



PERFORMANCE BEHIND THE POWER

GAS AND STEAM TURBINE AFTERMARKET SOLUTIONS

October 2014

IMPROVE RELIABILITY AND EFFICIENCY
FOR YOUR GAS AND STEAM TURBINES WITH
REPAIRS, RETROFITS, FIELD SERVICE AND
EXTENDED LIFE UPGRADES

SOLUTIONS FOR A HIGHER LEVEL OF RELIABILITY

Operators of gas and steam turbines have relied on Moog aftermarket solutions for over 20 years. Today the challenges are tougher than ever.

While base load and peaking facilities may have different operating profiles, they both demand an exceptionally high degree of reliability, operating efficiency, safety and environmental compliance.

Around the world, Moog experts help customer achieve their operational goals with a robust line of aftermarket products and services. We are committed to deliver innovative solutions within your defined outage cycle. Our goal is to deliver the expertise and products that maximize your technology investment today - while building a solid foundation for future productivity.



- Repair
- Exchanges/Rotable Stock
- Field Service
- Training
- Extended Life Upgrades



Evaluate: After initial receipt of actuator into repair facility technician breaks it down, logs in the parts and readies for refurbishment



Repair: Technician cleans, repairs and reassembles each actuator



Test: Technician working on finished actuator on test bench to assure it meets or exceeds original OEM specifications before sending it back to customer

TOTAL SUPPORT FROM ROTABLE PROGRAMS TO RETROFITS

With a long heritage of supplying products to virtually all major turbine OEM's, Moog understands the support needs of this changing industry.

Moog supplies a wide range of aftermarket solutions for steam and gas turbine actuation systems, including equipment of our own manufacture and competing makes as well.

Moog Global Support includes world-class repair services with quick turnaround by trained experts. Your local Moog representative will work with you to plan and implement a service and support program that matches your unique needs and helps minimize downtime all year long.

ROTABLE UNITS

Moog eliminates the risk of an extended outage by delivering remanufactured gas valve and inlet guide vane assemblies just before your outage begins. Old units can be removed and rebuilt units installed at the same time, reducing rigging costs and shortening the overall cycle time.

If you are in a forced outage and need assistance ASAP, Moog can deploy an exchange unit to your facility the next day.

We also maintain a large inventory of remanufactured servo valves. If you do not have a full set of spares and your site is only down for a brief annual inspection, there is still time to change out servo valves by taking advantage of our exchange program. Remanufactured servo valves may be purchased outright or as part of a rotatable exchange program

FACTORY REPAIR

Have sufficient time to repair your own equipment? We will repair the equipment to meet the original turbine OEM performance standards using genuine Moog parts. As our factory is the only authorized repair facility, only Moog can offer this service.

We understand the time pressures and the trust placed in us to turn the equipment around within the planned timeframe.

Our lean production innovations allow us to provide the quality you expect from a major corporation with the speed of a smaller repair shop. With Moog you truly get the best of both worlds.



All Moog repairs and exchanges carry our "as new" warranty. We warrant every component for two years just as if it were purchased brand new.

EXTENDED LIFE UPGRADES

Moog is the technology leader in extended life actuator componentry. We have adapted techniques developed from the most severe deep space and subterranean applications to offer a varnish and dither resistant actuator for the power generation industry.

When you receive an exchange actuator from our fleet, or have your unit repaired at our factory, these upgrades are automatically included in the service.

RETROFITS

Wish you had Moog equipment at your facility? Like the security of a rotatable pool at your disposal and extended life technologies? We can help you with that too. We offer pre-engineered "drop-in" retrofits for GE and Siemens industrial gas turbines equipped with Young and Franklin or Rexroth actuators.

Most retrofits require no, or very minimal site modifications. We will even apply a trade in credit for replaced equipment.

FIELD SERVICE

When a factory repair is not possible, or Moog expertise is needed at site to diagnose a problem, our team of field engineers will travel to your facility. This is a popular option for large steam turbine actuators.

THE MOOG FACTORY REPAIR ADVANTAGE

Here are five key reasons so many professionals rely upon Moog Factory Repair to stay productive:

AUTHENTIC MOOG PARTS

Moog does not sell parts to servo valves, actuators, pumps, drives and other Moog products to independent repair centers. Moog is the only repair facility that will replace used defective parts with new Authentic Moog Parts.

Moog frequently updates older components to the latest configuration to ensure that your systems are operating at maximum reliability and efficiency. Often times your repaired item leaves our facility better than when originally manufactured.

MOOG EXPERTISE

Moog works collaboratively to determine the root cause of failure, recommend system improvements and maintenance programs aimed at decreasing downtime, minimizing repair costs and increasing productivity. Through close collaboration with you, Moog and your Authorized Distributor can tailor a valve and actuator maintenance program that meets your specific needs.

CERTIFICATIONS

Moog maintains hazardous location certifications in accordance with ATEX, CSA and FM standards which allow Moog to repair intrinsically safe and explosion proof hardware. Repair by a facility that is not audited and approved to service products to these standards will void the products original certification.

REPAIR QUALITY AND REPORTING

Moog standard inspection reports identify physical damage, contamination and other observations. Moog will replace these parts and report any findings that allow your Moog Authorized Distributor to solve issues with your hydraulic system.

Moog provides a full test report with test data and performance charts, not just a certificate stating the valve was tested. Most products are tested on automated equipment with data acquisition systems, so you can be assured the information is accurate and professional.

FAILURE ANALYSIS

If you encounter repetitive repair issues, Moog Factory Repair offers the option of a real failure analysis investigation. We have a variety of services to help you pinpoint the root cause of a performance or reliability issue. With a staff of 25 people dedicated to solving your problem and over \$3 million in analytical equipment, our laboratory facility is second to none.

MOOG WARRANTY

Moog is so confident in our craftsmanship that we provide the same warranty on a repaired component as we would for a brand new one. In the case of servo valves, actuators and process valves that means two full years.



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Gas and Steam Aftermarket
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This technical data is based on current available information and is subject to change at any time by Moog. Specifications for specific systems or applications may vary.

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