

AEROSPACE FUEL COMPONENTS AND SYSTEMS TEST EQUIPMENT

FOR FUEL CONTROLS,
ENGINE CONTROLS,
PUMPS, BOOST PUMPS,
NOZZLES, HMU,
FUEL ACCESSORIES,
ETC.





APPLICATION

Testek designs and manufactures standard and custom fuel test equipment to suit the function of your fuel shop and the aircraft fleet to be supported. In most cases, universal test stands are the best solution to testing requirements, with test stand resources selected to cover the fleet of units to be tested. Test programs and adapters provide the interface between the universal test stand and each model/part number to be tested. In most cases, the test stand can be built to accommodate your expected fleet. Adapter/Test Programs can be individually supplied with the test stand or later, as shop expansions plans are implemented.

Testek fuel test stands are applicable to:

- Airline shops for overhaul and return to service tests
- OEM production test equipment – high productivity through automation
- OEM overhaul and repair stations
- Military depot, intermediate, and organizational level testing
- OEM and airframe manufacturer developmental test and system integration/simulation
- Third party repair and overhaul stations

MAJOR FEATURES

Testek fuel component test stands are designed to maximize flexibility in application and adaptation. Fuel as well as substitutes are accommodated for safe operation and test stands are most often designed for hazardous environments.

For some applications, one test stand may be designed to test pumps, nozzles, and even controls. Larger fuel shops may dedicate a specialized test stand for fuel pumps or fuel nozzles only. Even larger facilities may elect to have a central storage and pumping utility with manifold connections to peripheral test stands of various types. Testek designs and builds the equipment to fit your shop's productivity and scale of operation.

Within this broad specialization, Testek utilizes expandable, modular designs wherever possible. This assures that our test stands make maximum use of proven successful components and subsystems. Much of the quality and reliability of your test equipment depends upon the expertise and experience of Testek engineers. Collectively, Testek engineers provide many decades of experience. No amount of effort or experimentation can replace those years of experience in providing test equipment you can rely upon for production and profitability.

Testek provides you a choice of manual or computer-aided test stands. For simple and/or low cost installations, manual test equipment may provide the maximum benefit, especially for highly specialized or relatively low production needs. Testek manual test stands are designed with the same care and attention to detail as more sophisticated test stands, with accuracy, durability, ease of operation, maintenance, and calibration as key goals. Testek has manufactured thousands of manual fuel component test stands over the past three decades.



This is the front of a fuel pump/fuel boost pump test stand. This test stand features a separate operator console located outside the test cell. The test stand is shown with most access and maintenance covers removed. Note hoists to aid operator in placing the test part on the drive pad.



This remote operator console provides a safe and comfortable station for test operators. The two color displays show all test parameters, as well as the test program, test report (as it is being written), and graphical displays of schematics and hookup diagrams for each unit. TestEx runs on PC computers with the latest Windows operating system. Operators quickly become familiar with the use of standard keyboard and mouse controls, and rely on TestEx for safety and protection of the test part and test stand.





COMPUTER-AIDED FUEL TEST STANDS

When desired, computer-aided testing adds a level of operator friendliness, productivity and speed to complex test requirements. Computer-aided test stands are also a good test tool for components requiring long run-in periods. Testek computer-aided test stands allow continuous monitoring of test unit and test stand parameters. If any parameter moves into a range where safe operation is at risk, the test stand will warn the operator or shut down, preserving all test parameters. Computer-aided test is also a benefit to operators. New test stand operators require less training and experience to correctly and safely perform useful computer-aided testing.

Testek has been producing computer-aided fuel test stands for over two decades. Using the highest rated **TESTEX™** self documenting test programs, Testek fuel component test stands can run in four operational modes:

- **Fully Automatic** – test stand runs the entire component test automatically, printing and storing test results, monitoring safe test conditions, 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 test computer system – indispensable for diagnosing computer/test stand faults and for troubleshooting

EQUIVALENCY AND TEST CORRELATION

The Testek fuel component test stands – especially computer-aided test stands – can simplify test equipment equivalency and test data correlation with OEM overhaul test specs. **TESTEX™** test programs are printable spreadsheets, with simple English language test process listings. All setpoints and test data are in the same units as the OEM recommended test procedure. The test programs – and therefore the test process – fully conform to the OEM test procedure, and can easily be read by shop personnel to verify equivalency and correlation to OEM manuals, Technical Orders, NAVAIRS, etc.

Many, if not most fuel components have previously been tested on Testek test stands. Testek has provided hundreds of fuel component test stands and we have performed the test data correlation with most fuel components. Existing Testek equipment is in use throughout the world, probably already successfully testing the desired components in approved service.



This high flow / high pressure test stand can test most of the fuel components and accessories for several aircraft turbine engines. Test adapter carts allow pre-assembly of the test unit, and speed connection to the test stand. This test stand was custom designed to test fuel pumps, controls, valves, nozzles, as well as engine afterburner controls and spray rings. The moveable keyboard and monitor station allows the operator to control portions of the test from close proximity to the test unit for setup and adjustments. This fully automatic test stand uses TestEx software to simultaneously monitor up to 96 test parameters, providing up to 24 simultaneous PID control loops, and up to 292 digital input/output channels to perform the tests accurately and safely. Even with this complexity, the test program (and the test report) can be read as straightforward Excel spreadsheets.





LET TESTEK PROPOSE THE EXACT SOLUTION FOR YOUR NEEDS

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

1. Aircraft models to be supported, and all component part numbers
2. Available space limitations and entrance size limits
3. Method of operation – manual, computer-aided fully automatic, semi-automatic, etc.
4. Special preferences for test cell, self contained test stand, etc.
5. Existing test equipment, including adapter types, you may wish to retain
6. Estimated date of service of the new test equipment
7. Other pertinent details and requirements

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 engineering and purchasing decision.



This is a stand-alone test and calibration cart for use with multiple fuel component test stands. This computer-aided cart can calibrate every function of a complete shop of fuel test stands. It is capable of making highly accurate pressure, flow, electrical, and mechanical measurements to compare with test stand transducers and metering subsystems.

APPROVALS AND RECOMMENDATIONS

Testek fuel component test stands and test cells are in regular, daily service at approved repair stations and military repair/overhaul facilities in many locations, worldwide. As a result, we have successfully tested components by most of the OEMs in the world. Testek will provide user references related to your particular needs upon request. These references will include, wherever possible, names and contact information for existing users of similar equipment.

Testek will work with your shop people to achieve the correct correlation of test data with manufacturer test specifications, assuring you of useful, correct test results that correlate with the OEM specifications.

This is an example of a central fuel/substitute pumping station and reservoir. This system also has a large capacity storage tank located outside the test lab to meet local safety laws. As many as eight pumps are brought on line automatically as needed to provide low or high flow test bench needs. Some pump drives are variable frequency to match test stand needs exactly to the fuel flow. The result is very energy efficient, pumping only the needed flows and pressures to meet test bench setpoints. This fuel/substitute central pumping and storage facility is fully computerized, requiring no operator intervention for proper operation.





STATE OF THE ART

Whether manual or computer-aided, Testek fuel component test stands are state-of-the-art in every way. We utilize only the most modern, tested transducing and metering equipment to measure pressures, flows, mass-flow, velocity, etc. In computer-aided systems, using our acclaimed **TESTEX™** test executive software, we have systems in the field that can simultaneously measure up to 96 parameters while simultaneously maintaining over 20 PID control loops – this in addition to a virtually unlimited number of digital control channels. This provides more than sufficient capacity to test the most sophisticated engine control, etc., without difficulty. To simplify the solution, all of these channels reside in a single computer, not relying on multiple outboard controllers. The result is an elegant, manageable solution to fuel component test needs.



Computer-aided test stands also can incorporate chart recording and test report printing as a part of the **TESTEX™** control program solution. The **TESTEX™** computer can be networked to other Testek test stands and/or a central management computer, if desired, to manage software updates and monitor test data (SPC) records.

Manual test stands are designed for ease of calibration, with facilities for inserting calibration facilities, flowmeters, etc. without complex and time consuming effort. Computer-aided test stands have built-in computer-aided calibration programs to step through the calibration process, and to simplify the work of the calibrating technician. Computer-aided test stands also are provided with a built-in self test, which checks most of the test stand resources to be certain they are functioning correctly.

This low flow fuel component test stand contains its own fully automatic control and instrumentation system, using TestEx software. The stand is explosion proof per all requested standards, with the instrumentation and control enclosures pressurized to prevent fuel vapor ingress. Note the adapter cart containing the test unit - allowing one test article to be set up while another is under test. This stand is intended for use with a central pumping/reservoir system for fuel/substitute.

SIMPLE TO USE, DIFFICULT TO ABUSE

Manual test stands are designed with logical control and instrument layouts to simplify operation, and to allow intuitive operator control.

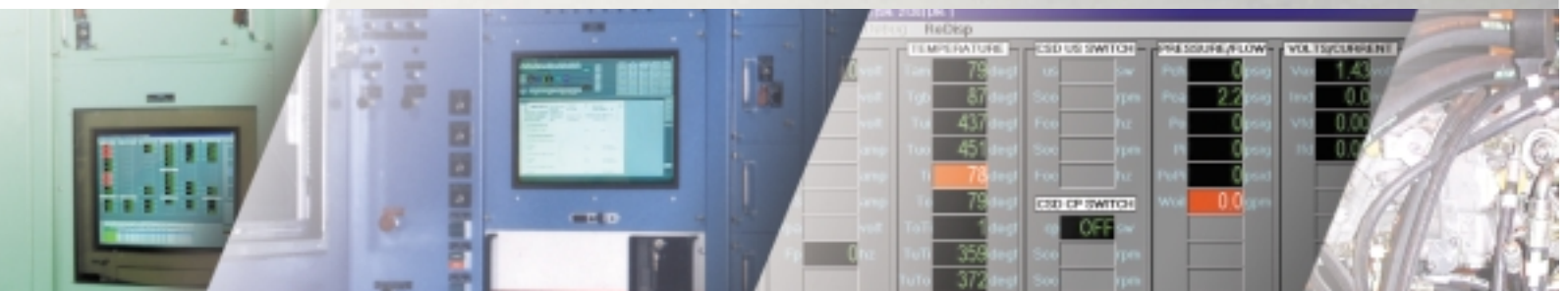
Computer-aided test stands are simple and easy to understand. Most test parameters are continuously monitored by the **TESTEX™** safety system to notify the operator of any out-of-limits condition. The **TESTEX™** safety system will stop the test, or even shut down the test stand, as appropriate, if an unsafe condition develops. Additionally, operators can be guided in making any needed manual setups or adjustments – including the display of diagrams and photos where appropriate to show the correct operator actions.

SAVES THOUSANDS ON INSTALLATION

Testek computer-aided test stands with remote control consoles can save thousands of dollars in installation wiring. Most instrumentation and control equipment is located in safe, air-purged control cabinets within the test area. Thus, only the data display, keyboard, mouse, and emergency stop equipment needs to be connected at the remote console. All test parameters and controls are located adjacent to the test stand, and the interconnecting wiring is provided by Testek, ready to attach to the appropriate test system modules.



This high flow test bench is shown with an adapter cart, used to hold the test part at the bench. The use of such carts allows one unit to be mounted and connected, while another unit is undergoing test. The result is extremely efficient use of test stand productive time.



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.



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, TestEx, and e-Turbine drive are trademarks of Testek, Inc.
Windows and Excel are trademarks of Microsoft, Inc.*

