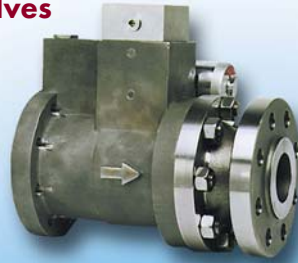




# Meeting Your Needs



**Liquid & Gas Shut-Off Valves**



**Digital MicroNet Controls**



**Liquid & Gas Fuel Metering Actuators & Valves**



**AVR's & Excitation Systems**



**Digital & Analog Drivers**



**Air Starters & Lubrication**



**Vibration Sensors & Monitoring**

## Gas Turbine Products & Services



Southeast: 877-659-6328 Gulf Coast: 888-427-4853 Mid-Atlantic: 877-659-6328 Pacific Northwest: 425-513-9390

sales@govconsys.com

# WOODWARD Authorized Combustion Turbine Services

## Gas & Liquid Fuel Control Valves for Combustion Turbine Applications

Woodward's complete line of Fuel Metering Systems components are typically applied to electrical power generation, gas compression, and mechanical drive system processes. Woodward Fuel Metering valves accurately meter fuel to a combustion turbine during acceleration, steady-state operation, and deceleration.

Valves available with hydraulic or electric actuation and include single or multi-coil position feedback that allow external valve drivers to accurately position the valve

in a closed loop configuration. Many units have secondary shutoff capability. Gas fuel control valves for aero-derivative turbines incorporate a shear type design that provides superior performance in less than ideal fuel environments. Plug-style gas control valves are specified for frame gas turbine applications. Liquid fuel control valves utilize either bypass or throttling technologies. Gas and liquid valves are available for all types of combustor designs including the most demanding dry low NOx applications.



**WOODWARD**  
Business Partner

### Authorized Repair & Service

Valve spares and service available for all types of turbines, offering a qualified authorized alternative to your service contract supplier.

GAS METERING VALVES	SHUT-OFF VALVES	LIQUID METERING VALVES	WATER METERING VALVES	CONTROLLERS / DRIVERS
GS16 / GS6	GSOV25	LQ25	EML100 / 3151	DVP 24V e 125VR
GS16DR	USOV	LQ25BP / LQ25T	TM40 / 3151	DIGITAL / ANALOG DRIVERS (EM/LQ) / (GS/LQ)
3103 EM35MR / 3171	LSOV25	LQ50	EWMV	MicroNet Plus™

### SPARES

#### Valves

- GS6 Gas Fuel Valve Actuator with On-board Driver
- GS16 Gas Fuel Valve Actuator with On-board Driver
- GSOV 25HT Gas Fuel Shutoff Valve, 2.0" Flange
- LQ6 Liquid Fuel Valve Actuator with On-board Driver
- LQ25 Standard Valves with PIV, SOV, LmtSw & without Driver
- LSOV 25 Liquid Fuel Shutoff Valve

#### Digital Valve Positioner (DVP) Drivers

- DVP1250 – 24VDC and 125 VDC
- DVP5000 – 90-300 VDC
- DVP10000 – 190-300 VDC

### SERVICE

#### Drivers/Actuators

- |                      |                 |
|----------------------|-----------------|
| GS Series            | EM35            |
| LQ Series            | TM55            |
| EM34/EM 80/EM300     | GS/LQ Analog    |
| EM/LQ Digital/Analog | EM 24 V Digital |

#### Valve Assemblies

- |                     |                          |
|---------------------|--------------------------|
| 3103/TM55           | LSOV 25                  |
| 3101/EM35           | GS16                     |
| 3151                | GSOV 25                  |
| Servo Valves        | SS-260                   |
| Gas Metering Valves | LQ3 / LQ6                |
| GS6                 | GFCV Valves              |
| 1907 LQ Liquid      | 3 Way Bypass             |
| SRV Valves          | LIQ Bypass Control Valve |

# Woodward Gas Valves, Actuators & Mechanical Controls Maintenance Recommendations

Scheduled maintenance of valves, actuators, and mechanical controls improves turbine engine reliability, availability, and safety of operation. While control monitoring cannot replace

normal preventative maintenance practices, it is important to follow OEM recommendations to avoid unnecessary and unscheduled shutdowns.

Product Name	Maintenance Recommendation	
	Operating Hours*	Years in Service
<b>AERO DERIVATIVE:</b>		
Hydraulic Control Unit	50,000 Hours	6 years
Variable Geometry Hydromechanical Control	50,000 Hours	6 years
Variable Geometry Electromechanical Control	50,000 Hours	6 years
Variable Stator Vane Actuators	50,000 Hours	6 years
1907 Small Liquid Valves	25,000 Hours	3 years
1907 Large Liquid Valves	50,000 Hours	6 years
Liquid Shutoff Valves	50,000 Hours	6 years
LQ25 & LQ25T Liquid Metering Valves	50,000 Hours	6 years
1907 Small Gas Valves	25,000 Hours	3 years
3103/3171 Gas Valve with Hydraulic Actuator	50,000 Hours	6 years
3103/3171 Gas Valve with Electric Actuator	50,000 Hours	6 years
Gas Shutoff Valve	50,000 Hours	6 years
GS3/GS10 Gas Metering Valve	25,000 Hours	6 years
GS6/GS16 Gas Metering Valve	50,000 Hours	6 years
3151 Water Metering Valve	50,000 Hours**	6 years**
CIT/CDP Sensor	50,000 Hours	6 years
2057 Pump	50,000 Hours	6 years
Electric Gas Metering Valve (EGMV) on LMS100	50,000 Hours***	6 years***
Electric Water Metering Valve (EWMV) on LMS100	50,000 Hours***	6 years***
Electric Liquid Metering Valve (EMLV) on LMS100	50,000 Hours***	6 years***
Variable Bleed Vane (VBV) on LMS100	50,000 Hours	6 Years
<b>HEAVY FRAME:</b>		
Globe Gas Fuel Control Valve (Hydraulic and Electric Actuated)	50,000 Hours***	6 years***
SonicFlo Gas Fuel Control Valve (Hydraulic and Electric Actuated)	50,000 Hours***	6 years***
Rotary Fuel Control Valve (Hydraulic, Electric, Pneumatic Actuated)	50,000 Hours***	6 years***
3-Way Liquid Fuel Control Valve (Hydraulic Actuated)	50,000 Hours	6 years
2 - Way Liquid Fuel Valve (Hydraulic and Electric Actuated)	50,000 Hours***	6 years***
2 – Way Water Metering Valve (Hydraulic and Electric Actuated)	50,000 Hours***	6 years***
Inlet Guide Vane (IGV) Actuator	50,000 Hours	6 years
Variable Guide Vane (VGV)	50,000 Hours	6 years

\*Woodward considers its valves and actuators as key components in the overall fuel efficiency, emissions control and safety of the gas turbine. Therefore, we recommend that our products be overhauled at the same regular intervals that the gas turbine "Hot Section" or "Major Inspections" occur. Please consult the Gas Turbine OEM guidelines for recommended service intervals for your turbine.

\*\* Per the product manual guidance complete sleeve indexing maintenance procedure as recommended. Manual 40120 "3151A Water Valve/TM-40LP Actuator Assembly for Gas Turbine Water Injection System" Manual 40181 "3151A Water Valve EML100 Actuator Assembly for Gas Turbine Water Injection System"

\*\*\* Per the product manual guidance for electric actuation, complete re-greasing maintenance procedure at recommended intervals. Contact your local Woodward distributor for re-greasing kits.

Woodward's overhaul services will return the unit to "as new" condition ready for another full operating cycle until your next planned maintenance outage. Upon reaching the recommended maintenance cycle of the auxiliary component, please contact [service@govconsys.com](mailto:service@govconsys.com) to arrange services.



[www.govconsys.com](http://www.govconsys.com)

Florida: 877-659-6328 / Gulf Coast: 888-427-4853  
Mid-Atlantic: 877-659-6328 / Pacific Northwest: 425-513-9390

## Gas Fuel Metering, Control, and Monitoring

From the smallest turbine in distributed generation to the largest used in power generation applications, GCS applications engineers specialize in control system integration and support. GCS supports your combustion turbine project with comprehensive turnkey project management, from initial site visit to design, installation, testing, commissioning, and training.

### Electronic Control Systems from WOODWARD

Woodward offers comprehensive energy control system solutions for every size, type, and application of combustion turbine. Woodward's wide range of standard and custom control platforms provide complete control for industrial turbines from start through loading and unloading to safe shutdown. All controls are microprocessor-based with programmable integral application software designed for many types of combustion turbine applications.



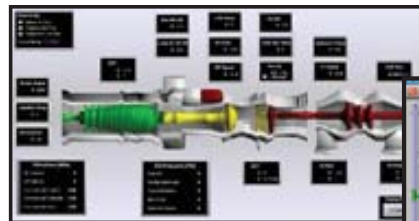
Woodward **MicroNet™** and **MicroNet™** Plus Controllers can be programmed to control any prime mover and processes, including system sequencing, high speed system monitoring, surge control, vibration monitoring and station control. Available in simplex, redundant, and triple modular redundant (TMR) configurations.



Woodward **Atlas-II™** Control Platform provides reliable and deterministic performance for key prime mover control functionality. Additional control functionality can be added through the use of GAP or Ladder Logic programming structures and additional distributed I/O.



**HMI** (Human Machine Interface) and **SCADA** (Supervisory Control and Data Acquisition) systems provide a window into the complete system by displaying current / historical information and alarm handling. The HMI allows operators and supervisory personnel to view a series of screens to troubleshoot and remotely monitor the control system. Monitor local, remote or unattended sites through a powerful suite of automation tools gathering current / historical data, trend logging, and alarm troubleshooting.



The Ingersoll Rand **TS700-TS900-TS1400** series Gas Turbine Air Starters are dependable industrial-grade starters. This series of air starters features a splash lubrication system internally that lubricates the planetary gears and motor bearings and no oil in drive air is necessary. Additionally, the air cooling extends bearing and seal life. Ingersoll Rand air starters offer multiple spline pinions, multiple gear ratios for matching the optimum engine characteristics, and multiple flange options and are gas-sealed for application flexibility.



### Automatic Voltage Regulators (AVR) & Excitation Systems.

GCS retrofits simplex AVR Systems to complex redundant configuration Excitation Systems including brush or brushless rotating exciter, PMG or bus-fed excitation systems, from field flashing to crow bar protection. GCS supports a range of Basler AVR's from DECS150 through DECS400 and DECS2100 Excitation Systems and ABB Unitrol family of AVR's.

### Vibration Monitoring Systems

service, training, specifications, and installations of industry-standard vibration monitoring systems to meet API670 standard.



# GOVERNOR CONTROL SYSTEMS, INC.

Southeast: 877-659-6328 Gulf Coast: 888-427-4853 Mid-Atlantic: 877-659-6328 Pacific Northwest: 425-513-9390

sales@govconsys.com www.govconsys.com