AEROSPACE ELECTRICAL POWER GENERATING SYSTEM TEST STANDS

FOR GENERATORS, CSD
VSCF, APU GENERATORS
ELECTRICAL STARTERS
ETC.

MODEL
101690

Testek INC.

APPLICATION

The Testek model 101690 test stand is a state-of-the-art system for use by:

- Airline shops for overhaul and return to service tests
- OEM repair and overhaul stations
- Military depot, intermediate, and organizational level testing
- OEM and airframe manufacturer development test and system integration/simulation
- Third party repair and overhaul stations

The Testek 101690 is highly flexible in design and adaptation, allowing exact configuration to meet the requirements for testing all of the IDGs, generators, CSDs, etc. in a particular fleet. A variety of output speeds, drive horsepower, and mounting configurations can be configured for each application:

- Horsepower from 50 hp to 1,300 hp
- Output maximum speeds of 12,000 to 33,000 rpm (lower and higher speeds upon application)
- Multiple output pads of various speeds, including coaxial output

The 101690 provides full OEM-specified support for:

- Hydraulic cooling with accurate flow/temperature control
  – Meets Hamilton Sundstrand low volume test spec.
  – Overall drip pan to contain spills
  – Completely separate oil loops for test unit and drive gearbox
- **eTurbine drive™** system closely simulates aircraft engine test conditions
  – Adapter test programs can optimize drive performance for each UUT model
- Electrical loading, low distortion resistive, reactive, optional wide frequency
  – Features automatic current regulation under varying load voltages
  – Accurate metering of test unit voltage, current, and frequency
- Air cooling for blast air cooled generators
  – Integral blower is quiet and vibration isolated
- DC supply and load for starter-generators (optional capability)
  – Test stand provides inertial load and braking

Using the highest rated **TEST EX™** self-documenting test programs, the 101690 can be run in four operational modes:

Fully Automatic test stand runs the entire test automatically, printing and storing test results, and stopping only on out-of tolerance results or fault detection

Semi-Automatic same as fully automatic, except test stand runs operator selected test paragraphs, accumulating test results, and monitoring safe test conditions

Manual test stand is under operator control for each test sequence and test parameter. Default setpoints can be OEM specified test circumstances, if desired

Primitive Manual test stand can be operated without the computer system – best used to diagnose computer – test stand faults and troubleshooting

The Testek 101690 eTurbine™ drive and gearbox with typical IDG installed for test. Adapter kits normally contain the test program, certified by the manufacturer, allowing easy test stand operation by even newly trained operators. This test unit is by Testek teaming partner Hamilton Sundstrand. The eTurbine drive digitally simulates turbojet engine performance for exact, consistent test results.

The Testek Load Bank is supplied to meet the maximum test requirements of the most powerful test unit – in this case 210 kW and 210 kVAr. Cooling air is directed upward for easy exhaust to outside areas. Testek resistive load elements are specially built, fully stainless steel enclosed, instrumentation quality units. No 'doorspring' type elements to vibrate and break. Blower operation is automatic and foolproof. Only Testek provides 'closed loop' control of the electrical load setpoint to maintain test specified line current despite load voltage fluctuations. Load bank takes setpoints via noise immune digital link to the test stand.

Testek INC.

EQUIVALENCY AND TEST CORRELATION ISSUES

The Testek 101690, using **TEST EX**™ test programs, makes test equipment equivalency and test data correlation with OEM overhaul test specs much easier. Test programs are printable spreadsheets, with simple English language test process listings. All data is in the same units as the OEM recommended test procedure. The test programs conform to the OEM test procedure, as can be verified by shop or regulatory personnel. Test programs, whether printed or displayed, can easily be read by shop personnel to verify equivalency and correlation to OEM manuals.

Just as important, **the 101690 is the test stand approved and recommended by Hamilton Sundstrand** for proper test of their most popular line of commercial and military IDGs, generators, CSDs, and VSCFs.

Hamilton Sundstrand
A United Technologies Company

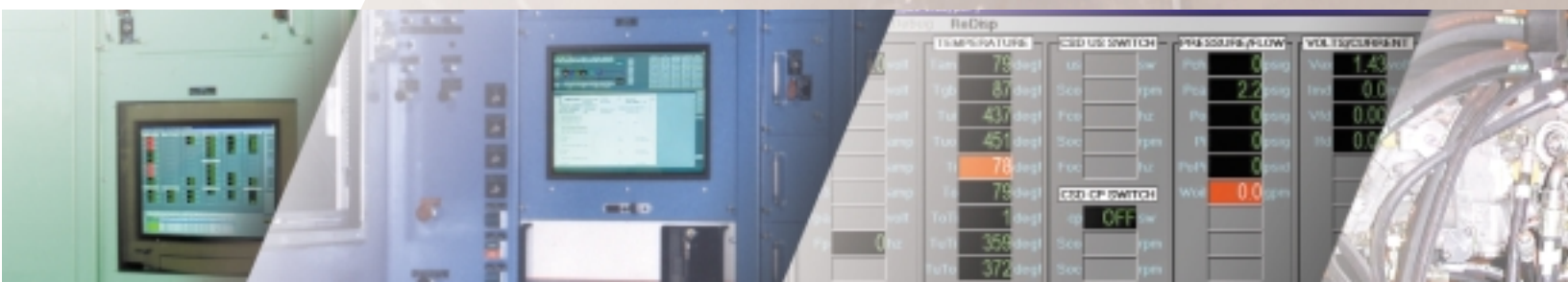
Testek, Inc., is the sole Teaming Partner and Licensee of Hamilton Sundstrand for Electrical Power Generating System Component test equipment.

The 101690 is equivalent to OEM test equipment, and fully capable of providing the exact test setup and results for the generating system components on the following commercial aircraft:

B707, 727	B747-400	MD-80	A300B, A300-600
B737-100-300	B757/767	DC-10	A310
B737-400-600	B777	MD-11	A319, 320, 321, 3tc.
B737-700, etc.	B717	Fokker F28	A330/340
B747 Classic	DC-9	Fokker F50/70/100	+ Many Commuter Aircraft

And, the 101690 test stand is approved in US military service for these military aircraft generators:

F-15	C-17	T-34C	TH-57C
F-16 A/B, C/D	B-52	F-22	F-14
F-117A	B-1B	UC-12	CH/MH/RH-53
F-18 C/D, E/F	A-10	T-44	E2C / C-2A
C-130	C-9	CH-46	P-3C/D
AH-1	AV-8B	T-2	EA-6B
T-45	KC-130	V-22	AWACS
KC-135	C-5A	KC-10	+ Many More



LET TESTEK PROPOSE THE EXACT SOLUTION TO YOUR NEEDS

The 101690 is a universal test stand, built to provide the proper solution to your complete generating system test needs. Within the standard design, there are many parameters which Testek can customize to meet your special fleet requirements. Also, the equipment is modular, allowing the same systems to be combined in many packages, to meet individual test cell options. Testek can select various subsystems to meet the needs of any commercial or military fleet, and to fit in the tightest or most spacious facilities. Waste heat may be transferred to water or forced air. All electrical utility voltages and frequencies can be accommodated.

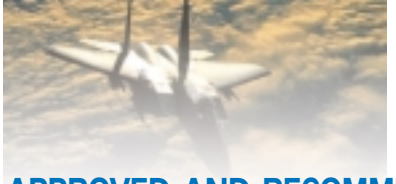
Testek designs and manufactures much better-than-commercial quality gearboxes for long life and easy maintenance. All of our gearboxes are lubricated and cooled by standard hydraulic oil for wide temperature range operation. (Regular lube oil will 'char' at about 160°F – far below many generator and IDG operating temperatures.) Gearbox cooling loops are completely separate from test unit oil loops. Drawings are available to permit local machining of replacement parts in addition to Testek worldwide support.

To allow us to propose a solution for your specific needs, please provide the following information:

1. **Test unit part numbers**
2. **Available space limitations and entrance size limits**
3. **Utility voltage and frequency (3 phase)**
4. **Desired console configuration**
   a. **Separate, fully enclosed, for remote operation**
   b. **Integrated into test stand**
   c. **Open, desktop control components (keyboard, mouse, 2 CRTs)**
   d. **Your special needs**
5. **Existing test equipment in use for generating system components, including adapters**
6. **Estimated date of service of the new equipment**

Testek will respond with a proposal and, if desired, a presentation of the proposal at your site. We can provide various options and estimated costs to allow you to make your purchasing decision.

All information is displayed on two color displays by TestEx™ executive software. TestEx is the highly acclaimed, full authority test executive which takes full advantage of the Windows operating system to minimize operator training and experience requirements. Operators and managers love TestEx. All test results become a computer spreadsheet for later analysis. Even the test program is a spreadsheet, allowing easy update with CMM changes (manager password protected).



APPROVED AND RECOMMENDED…

The Testek model 101690 is the only test stand to be approved and recommended in writing by Hamilton Sundstrand, the world's largest manufacturer of aircraft electric power generating system components. In many cases, the 101690 is listed in the CMM (Component Maintenance Manual) as the recommended test equipment. By virtue of its teaming partnership with Hamilton Sundstrand, Testek equipment is used to verify OEM test data for the CMM. Thus, Testek users can be assured of exact equivalency in the 101690 to CMM test equipment. In most cases, this approval, the recommendation, and/or the listing in the CMM by Hamilton Sundstrand should meet the conditions for proving equivalency of the test equipment for aircraft repair stations.

STATE-OF-THE-ART

The 101690 is 'state-of-the-art' in every way. Every step is under the control of our tested and assured **TEST EX**™ executive program. **TEST EX** has been used in hundreds of test stands throughout the world. **TEST EX** runs on readily available (and replaceable) PC type computers. The operating system is by Microsoft. **TEST EX** allows easy integration of oscilloscope, chart recorder, and data acquisition functions within one PC.

SIMPLE TO USE, DIFFICULT TO ABUSE

The 101690 control console is very simple to operate, allowing technicians to safely test complex components with a minimum of experience and training. The standard Compact Console model 101690 places the durable, industrial quality instrumentation and control system within the drive stand - only the controls and displays are outside the test cell.

The test unit (typical IDG shown here) is easily installed using adapter sets including all mechanical, hydraulic, and electrical connections. Test unit and flight hardware called out in CMM are normally customer furnished. Testek test stands normally feature a full coverage drip pan (not shown here) to catch and contain oil spills.

E-TURBINE DRIVE™

The heart of the Testek 101690 test stand is the proprietary **eTurbine drive™**. This digital electronic drive control provides an electrical drive simulation of aircraft turbine engine performance – the same test conditions found on the aircraft. The **eTurbine drive** characteristics are included in the test program. This insures a very close turbine engine simulation, regardless of the aircraft engine type. **eTurbine drive** allows Testek test stands to obtain the same test data as found by the manufacturer tests on the aircraft engine, itself.

SAVES $40,000 (OR MORE) ON INSTALLATION COSTS

101690 users find that the test system is easy and inexpensive to install. Just two small cables interconnect the console with the test stand. Older designs require dozens or even hundreds of wires between the test stand and the console – wiring that can cost tens of thousands of dollars to install. Virtually all of the interconnection wiring comes with a Testek 101690 – the user merely connects utilities, and runs the power/control wiring to the load bank.

Testek makes maximum use of display windows to make operation as simple and safe as possible. All vital parameters are monitored for safe operation, and operator notification or shutdown protects the test unit, operator, and test stand at all times. Even calibration is computer-aided to reduce errors and speed the (normally once per year) calibration process.

Testek is a recognized world leader in aerospace test equipment for the following components:

ELECTRICAL	FUEL	PNEUMATIC	HYDRAULIC	AVIONICS
IDG	Main Engine Fuel Controls	Air Cycle Machines	Flight Controls	GCU
AC & DC Generators	HMU	High/Low Temp. Valves	Servo Actuators	BPCU
CSD	Fuel Nozzles	High/Low Flow Valves	Servo Valves	ELCU
VSCF	Fuel Flow Transmitters	Fans	Pumps	APU-GCU
APU Generator	APU Fuel Controls	Waste, Dump Valves	Motors	ELMS
Electric Starter/Generator	Fuel Boost/Jettison Pumps	Engine Starters	Controls	ASCU
Variable Freq. Generators	Fuel Accessories	Air Motors, Actuators	Support & Supply Carts	PSEU
and Electro-Mechanical Rotary/Linear Actuators				

TESTEK SERVICE AND SUPPORT

We service all of the equipment we have in the field, worldwide. Testek test equipment is in daily use on five continents. Our engineers and technicians are experienced in providing on site service, usually on 24-48 hour notice.

REPLACEMENT PARTS AND SPARES

Throughout our over 32 year history, Testek has designed our test equipment for long term support. Quality, long life components and subsystems are employed to assure long term support. In those cases where parts have become obsolete, in most cases Testek engineers provide updated parts with assistance in making the substitution.

CUSTOMER RECOMMENDATIONS

Testek relies on customer recommendations for its increasing equipment sales. Most of our equipment is sold by "word of mouth" from one satisfied customer to another. In most cases, we can provide prospective buyers with a listing of existing users of similar equipment, including telephone or e-mail contacts.

Testek INC.

CONTACT INFORMATION

Testek, Inc.
12271 Globe Road
Livonia, MI 48150 USA

Phone: (1) 734-591-2271 • Fax: (1) 734-591-3060 • e-mail: aerospace@testek.com • www.testek.com

Features and details are subject to change without notice.

TESTEK ISO 9001