

HELPING SMART IDEAS TAKE FLIGHT

Aerospace test solutions

LEADING-EDGE TEST SOLUTIONS ARE JUST THE BEGINNING

In an industry that continually pushes technology to its absolute limits, employing the most advanced test solutions is critical. Aerospace test and application engineers today are managing an array of challenges unheard of just a few years ago. Faster test times, more complex test subjects and the push for greater cost efficiencies throughout the test lab mean engineers must work smarter than ever. And the choice of test systems can make all the difference.

Recognized as a leader in the aerospace industry for the last 55 years, we provide major aerospace companies with turnkey solutions. Our customers can expand test rigs easily, run more tests and increase test accuracy while keeping the tested specimen totally safe.

Today, the global resources of a billion-dollar corporation with applications that range from heavy industry to space and defense reinforce this customer-first approach, allowing our team to deliver high-performance test solutions to aerospace manufacturers and test labs around the globe.

Incorporating the world-class performance of Moog Test Controllers and Moog Servovalves, our technological leadership is unsurpassed. But it's our depth of expertise and collaborative approach to your unique requirements that truly set us apart. It's an approach that focuses on your ideas first, giving you the tools, techniques and ideas to turn today's testing challenges into tomorrow's successes.



GLOBAL REACH, PERSONAL COMMITMENT

Across the globe, Moog teams are hard at work delivering prompt, proactive service to aerospace companies and test labs alike. In more than 26 countries worldwide, our representatives stand ready to help you take your aerospace test applications further than you may have thought possible.

55 years of service

This depth of service is made possible by a robust product line that ensures a high level of consistency and performance integrity. After all, we're part of the same company who pioneered the commercial servovalve more than five decades ago. Today, this legacy in precision motion control is stronger than ever.

But this commitment to product consistency and our vast global reach is just the beginning. Through close, collaborative working relationships with customers, we help drive increased productivity, introduce more efficient test methods and produce faster test times.

Meeting one challenge at a time

Rather than relying upon the same off-the-shelf systems that worked for someone else, we work hard to understand your specific test needs and deliver a turnkey solution that incorporates high-performance components and sophisticated software tailored to the application.

To provide faster test solutions, for example, we have developed an array of testing tools that are simpler to set up and more user friendly. Instead of complex interfaces or cumbersome rigs, we've designed servocontrollers that bring modularity and plug-and-play

performance to the test lab. We've created software interfaces that instantly provide the critical data you need, in a highly intuitive format. And we've ensured that all Moog systems will seamlessly integrate with the other equipment in your work environment.

After all, the faster you can complete your testing procedures and protocols, the more cost-effective your entire operation can be.

Flexibility for the future

Whether it's facilitating a better testing methodology or simply helping you upgrade to high-performance digital servocontrollers, our technical experts have gained a reputation for flexibility and unsurpassed service with the world's largest aerospace companies. And we're just getting started.

Here are a few of our key testing applications for commercial and military airplanes, spacecraft and helicopters:

- Iron bird testing
- Aircraft/airframe structural tests
- Spacecraft structural integrity
- Hydraulic system tests
- Landing gear, engine casing, and fin actuation loading tests
- Load calibration tests

HIGHER EFFICIENCY STARTS HERE



One of the world's largest aircraft providers needed to improve efficiencies across all of its structural testing facilities. When the company turned to Moog for support, we responded with a robust long-term solution.

The request

Provide a multi-channel digital servo-control solution that will unify testing under a single platform and offer the flexibility to meet various program demands for testing facilities in Germany, France, Spain and the United Kingdom.

The solution

We delivered a cost-effective solution, incorporating digital test controllers that helps the customer benefit from greater efficiency and the ability to meet the demands of all its locations. What's more, the innovative test product family allows faster and more accurate testing, saving the company time and money on its extensive testing schedules.

The result

A single platform testing solution that ensures the customer many benefits from unsurpassed performance for the next ten years—the length of our exclusive agreement.

INNOVATIVE TURNKEY SOLUTIONS PROVEN IN LABS WORLDWIDE

Major aerospace companies turn to us for turnkey solutions that integrate the essential components and software with unmatched consultative expertise. Our core strength is helping maximize your overall investment by bringing together the key systems and knowledge your unique test applications require—affording you the time and resources to focus on other areas.

To ensure system reliability, longevity and performance, we incorporate an array of high-quality components. All are engineered for precision, consistency and total flexibility. These components form the building blocks for our full range of turnkey solutions, providing world-class performance in some of the world's most critical applications.

TEST CONTROLLERS

Advanced control in every application.



Moog delivers the flexibility, innovation and trusted solutions you need for a smart approach to aerospace testing. The heart of all our solutions is the control hardware and software that sets the pace for the industry. Our feature-rich Aerospace Test Controllers are all based on user input and incorporate the innovations we have learned from working closely on demanding, high performance testing and simulation applications in labs and aerospace manufacturing facilities around the world.

Advanced control technology
— Unique force loop model for exacting control and faster testing

User-friendly operation — For maximum flexibility in your test lab and minimum set-up time

Reliability/Traceability — Easily configurable failsafe safety features to protect your valuable test articles and keep those testing going at all costs

Networking — You can be sure to have high-performance interconnect network you need for current and future needs

Value — From new equipment to upgrades, you can buy just the features you need

DATA ACQUISITION

The Test Controller system can be fully integrated with several data acquisition systems. This enables users to graphically present load data in real time while the test is executed. In addition, it provides the vital flight spectrum information test and application engineers require on an ongoing basis.

TEST SOFTWARE SUITE



Moog provides open architecture control software developed specifically for your unique needs in static, fatigue and system testing. Our test software provides a user-friendly, straightforward approach to overcome the often complex processes involved in aerospace test applications.

For example, our unique graphical user interface quickly and easily guides you through each step of the process in creating a test, calibrating the system, tuning the controllers, defining your spectrum and running the test. It

eliminates the tedious task of browsing through multiple windows and adds speed and efficiency to the entire test process.

ELECTRIC PRODUCTS



Designed to meet your specific requirements for simple integration, we offer a variety of electric-based actuators that provide a cost-effective means of applying representative test loads (under closed-loop control) to aero structures in the test lab. These general purpose or fatigue-rated actuators are ideal for structural testing applications that require continuous operation with minimal maintenance.

HYDRAULIC PRODUCTS



Moog Servovalves, Manifolds and Hydraulic Actuators are just a few of the products that are critical to our solutions. A focus on the performance of these high-quality individual products ensures the entire system can reach higher levels of efficiency, reliability and longevity while ensuring the safety of the test article.



A HIGHER LEVEL OF SUPPORT

From system commissioning to Moog Authentic Repair® services, you can be assured that Moog is there when you need us.

Our trained and authorized engineers are on call across the globe, ready to respond quickly and professionally to help you get the most from your test equipment investment. Rely on us for services that include:

- Application engineering
- Start-up and installation
- Commissioning
- Training
- Design work
- Aftersales support
- Test execution

Innovation at work for you

In addition to ongoing face-to-face collaboration, we know how important it is to listen to customers on an ongoing basis. So we designed a password-protected section on our Web site that allows you to contact us with key insights or questions related to your Moog test systems.

For example, should you have a suggestion related to a feature or a question related to a specific application, it's simple to notify us immediately via this Web site. We also host user groups on an international level to help drive design innovation. It's the ideal way to stay connected and incorporate your insights and input into test system design.

Another key service we offer to customers worldwide is in the area of upgrades. From simple component upgrades to helping you incorporate electric-based systems into your test environment, our specialists and engineers are always available to support your technology needs.

A partner for tomorrow

Isn't it time you work with a partner who understands what makes your aerospace test applications unique? Who can offer both the world-class products and the collaborative expertise you need to reach the next level of performance? And who you can count on for swift, reliable answers and equipment on your schedule, not theirs?

Contact Moog today. And see for yourself how the right partner can help your aerospace test ideas take flight, again and again.

A FULL-SCALE SUCCESS

When a Swiss aerospace test facility needed to provide full-scale fatigue testing for the country's F/A-18 fighters, it turned to Moog for a solution that few others could offer.

The request

Provide multiple channels of load control with a fully-integrated data acquisition system to provide fatigue testing for F/A-18 fighters. The company needed to ensure the Swiss jets could meet the structural requirements for a service life of 5,000 flight hours—and it wanted to complete testing in a significantly compressed time frame.

The solution

Seventy-seven channels of Moog digital test control were incorporated into the company's fatigue testing protocol. Through



a tight integration between the test servocontrollers and the data acquisition system, the time required to gather strain measurement data was minimized.

In addition, the test system affords real-time transmission of load cell signals, flight spectrum counters and Test Load Condition (TLC) numbers to the data acquisition system. This data, combined with the corresponding strain data, provides efficient strain analysis for each TLC as the test progresses, saving even more time and effort.

The result

A solution that meets stringent Swiss technical requirements while ensuring the fastest possible fatigue tests for this high-performance aircraft.

TAKE A CLOSER LOOK.

Aerospace test solutions from Moog are available around the world. For more information, visit our Web site or contact one of the locations below.

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