thousands of catalog test and measurement instruments, we develop test solutions that are cost-effective without compromising performance. Our partnerships with leading suppliers allows us to take advantage of the latest technology and ensure long-term operability.

What Intepro Offers

Intepro Test Solutions Include:

Turn-key systems for characterization, functional and accelerated power test for the following:

- AC/DC, DC/AC, and DC/DC Power Supplies
- Electronic Loads
- Medical Power Supplies
- Battery for EV and HEV
- Aerospace components, Motor Drive Test and Semi-Conductor Power Devices
- Renewable Energy Inverters For On-Grid or Off-Grid PV and Bi-Directional EV Chargers

On-Time, On Budget

Is at the top of the list for any company. Intepro doesn't stop there. We factor in through-put, quality control, down time, servicing and expandability. Customers rely on our systems to reduce cost of ownership and provide long term operation. Let Intepro solve the problem of designing and building your ATE tester on time, on budget.



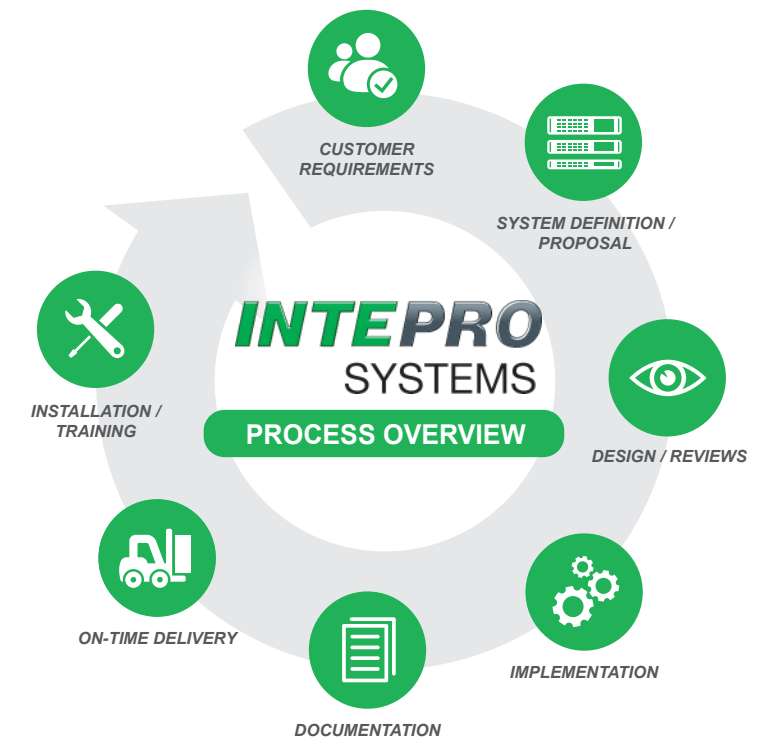
PROCYON ATE SYSTEMS



PRODUCTS AVAILABLE:

PROCYON ATE SYSTEMS

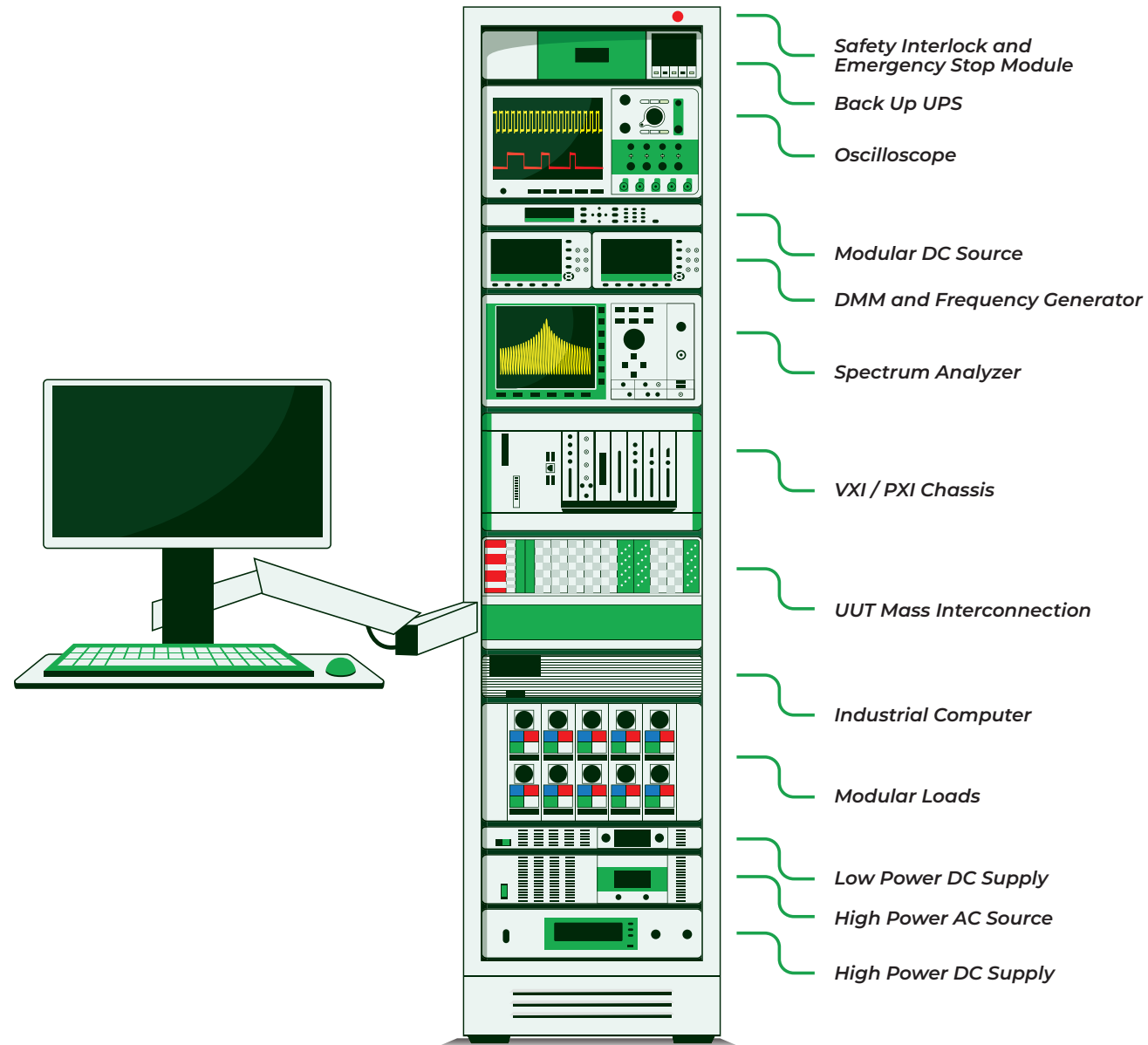
When it comes to ATE Test Systems for a for low to high volume production, Intepro has what you need. For over 40 years, Intepro has designed, built and integrated power supply test equipment for the world's largest and smallest power supply manufacturers. Our customers benefit from our fast, cost-efficient solutions that include our own specialty hardware and pre-selected commercial instruments to cut their production, design characterization, life-cycle and repair costs.



Product Management

Intepro Systems follows a structured approach in specifying and implementing test systems for its customers. Projects we manage are coordinated via a dedicated Project Engineer who works directly with your during each phase of the project from start-to-finish.

Typical PROCYON 2100-10 Test System



STANDARD LIBRARY TESTS INCLUDE:

OUTPUT PERFORMANCE	INPUT CHARACTERISTICS	REGULATION TEST
<ul style="list-style-type: none"> DC Output Voltage Ripple and Noise Efficiency Overshoot Voltage Voltage Dropouts Dynamic 	<ul style="list-style-type: none"> Frequency Range Power Analyzer Data High Line/Low Line Line disturbance Safety 	<ul style="list-style-type: none"> Cross Regulation Load Regulation Line Regulation
RESPONSE AND TIMING	PROTECTION TEST	SPECIAL TEST
<ul style="list-style-type: none"> Transient Response Time Spikes and Drops Line Transient 	<ul style="list-style-type: none"> Short Circuit OC, OV and OP Protection Remote Shutdown Protection 	<ul style="list-style-type: none"> Communication Status Signals

KEY FEATURES

- R&D and production ATE's
- Power from 1 W to over 1 MW
- Single and multi-channel
- Scalable solutions
- Regenerative technology
- Auto-ranging DC sources
- Open-architecture hardware supporting LXI, IEEE, VXI, PXI and AXI
- High speed data acquisition
- Powerful open frame test executive software

OUR CONFIGURABLE TEST PLATFORMS INCLUDE:

- PST2100-10 DC/DC Power Supply Test Systems
- PST2100-20 Battery Test Systems
- PTS2100-30 Electric Vehicle Test Systems
- PTS2100-40 Energy Conversion Test Systems
- PTS2100-50 Life Cycle Test Stations / Burn In
- PTS2100-60 Power Semiconductor Test Systems
- PTS2100-70 DC/AC Power Supply Test System
- PTS2100-80 AC/DC Power Supply Test System

DC POWER SUPPLIES



PRODUCTS AVAILABLE:

PROGRAMMABLE DC POWER SUPPLIES

Intepro Systems offers a wide selection of programmable DC Power Supplies, including standard units and auto-ranging. Each DC Power Supply are MOS-FET based, resulting in a high performance power stage that offers high speed slew rates and low output ripple.



Delta SM1500 DC Power Supply

Intepro's latest offering, the SM1500 Series 1500W DC Power Supplies by Delta. Featuring flexible output with constant power characteristics, the Delta SM1500 offers outstanding performance, with very high efficiency to meet the demands to adapt to most applications.



Delta SM800 DC Power Supply

Intepro's latest offering, the SM800 Series 800W DC Power Supplies by Delta. Featuring flexible output with constant power characteristics, the Delta SM800 offers long life at full power and excellent dynamic response to load changes.



Delta SM3300 3300W DC Power Supply

Intepro's latest offering, the SM3300 Series 3300W DC Power Supplies by Delta. Featuring flexible output with constant power characteristics, the Delta SM3300 offers long life at full power and excellent dynamic response to load changes.

Programmable Bidirectional DC Power Supply

Ainuo ANEVH(F) Series Bidirectional DC Power Supply

ANEVH(F) series is a programmable bidirectional DC power supply that integrates a DC power supply and a feedback load, which can be used as a “source” and output power; or used as a load to realize sink function, absorbing power and returning to the grid cleanly; standard dual-quadrant operation.

Functionalities:

- Bidirectional power supplies +/- 50kW in 4U Resolution: 0.001kW
- Can be paralleled up to 1MW Resolution: 0.01V
- Voltage Ranges up to 2250V
- Resolution of 0.001kW and 0.001V

Application:

- Microgrid and micro-inverter tests.
- Automotive motor, controller, and power battery tests.
- Fuel battery test and fuel battery DCDC test.
- Uninterruptible power supply (UPS), on-board charger (OBC), charging station, and bidirectional DC-DC tests
- Industrial tests such as electrolysis, electroplating, and welding.
- Communication power supply and LED product tests.
- Tests of automotive electronics, military electronics, and aviation electronics.
- High-power test and DC feedback load demand scenarios.



3U



4U



Cinergia B2C+ Regenerative DC Converter

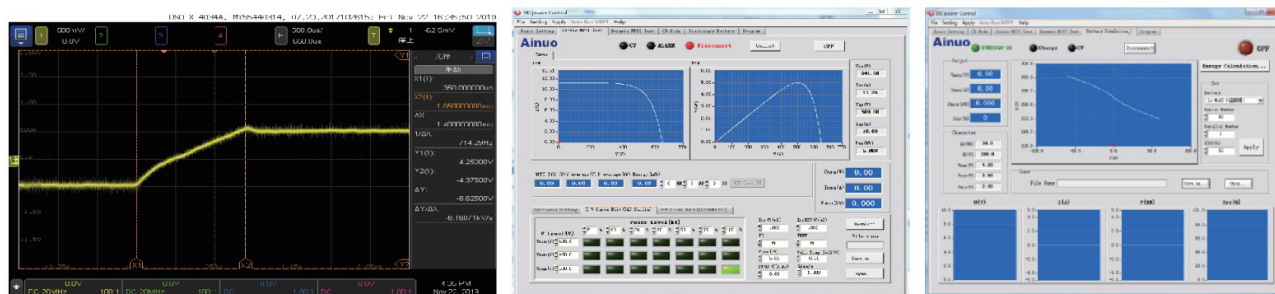
B2C+ is CINERGIA's solution for Regenerative and Bidirectional DC Test Platforms. The efficiency, multichannel flexibility and high-resolution and dynamics of this device make it convenient in multiple applications like: Renewable Energy Sources, Energy Storage Systems, Smart grids, Battery Testing and Characterization, Electrical Vehicles, EV Charging Infrastructures, Traction Converters, Power HiL and Aeronautic.

Feature Listing:

- Bidirectional and Regenerative: Clean grid current: THDi < 3% and PF > 0.98 Same Power in DC and AC
- 13 models from 7.5kW to 160kW: Parallelization of units to increase the power
- Emulation of grid-connected devices: Loads absorbing energy from grid. Generators injecting energy to the grid. Programmable Active/Reactive consumption Non-linear currents up to CF of 3
- Independent phase configuration of: rms current, phase angle, harmonics, interharmonics, generation of fast transients (“Current Dips”)
- Intuitive User Interface
- Mod bus/Ethernet Open protocol, Labview drivers

Functionalities:

- Master / Slave parallel and series operation with voltage and current sharing
- Stacking is allowed, space between units is not required
- High power system configuration from multiple units
- 19” rack mounting or laboratory use (feet included)
- Remote sensing
- Interlock





Delta SM15K DC Power Supply 15kW Bi-directional DC Power Supplies

Introducing Intepro's latest offering, the SM15K Series 15kW Bi-directional DC Power Supplies by Delta. Featuring flexible output with constant power characteristics, the Delta SM15K offers outstanding regenerative performance, with very high efficiency to meet the demands to adapt to most applications.

Feature Listing:

- Bi-directional power supply with standard 15 kW source and sink.
- Flexible output with Constant Power characteristics
- Power Regeneration Technology: in sink mode the PSU returns the energy back into the grid
- Easy Master/Slave parallel & series operation up to 900kW
- Very low heat dissipation. Efficiency is more than 95%. No need for expensive cooling systems.
- Excellent dynamic responses to load changes including all-digital control to adapt regulation to match load type
- Designed for long life at full power
- Protected against all overload and short circuit conditions

Functionalities:

- Operation on wide range of 3 phase AC input voltages
- Master/Slave operation up to 900kW
- Large user display, menu driven operation
- EMC surpasses CE requirements: low emission and high immunity
- Low audible noise: temperature controlled cooling fans



Delta SM6K DC Power Supply 6kW DC Power Supplies

SM6K model

SM60000 model

SM40-CP-450

SM15-400
SM30-200

SM75-CP-250

SM45-140
SM60-100
SM70-90

SM330-CP-55

SM15-400
SM30-200

SM1000-CP-18

SM600-10

Functionalities:

Wide-range three-phase AC input

- Operation on wide range of 3 phase AC input voltages
- Master/Slave operation up to 900kW
- Large user display, menu driven operation
- EMC surpasses CE requirements: low emission and high immunity
- Low audible noise: temperature controlled cooling fans

Ainuo Programmable AC Power Source AN61(F) Series

The AN61(F) Series Programmable AC Test Power Supply adopts SPWM technology, digital processing technology and high-power switching power supply technology, and it can output AC, DC, and AC+DC power supply, providing precise power input for AC load, DC load, rectifier load, etc. With the ability to provide 3-4 times peak current, it is the best test instrument for measuring surge current and can set waveform switch-on and switch-off angles for testing surge current and output maintenance time.

The AN61(F) Series Programmable AC Test Power Supply has powerful programmable functions and can complete IEC61000-4-11 (pre-certification test) /-4-13/-4-14/-4-28 regulatory immunity tests. In addition, with programmable output impedance, it can be combined with a power analyzer to achieve IEC 61000-3-2/-3-3 harmonic current limitation and flicker regulatory tests, making it the best choice for IEC regulatory tests.

Features Include:

- Multiple output modes include AC, DC, and AC+DC.
- Programmable output impedance for IEC61000-3-3 tests.
- Voltage and frequency variation tests for IEC61000-4-11, IEC61000-4-14, and IEC61000-4-28.
- Harmonic and sub-harmonic waveform synthesis tests for IEC61000-4-13.
- High output peak current for ideal surge current testing.
- Pulse output function for voltage dip tests and simulating interference in actual grids.
- Sequence output function for combining all configured sequence numbers into a waveform. Users can edit the required output voltage sequence according to their specific needs.
- External analog signal input interface for power amplification of external input signals (only available for 615 and 618 Series).
- Features an LCD, a small size, and lightweight, meeting the requirements for standard cabinet installation.
- The 615 and 618 Series are equipped with an RS232 communication interface as standard, with optional RS485, GPIB, and Ethernet communication interfaces.
- The 619 Series is equipped with RS485 and Ethernet communication interfaces as standard, with optional RS232 and GPIB communication interfaces.



PROGRAMMABLE AC SOURCES

Ainuo High Current AC Power Source ANRGS(F) Series

The ANRGS(F) Series Regenerative Grid Simulator adopts advanced SPWM technology, FPGA digital processing technology and high-power switching power supply technology, and it can output AC, DC, and AC+DC power supply, providing precise power input for AC load, DC load, rectifier load, etc. The power supply has the function of 100% rated power feedback to the grid, enabling four-quadrant operation and significant energy savings to reduce operating costs. It can set waveform switch-on and switch-off angles for testing surge current and output maintenance time.

It can also set the rate of change of voltage and frequency to scan the range of power input specifications for the object to be tested. The power supply can simulate abnormal instantaneous rise, drop, short circuit, jitter and other phenomena in the power grid, simulate distortion of the mains power waveform and provide accurate and fast measurement of power parameters.

The ANRGS Series Regenerative Grid Simulator adopts advanced SPWM technology with excellent power output quality, widely used in laboratories and production lines in the photovoltaic, new energy vehicle, and other industries.



Ainuo High Current AC Power Source ANFC(F) Series

The ANFC(F) series AC power supply adopts FPGA digital control, instantaneous waveform control and high-frequency pulse width modulation (SPWM) technologies.

It has the advantages of fast response speed, high output accuracy, and superior waveform quality; it can withstand 3 times the rated current impact, high capacity and strong load adaptability; adopts modular design concept, small volume and weight, convenient operation and high cost performance.

Mainly used in applications such as home appliances, motors and production lines, it is one solution that meets the basic needs of traditional industries and a power supply alternative for equipment upgrades.



GE+ vAC

GE+ vAC is a 4Q programmable AC Voltage Source designed to create both stable and distorted AC grids with a predefined IEC testing software. This cost-competitive Bidirectional and Regenerative solution allows Independent phase configuration of: voltage rms, phase angle, frequency and harmonics. It is a device suitable to perform AC testing in Applications for Industry and Education, Renewable Energy Sources, Smartgrids, IEC Testing, EV and EVSE and, PV Inverter Testing, Power HiL and, in general, grid connected devices..

- Bidirectional and Regenerative
- Clean grid current: THDi < 3% and PF > 0.98
- 13 models from 7.5kW to 160kW
- Parallelization of units to increase the power
- Generation of Worldwide electrical grids: 3-phase / 1-phase / split phase / Multichannel
- Independent phase configuration of: voltage rms, phase angle, frequency and harmonics
- Generation of disturbances: harmonics, interharmonics, subharmonics, voltage dips frequency variaton, flicker
- Disturbance Generation Editor compatible with IEC, LVRT, SEMI-F47, CBEMA test standards
- -Intuitive User Interface
- -Modbus/Ethernet Open protocol, Labview drivers

GE+ vAC / DC Full

The GE+ vAC/DC Full is the most complete and flexible Voltage Source, for AC and DC Test Platforms. Based on a Regenerative and Bidirectional power hardware, it is an essential laboratory device for testing and R&D applications in Renewable Energy Sources (PV, WT, CHP), grid connected devices, Smartgrids, Batteries, Electrical Vehicles and EV Chargers and Power HiL.

Bidirectional and Regenerative

Clean grid current

THDi < 3% and PF > 0.98

13 Models

from 7.5kW to 160kW

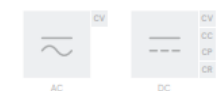
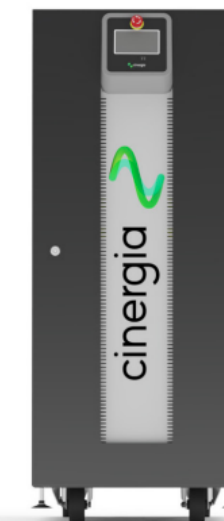
Parallelization of units to increase the power

Generation of Worldwide Electrical Grids

3-phase/ 1-phase/ split phase/ Multichannel

Independent Phase Configuration of

voltage rms, phase angle, frequency and harmonics



Same Power in DC and AC

Generation of Disturbances

harmonics, interharmonics, subharmonics, voltage dips frequency variaton, flicker

Disturbance Generation Editor

compatible with IEC, LVRT, SEMI-F47, CBEMA test standards

Intuitive User Interface

Modbus/Ethernet Open protocol, Labview drivers

ELECTRONIC LOADS



PRODUCTS AVAILABLE: ELECTRONIC LOADS

CINERGIA has ingeniously combined the functionalities of several products in a single cabinet to offer the most flexible and unique testing equipment. The GE&EL product family is the aggregation of Grid Simulators, Electronic Loads and Bidirectional DC Converters in one product. The All-in-One AC GE&EL includes, in one single cabinet, an AC Grid Simulator and an AC Electronic Load without any limitation. The All-Terrain GE&EL vAC/DC is all CINERGIA catalogue in one system: Grid Simulators, Electronic Loads and Bidirectional DC.

GE&EL+ vAC/DC SiC Regenerative DC Converter

The GE&EL+ vAC/DC SiC is the most complete and versatile converter in the regenerative energy testing market. The whole CINERGIA's catalogue in a single unit. A Grid Emulator (GE), an Electronic Load (EL) and a DC Bidirectional (B2C). This converter with SiC Technology is suitable for most test applications in Renewable Energies, Power HiL, Smartgrids, Batteries, and Electrical Vehicles..

Feature Listing:

- Higher Switching Frequency
- Higher Bandwidth
- Reduced Ripple
- Increased Efficiency
- Same Current Capacity in DC or AC
- Battery Emulation and Testing

Functionalities:

- Bidirectional and Regenerative
- Clean grid current: THDi < 3% and PF > 0.98
- Same power in DC and AC
- Operation Modes:
 - Complete DC Load/Source
 - Full 4Q AC Grid Emulator
 - Power Amplifier for Power HiL
 - Full 4Q AC Electronic Load
 - Battery Emulation and Testing
 - PV Panel Emulation
 - Modbus/Ethernet Open protocol, Labview drivers



Ainuo AN236(F) Series High Power DC Electronic Load

The AN236(F) Series is a new high power DC electronic load introduced by Ainuo Instrument Co., Ltd. It offers voltage ranges of 150V, 600V, and 1,200V, with power ranges from 2kW to 60kW. This series of electronic loads are mainly used for testing products in various fields such as new energy vehicle OBCs, power batteries, charging stations, power electronics, servo/server power supplies, high voltage UPS, military, photovoltaics, grid energy storage, aerospace, and more. Featuring a new generation digital controller, it comes with five basic modes, seven advanced modes, and sequence function to meet users' programming and automation test requirements.

Feature Listing:

- High power density: 6kW in 4U height, and 24kW in 13U height. Compact, light, convenient.
- With precision measurement technology, it supports voltage accuracy of 0.015% + 0.015% F.S., current accuracy of 0.04% + 0.04% F.S., and power accuracy of 0.1% + 0.1% F.S. (maintained constant at high temperatures).
- Built-in dynamic loading mode with a dynamic frequency of up to 25kHz and Vpk+/- test function.
- Built-in FLEX mode for simulating capacitive loads, inductive loads, and complex impedance loads. Smartgrids & Electrical Vehicles
- Wide range, offering nearly twice the current range of traditional high power loads with the same capacity



EL+ vAC Regenerative AC Electronic Load Regenerative AC Electronic Load

EL+ vAC is a 4Q programmable AC Current Source designed to emulate the electrical behaviour of passive and active devices connected to the grid. In addition, its grid stage as an Active Rectifier produces clean sinusoidal currents with very low harmonic distortion. This cost-efficient solution is specially suitable for testing AC sources, Applications for Industry and Education, Smart grids, Aeronautic, UPS and EV Charging Infrastructure. Its Regenerative and Bidirectional Hardware allows a reduction in the total power and energy needed for the test.

Feature Listing:

- Efficiency and Flexibility
- Save Energy, Power and Time
- AC only
- Smartgrids & Electrical Vehicles
- High-Resolution and Dynamics

Functionalities:

- Bidirectional and Regenerative
- Clean grid current: THDi < 3% and PF > 0.98
- 13 models from 7.5kW to 160kW
- Parallelization of units to increase the power
- Emulation of grid-connected devices:
 - + Loads absorbing energy from grid
 - + Generators injecting energy to the grid
 - + Programmable Active/Reactive consumption
 - + Non-linear currents up to CF of 3
- Independent phase configuration of: rms current, phase angle, harmonics, interharmonics, generation of fast transients ("Current Dips")
- Intuitive User Interface
- Modbus/Ethernet Open protocol, Labview drivers



EL+ vAC/DC Full

Regenerative AC/DC Electronic Load

CINERGIA's EL+ vAC/DC is the most versatile regenerative Current Source product in the market for energy testing in AC and DC applications. Its Bidirectional and Regenerative Hardware based on a back-to-back power conversion topology allows saving energy and power. Moreover, thanks to its flexibility, this device becomes crucial in two main areas: testing and R&D. The main applications for this device are Smart grids, Renewable Energy, Storage Systems, Electromobility, Avionics and Power HiL.

Feature Listing:

- Efficiency and Flexibility
- Save Energy, Power and Time
- Full options and power in AC&DC
- Smartgrids & Electrical Vehicles
- High-Resolution and Dynamics

Functionalities:

- Bidirectional and Regenerative
- Clean grid current: THDi < 3% and PF > 0.98
- 13 models from 7.5kW to 160kW
- Parallelization of units to increase the power
- Emulation of grid-connected devices:
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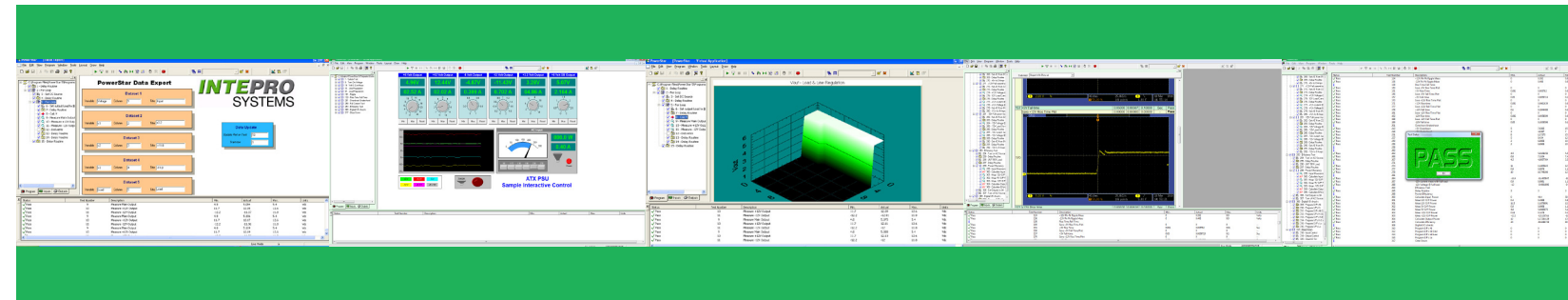
CUSTOM SOLUTIONS

CUSTOM DESIGN LAYOUTS

Intepro Systems works can build any system to fit your needs and your testing environment depending on your volume. We can create solutions from single bay test station all the way to 5 Bay systems. We also have experience creating desk top systems.

Products Available: **CUSTOM DESIGNS**

Intepro Systems works with our customers to find the ideal solution to your power testing problem. Here are some examples of custom solutions we have created for some of our customers



Power Distribution Units

Custom designed or build to print PDU manufacturing. Short design cycles for AC or DC power distribution.



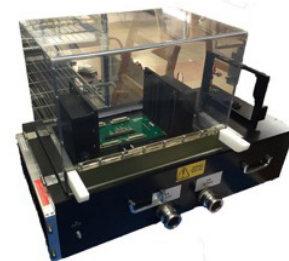
Calibration Fixture

Intepro provides breakout fixtures to simplify the calibration of the test station.



Self-Test Fixtures

A self-test fixture is available to carry out an automatic functional check on the test system hardware. The system leverages internal hardware to test functional operation of the system.



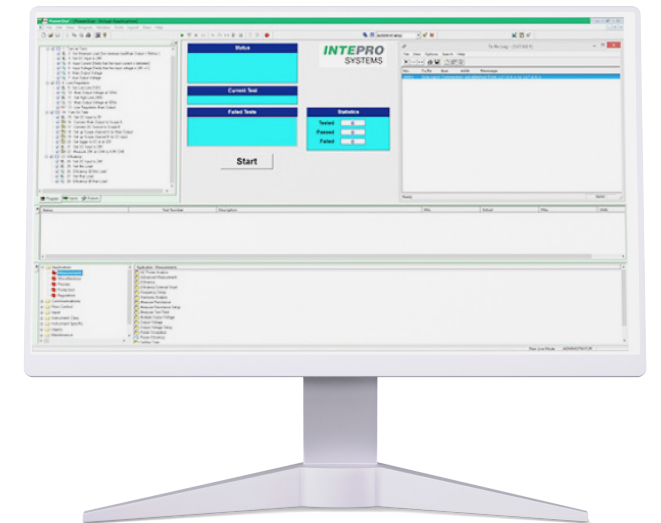
Test Fixtures

For customers who need a complete turn-key test platform, Intepro Systems provides fully integrated test fixtures and software programs with your test systems. These fixtures can be integrated with your automation systems and designed to be safely operated by operators.

Software

PowerStar Software™ Program without Coding™

- Eliminates the need for complex programming
- Quick and simple testing
- Seamless transition from design to manufacturing
- Hardware independent test programs
- Executes LabView test sets



Test Executive Software

Why Engineers Choose Purpose-Built Over General-Purpose.

PowerStar, by Intepro Systems provides a faster path from requirements to production, a lower total cost of ownership, and greater hardware independence compared to traditional competitive test executive solutions, without requiring extensive custom development. PowerStar also offers an open platform, integrating with languages like Python, Java, and C/C++, while still supporting existing software through its DLL interface.

Functionalities:

- The software includes over 100 pre-built routines covering various test scenarios. Engineers can quickly create test sequences using a drag-and-drop interface by entering parameters and pass/fail limits—no coding required.
- A key advantage is its hardware independence: test programs run on different instruments without modification, eliminating the need for custom abstraction layers and reducing development and maintenance effort.
- PowerStar also functions as an open integration platform, allowing seamless use of external tools through DLL interfaces. It supports languages like Python, Java, and C/C++, enabling teams to leverage existing software while using PowerStar as the central test executive.

Head-to-Head Comparison

The following table compares Competitive Test Executive and PowerStar Cost & Savings.

Cost Category	Competitive Test Executive	PowerStar Cost & Savings
Year 1 Software:	\$15K-\$25K	✓ \$0 Included
Development:	\$24K-\$60K	✓ \$6K-\$15K
Annual Maintenance:	\$8K-\$12K/yr	✓ \$0
Hardware Changes:	\$5K-\$20K	✓ \$0

Worldwide Service Support

- Superior quality support and service.
- Intepro is committed to providing its customers with superior quality products.
- Quality standards to achieve superior performance.

Support Services

- Technical Assistance
- Installation Support
- Configuration
- Updated Firmware
- Software Configuration





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