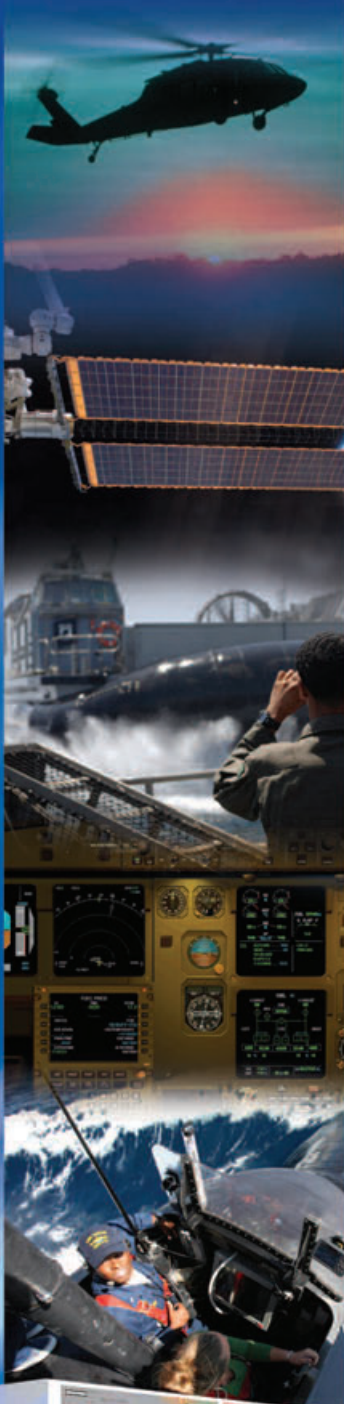


INTEPRO
SYSTEMS

DEFENSE & AVIONICS
FUNCTIONAL
POWER TEST SYSTEMS



- :: Functional and ESS Test
- :: Open Architecture Hardware LXI/IEEE/VXI/PXI
- :: Powerful Open 32bit Windows™ Test Executive
- :: Customized Hardware and Software
- :: Full Turnkey Solutions
- :: ISO 9000 Certified
- :: Worldwide Support Network



OVERVIEW

Intepro Systems are used all over the world for functional test, diagnostics and repair of power electronics used in some of the most complex defense and avionics equipment in the industry. Our knowledge and expertise in high-end power supplies, distributed power systems, power electronics, and power components make our systems unparalleled for production testing, ESS screening, repair and characterization.

Applications include functional testing of AC and DC power supplies, generators and engine control units, analog component environmental characterization, as well as a wide range of associated electronics.

Key to the systems is an open architecture for hardware and software that permits complete flexibility to configure and integrate any third party instrumentation with a wide range of Intepro and customer hardware. The powerful software test executive supports fast TPS development with and without writing test code. Seamless integration of key IVI packages such as PowerStar Virtual Instruments and Routines and National Instruments' LabView package, as well as support for both Visual Basic and Atlas or IEEE-1641 languages, let our customers choose the methods and procedures for TPS development and documentation.

This is the basis for Intepro Systems being *the* tailor-made test solution, delivering comprehensive test coverage and proven front-line reliability to some of the world's most prestigious projects.



Automatic handling test system

SYSTEM FEATURES

Systems are configured using open architecture hardware and software including:

- :: Never obsolete, scalable solutions
- :: Powerful 32-bit Windows™ test executive with drag and drop test program generation
- :: Hundreds of supported instruments
- :: IEEE-488, VXI, PXI, LXI, Ethernet and USB
- :: Virginia Panel, Hypertronics, Mac Panel interfaces
- :: Specials are OK
- :: Your specifications, our quality solutions



AC/DC power supply test systems



4 bay aerospace test system

PROJECT MANAGEMENT

Intepro Systems follow a structured approach in specifying and implementing test systems for Defense/Avionics applications.

Projects are co-ordinated by a dedicated project engineer who liaises directly with the customer during all phases of the project as follows:

- :: System specification
- :: System implementation
- :: Project status updates
- :: Factory acceptance
- :: Maintenance planning
- :: Spares planning
- :: System installation and start up at customer sites
- :: Post installation support

PROJECT MONITORING

Projects are reviewed during the implementation phase via routine weekly conference meetings with the customer. Key project design reviews are managed via teleconference meetings or onsite meetings.

Project planning, resourcing and progress updates are managed using MS Project™ planning schedules. Intepro systems encourage factory acceptance tests with the customer prior to shipping systems onsite. After the factory acceptance, on site installation is carried at the customer site.

MAINTENANCE, SUPPORT & SERVICES

APPLICATION SUPPORT

Full turnkey solutions can be provided including the design and development of application test fixtures and test programs.

SELFTEST

A selftest facility is provided with each test system to carry out an automatic functional check on the test system hardware.

CALIBRATION

A calibration adapter and CalStar 5 calibration software facility is used to verify system calibration. Third party instruments are removed for calibration at an accredited calibration laboratory.



Selftest adapter and software



Calibration adapter

DOCUMENTATION

- :: Service manuals including detailed system schematics
- :: Manuals for all instruments
- :: System parts list

SERVICES

Intepro Systems has a worldwide network of support centers that provide a range of training application and post installation support services.

TRAINING

The following training courses are available:

BASIC TRAINING

Introductory training covering system hardware, software and maintenance.

ADVANCED SOFTWARE TRAINING

Advanced training covering generation of special tests and instrument drivers.

MAINTENANCE CALIBRATION TRAINING

Detailed system descriptions, routine maintenance, troubleshooting, selftest, calibration and system documentation.

POST INSTALLATION MAINTENANCE SERVICES

These include:

- :: Warranty support
- :: Maintenance contracts
- :: Onsite call out
- :: Calibration
- :: Return and repair
- :: Telephone technical support
- :: Application support
- :: Remote diagnostics
- :: Spares planning
- :: Software support
- :: Upgrades
- :: Post design engineering services



POWERSTAR 5 POWERFUL FACILITIES INCLUDE:

- Application specific test libraries
- Drag and drop program generation
- Comprehensive test sequencing control
- SQL™ and MS Access® database reporting
- High-speed performance
- GUI/IVI Programming Programming
- In environment LabView™ support
- Virtual instrument support
- Visual Basic™, Atlas or IEEE-1641 programming

INTRODUCTION

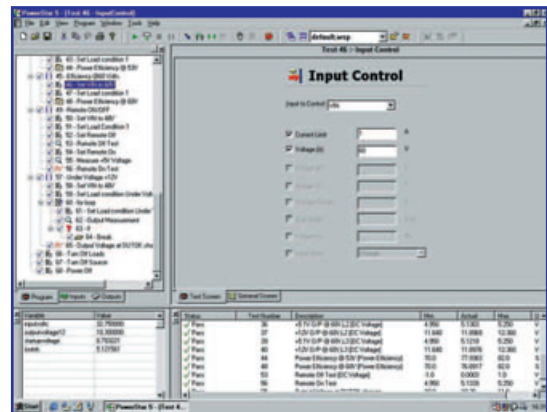
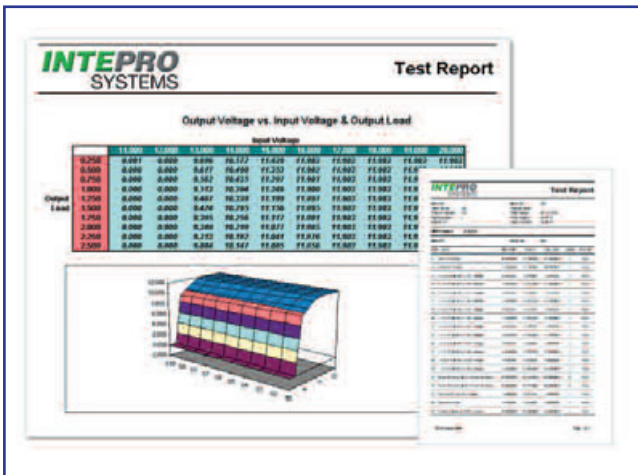
All Intepro test systems include PowerStar 5, an open architecture test executive that has been field proven since 2000 and still is the most powerful, user-flexible software available for functional, verification and ESS testing.

Key to its flexibility is PowerStar 5's ability to let users create test programs using variables instead of values. This results in a single test program for an entire family of power supplies cutting development time, and reducing support time documentation.

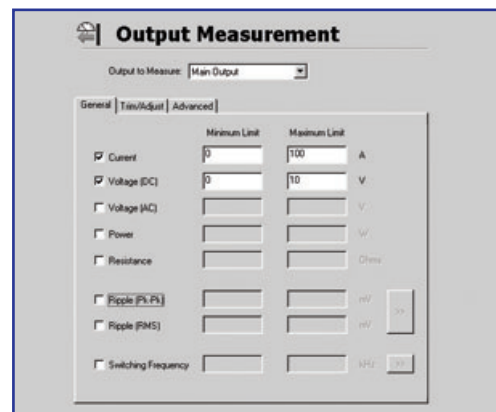
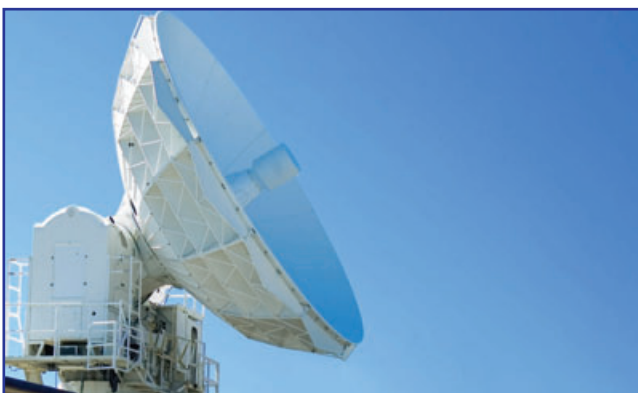
These variables can be static or dynamic, allowing the program to set up the power supply outputs or configuration and then testing the unit to its defined limits.

TEST SETUP

With a true open architecture structure, PowerStar 5 facilitates the engineers' job of quickly developing comprehensive test programs. Engineers create the TPS by simply selecting from over 200 standard tests routines, limit checks, data logging or data exporting functions. They can also write their own test libraries or instrument drivers with the built-in VBA (Visual Basic for Applications) or use one of the support programming languages such as Atlas or IEEE-1641.



Test development window



Test program window showing a data entry input screen.

Major advantages of this are

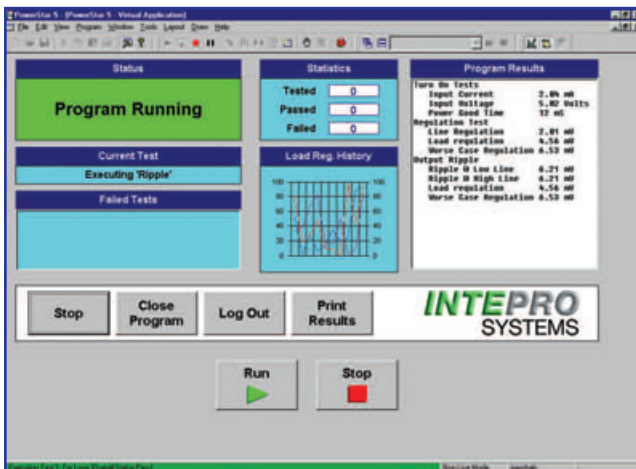
- :: Users fill in the blanks test program generation using predefined tests.
- :: Variables as well as numeric values are supported in the test menu.
- :: Users can customise library tests or generate their own special tests.
- :: Standard libraries included comprehensive control of test sequence execution including 'for_next' and 'while_end' loop controls,

Engineers can structure the tests sequences into a number of test groups. Variables are used for flow control structures in the test sequences and making the TPS perfect for families of power supplies and supplies with programmed outputs.

DEBUGGING TOOLS

PowerStar 5 goes beyond ease of test programming with a comprehensive group of tools to help test integration.

Transmission logging provides comprehensive low level information on exchanges between the software and the hardware to facilitate debugging of test programs and special tests.



User defined operator screen created using the virtual

VIRTUAL INSTRUMENTS

With PowerStar 5, users can build graphical virtual instruments (VI's) instead of writing text focused programs. Users can quickly create front panel user interfaces to support interactive control of the test system instruments or call LabView VI's. This is very useful for debugging and design characterisation applications.

TEST DEVELOPMENT KIT (TDK)

The TDK facility is a built in development environment for PowerStar 5's ATE test executive, providing a powerful means for users to create custom data driven tests, drivers within PowerStar 5 or test programs.

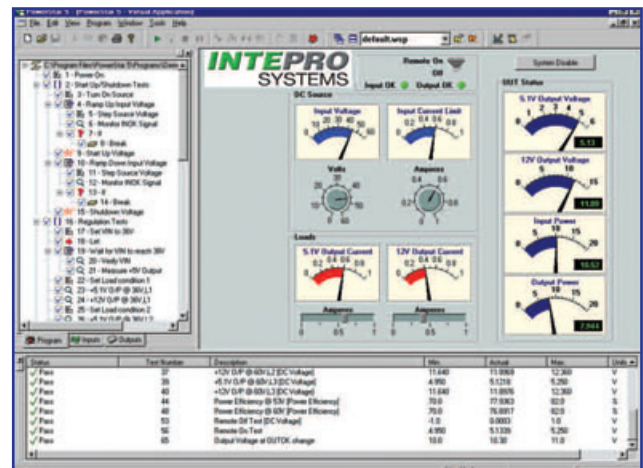
ATLAS/IEEE-1641

PowerStar 5 is fully compatible with ATLAS or IEEE-1641 and may be run as a module within an ATLAS or IEEE-1641 system environment.

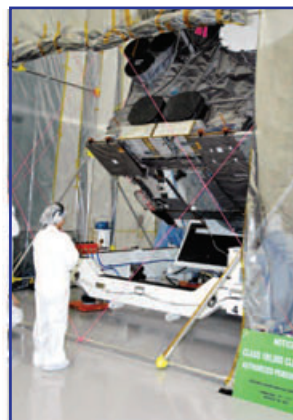
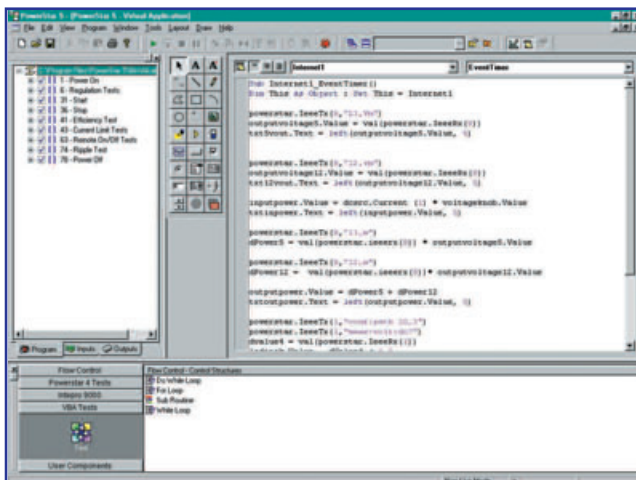
TEST RESULTS

PowerStar 5 results are written to an SQL or MS Access® database. The package has facilities to query results for tested units as well as user customizable reporting.

Test support is provided throughout the product life cycle, from design characterisation to volume production testing, maintenance, faultfinding and repair.



Virtual applications used for debug and manual control



HARDWARE CONFIGURATION

OPEN BUS ARCHITECTURE

Intepro test systems are built around industry-standard open architecture hardware platforms that enable integration of commercial off-the-shelf (COTS) instruments from such major vendors as Agilent, National Instruments, Cytek, Fluke and others. Our engineers carefully select, test and then integrate a wide variety of DVMs and DMMs, oscilloscopes, counter-timers, function generators, DC sources, AC sources, electronic loads including water-cooled loads and spectrum analyzers including:

- :: LXI modules
- :: VXI modules
- :: PXI modules
- :: IEEE 488 instruments

In addition, Intepro manufactures and integrates its own instruments that are specifically designed for power electronics testing including:

- :: Digital I/O
- :: Scanner modules
- :: Relay modules
- :: Function generators
- :: Counter timers
- :: Digitizers

All modules are expertly configured into either 30U or 40U 19" racks. Multiple cabinets may be used to configure larger systems.

FIXTURE INTERFACE

Intepro systems are fitted with industry-standard hyperpac-hypertronics, Virginia Panel receivers and interface test adapters (ITA's). Custom interfaces are available.

SPECIAL MODULES

Intepro systems has a wide experience of developing special modules to support specific application requirements such as:

- :: High-power AC loads
- :: High-power programmable resistive loads
- :: Software drivers and tests

SAFETY

The systems contain safety interlocks and optional real-time safety shutdown modules that cut off power to the unit under test when programmable safety critical thresholds are exceeded.

DOCUMENTATION

Comprehensive system documentation is provided, including:

- :: System manuals
- :: System wiring diagrams
- :: Maintenance manuals
- :: Calibration
- :: Selftest
- :: Operator manuals

ESS/BURN-IN AND PRODUCT LIFE TESTING

Intepro Systems' environmental stress screening (ESS)/burn-in systems are ideal for burn-in and life characterisation applications. Intepro integrates a variety of static and electronic loads including 'Green Loads' which recycle more than 80% of the power drawn from the AC mains or DC input. These recycling energy are:

- ELU60 - 60V/25A/375W
- ELU120 - 120V/65A/5kW
- ELU500 - 420V/25A/10kW

These "Loadsavers" cover a wide range of voltage, current and power combinations. Because up to 80% of the load energy is recycled, air-conditioning and electrical facility costs are greatly reduced.



AC/DC power supply test system

- :: High-power system - 30kVA AC power
- :: Virginia Panel interface
- :: Real-time monitor power shutdown





VXI-based functional

- :: VXI-based system
- :: 30kVA AC source
- :: Scope and spectrum analyzer
- :: Used to test radar PSUs



Automatic handling test system

- :: Automatic handling solution
- :: Combines safety test and functional test
- :: Reduces handling requirements
- :: Automatic program selection and loading
- :: Supports test of mixed configuration products



Universal military depot and repair test system

- :: Replaces special type test equipment
- :: Supports ATLAS or IEEE-1641
- :: Functional test and diagnostic facilities



Low-cost bench top depot repair station

- Functional test system for lower power converters
- :: Single-phase AC source
- :: Rack loads and instruments



Burn-in test system using

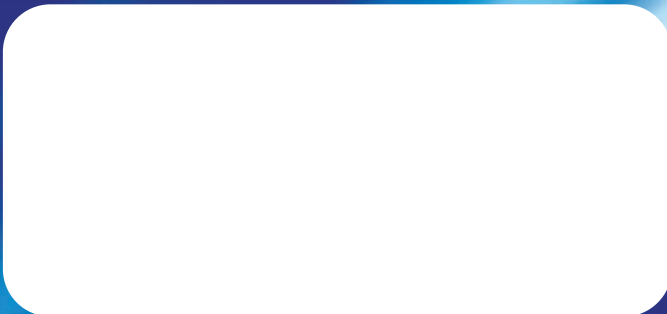
- :: 45 cell DC/DC burn-in system
- :: Recycles 80% of total energy into the mains or DC power supply
- :: No air-conditioning required
- :: Greatly reduced electricity cost



Medium complexity functional test system using IEEE

- VXI based system
- :: 30kVA AC source
- :: Used to test radar PSUs

Represented By:



SUMMARY

Intepro Systems has years of experience completing complex projects to stringent budget and time requirements. Flexible system architecture and a dedicated engineering team provide technical support from initial system specification design, right through build, test, installation, application and maintenance.

Key to this is the assigning of a dedicated project manager to work closely with customers throughout the entire process. Intepro Systems has built its reputation in the avionics/defense markets by establishing long-term relationships with key clients. We look forward to working with you.

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