

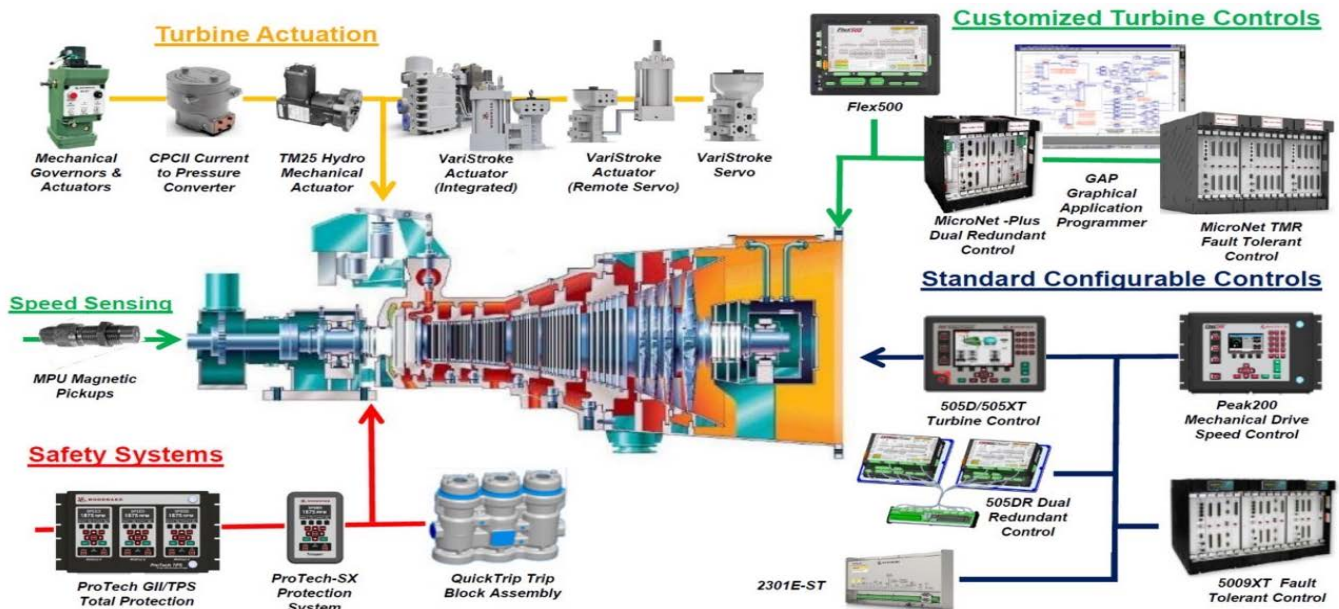


OSA Valve Services is now part of Woodward global network, we successfully obtained ASI + AISF as a Specialized distributor for Woodward products & services.

Our Governors and Control Solutions offer Woodward technology for Steam turbine, Gas turbine, Hydro turbine and Compressor for various applications.

We cater integrated services range from field assessment, engineering, upgrade, replacement, installation & commissioning and after-sales services for turbine speed control on both controller and governor & actuation systems compressor control and safety & protection system.

STEAM TURBINE SOLUTIONS



OSA Valve Services offers steam turbine controllers for all size turbines and applications. Standard off-the-shelf field configurable controllers allow users with simple steam turbine applications to easily configure and operate the control themselves—resulting in lowering commissioning and support costs. Depending on the application's complexity and level of criticality, also offers custom programmable control platforms in simplex, dual redundant, or triple redundant configurations enabling customers to match the required control reliability and availability levels to their application. Fully programmable control platforms allow turbine OEMs and end-users to create a custom controller with site specific algorithms, logic, and protection functionality as required by the application.

Also offers different sizes of steam turbine valve actuators and turbine overspeed detection systems (ODS) for selection and application by both OEMs and end-users. These versatile product families allow entire plants/companies to use and standardize on one actuator family or ODS family across their plants, lowering associated spare parts and personnel training costs.

GOVERNORS and CONTROL SOLUTIONS



SMALL MECHANICAL DRIVE TURBINE APPLICATION

Peak 200

- Large speed band
- Plant DCS interface
- First-out indication
- Integrated HMI
- Header pressure control

CRITICAL MEDIUM MECHANICAL/GENERATOR DRIVE TURBINE APPLICATION

5009FT

- Triple modular redundant (99.999% availability)
- Auto-start sequence
- Header pressure control
- First-out indication
- Optional single extraction control



MEDIUM MECHANICAL/GENERATOR DRIVE TURBINE APPLICATION

505 / 505XT

- Auto-start sequence
- Header pressure control
- First-out indication
- Optional single extraction Control
- Integrated HMI
- OptiTune PID "auto-tune"

MEDIUM-LARGE MECHANICAL/GENERATOR DRIVE TURBINE APPLICATION

Micronet Plus

- Custom site specific control logic
- Custom redundancy-architecture and I/O
- Custom number of inputs & outputs
- Custom user interfaces



SAFETY SYSTEMS MATCHED TO YOUR APPLICATION

From the simple to the triple-modular-redundant, Woodward has the safety system to meet your asset protection requirements.



ProTech®-SX

SIL-2

Turbomachinery Safety Logic Solver

- 2 redundant speed inputs
- 7 analog/discrete inputs
- Overspeed and over acceleration protection
- Custom programming
- Trip valve response monitor



ProTech®-TPS

MicroNet® Safety Module

SIL-3 Turbomachinery Logic Solver

- Accepts 3, 2, or 1 speed inputs
- 30 analog/discrete inputs
- 15 relay outputs
- 2-o-o-3 voted or independent output models
- Overspeed and over-acceleration protection
- Custom programming
- Trip valve response monitor
- 1 millisecond time synchronization (Micronet)



MicroNet® Plus

MicroNet® Safety Module

SIL-3 Turbomachinery Logic solver

- Accepts 3, 2, or 1 speed inputs
- 100+ analog/discrete inputs
- 100+ relay outputs
- 2-o-o-3 voted or independent output models
- Overspeed and over-acceleration protection
- Custom programming
- Trip valve response monitor
- 1 millisecond time synchronization



ProTech®-GII

SIL-3

Steam or Gas Turbine Overspeed Device

- Accepts 3, 2, or 1 speed inputs
- Overspeed and over-acceleration protection
- Field configurable
- 2-o-o-3 voted or independent output models

GOVERNOR and ACTUATORS

- Simple governor
- Overspeed test function

TG Mechanical Governors



Hydraulic Amplifier Electro-Hydraulic Actuator

UG-Actuator Self-contained electro-hydraulic actuator



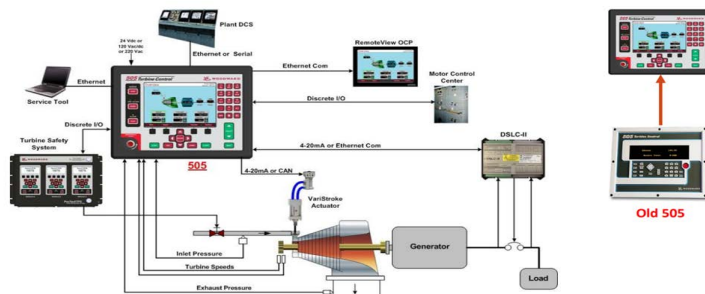
Varistroke Linear Electro-Hydraulic Valve Actuators

CPC-II Current to Pressure Converter



SPC Servo Position Controller Steam Turbine Servo-Valve Driver

NEW 505 – TYPICAL APPLICATION



INTEGRATED SYSTEM APPROACH

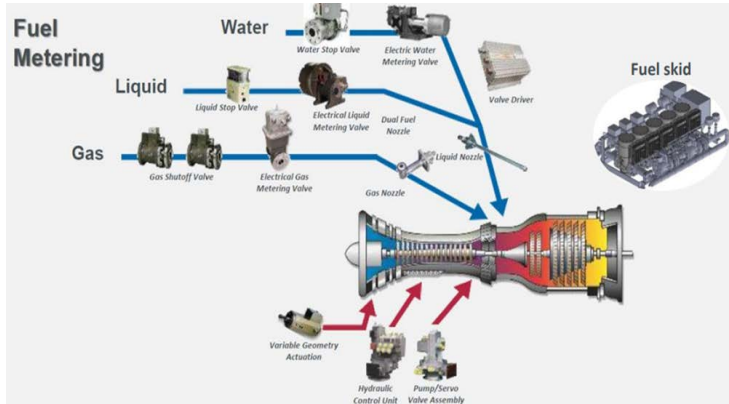
Woodward designs its line of steam turbine control products to be easily integrated together, simplifying. This integrated approach reduces installation costs and allows customers to scale their system components to meet the requirements of small, medium, or large steam turbine applications.

GAS TURBINE SOLUTIONS

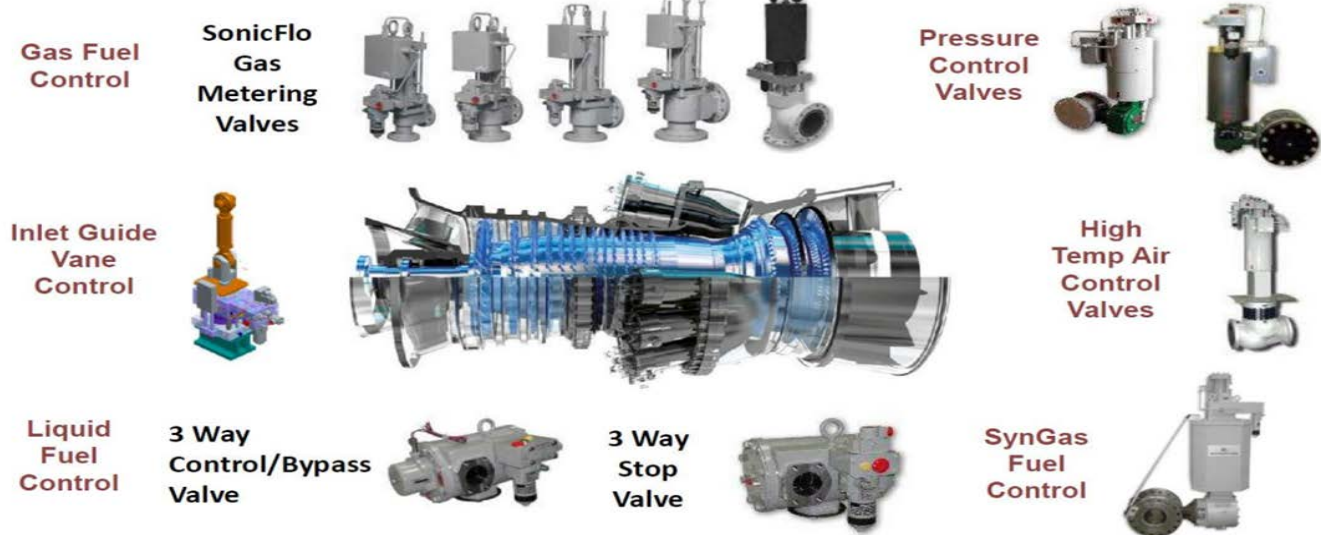
OSA Valve Services offers a broad line of **gas turbine valves** of all sizes and flows designed to accurately control gas and liquid fuel, water, steam, and air into and within the turbine package. Depending on the application, electric powered valves and actuators are available to allow turbine OEMs and owners to fully electrify their turbine packages and lower the risk of oil-based fires.

For improved accuracy and lower wiring costs, networked valves allow package simplification and a reduced total installed cost. As required, either hydraulic or electric powered actuators are available for variable stator vane and inlet guide vane position control.

AERO-DERIVATIVE



HEAVY DUTY FRAME



COMPRESSOR SOLUTIONS

ONE INTEGRATED, PURPOSE-BUILT SOLUTION FOR COMPLETE COMPRESSOR CONTROL AND PROTECTION



Vertex control capabilities include:

- Motor or Turbine Drive Interface Logic
- Inlet Throttle Valve Control
- Inlet Guide Vane Control
- Recycle Valve(s) Control
- Anti-Surge Control
- Performance Control (suction or discharge pressure or process flow)
- Surge Anticipation Logic
- Surge Protection Logic
- Surge Recovery Logic
- Load Sharing (parallel compressors up to three trains)

Authorized Independent Service Facility - Our Services & Capabilities

OSA Valve Services is committed to ensuring you get the best performance from your equipment. Our repair, maintenance and field service programs are designed to keep your machinery operating at peak performance, shortening your return on investment, and maximizing the bottom line.

REPAIR & OVERHAUL



We are a certified Woodward Authorized Independent Service Facility (AISF), and additionally, are experienced in servicing other makes of governors such as Regulators Europa, Zexel and Yanmar.

All overhauls follow strict quality-controlled procedures: from disassembly, cleaning, and assessment, through to parts renewal, testing and calibration to the correct specifications. Only genuine replacement parts are used in all our governor overhauls, ensuring superior service life and reliability. We also offer the option of service-exchange governors where the service time window is small.

Our commitment to excellence means all governors leaving any OSA Valve' workshop carry full repair warranties. Should an emergency situation arise, our service engineers are available for assistance around-the-clock, whether in-house or on-site, to offer troubleshooting and consultation services.

We provide the following services.

- Sales of genuine Woodward governors and spares
- Overhaul, repair, test and calibration of all makes and models of governors.
- 24-hour emergency support
- Retrofitting of legacy governors to current models
- Technical consultancy for new installations, maintenance and troubleshooting.



EXCHANGE PROGRAMME



We recognize that obtaining replacement parts is not always an option for our customers. When time constraints limit your service window we can provide reconditioned governors on an exchange-basis. We simply exchange your existing governor for a newly overhauled and tested unit from our stock; ensuring a replacement is there and ready to be fitted when you need it.

The exchange program is available for governors in a wide range of applications – for ships, refineries, power generators and more. Our exchange service is tailored for the marine industry, where we can shorten the turn-around even further by preparing exchange governors before the vessel arrives in port.

The advantages of the Exchange Program

- Your cost is known and contained.
- System downtime is minimized.
- Avoids potentially lengthy delays while waiting for replacement parts.
- It's an instant solution to any governor problem.

FIELD SERVICE, UPGRADE & RETROFITS



Our service teams are ready, at hand, to provide round-the-clock assistance to our customers, we are able to work on all Woodward industrial systems.

Experienced in many applications, our trained service engineers provide prompt, expert advice to help you in the troubleshooting or commissioning of your systems. We can work independently or together with your engineers to isolate failures, return your systems to a ready condition, and get you back up and running.

We are committed to keeping your systems operating at peak performance and ensuring you receive the very best in support.

We provide the following services.

- A helpdesk to remotely assist in problems and troubleshooting
- 24/7 call-out services
- Removing and installing governors into prime movers
- Informal on-site training