



Based upon decades of experience, Woodward offers turbine control and regulation systems which enhance efficiency and are environmentally friendly. Woodward has developed solutions for each major stage of the operating chain: supply, combustion control, electronic/software controls, and system integration.

By using these integrated solutions, the cost of the control system can be reduced while at the same time greatly increasing its performance.



Turbine control

Steam turbines

THE 505 AND 505E are microprocessor-based controls designed to operate steam turbines of all sizes. The 505 is designed to operate steam turbines using one or two (split-stage) actuators to drive inlet steam valves. The 505E is designed to operate single extraction and/or admission steam turbines.



These digital controls are field programmable. They use menu-driven software to instruct site engineers on programming the control to a specific generator or mechanical drive application. The 505 or 505E can be configured to operate as a standalone unit or in conjunction with a plant's Distributed Control System.

The controls are available in simplex and dual redundant configurations.

Gas turbines

THE ALL NEW ATLAS-II™ PROGRAMMABLE CONTROL is an industrial platform that offers robust, low-cost control for a wide variety of turbine, engine, and compressor applications.



The Atlas-II programmable control is designed specifically for prime mover control applications such as gas turbines, compressor control and protection, gas and diesel engines, steam turbines, hydro turbines.

This control is designed to integrate into the modern plant architecture through the use of Ethernet and fieldbus communication protocols. Four Ethernet ports and add-on fieldbus communication modules allow for the network flexibility and redundancy necessary for today's communication architectures.

Mono stage turbines

THE 2301D-ST is a microprocessor-based control with integral application software designed for single-valve steam turbines driving either mechanical or generator loads.



Like Woodward's 2301A line of controls, this control is housed in a sheet-metal chassis and consists of a single printed circuit board. To facilitate unit retrofits, the 2301D-ST's I/O terminals are located in the same general location as Woodward's 2301A line of controls.

This control is designed to perform the core control functions of a small steam turbine package with integral process control. The application software is field configurable, allowing it to be configured and modified to meet site-specific requirements.

A 2301D-GT version is available for gas turbines.

Engines & co-generation

THE 723 DIGITAL CONTROL governs reciprocating engines (gas, diesel, or dual fuel) used in power generation, marine propulsion, and gas compression/distribution.



The control may also be used in cogeneration, power transmission/ distribution, process management, pipeline pump stations, utility power generation, emergency standby power, and remote control station operation. The 723 provides state-of-the art control for new and retrofit situations.

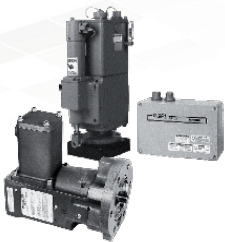
Actuators

Hydraulic amplifiers



The electrically controlled Hydraulic Amplifier is a pilot operated, linear servo actuator with up to 3 inches (76 mm) of stroke and up to 4500 lb (20 kN) of force. The amplifier is capable of operating the control mechanisms for steam turbines or large engines which require relatively large forces and work capacity.

Electro-Hydraulic actuators



The PGPL Actuator/Driver is a drop-in replacement for PG-PL mechanical governors, and is an electro-hydraulic actuator with a proportional driver interface which can be used with electronic controls providing a 0 to 200 mA position signal. The actuator is designed for use with Woodward controls (2301D, 723, 505, Atlas-II...).

The TM-25LP and TM-200LP actuators are electro-hydraulic, proportional actuators for positioning steam and fuel-control valves requiring either 25 or 200 lb (111 or 890 N) of linear force.



EG-3P / -6P / -10P: These actuators are designed for use on diesel, gas, and gasoline engines, or turbines, and are particularly well suited for use in control systems requiring a proportional mechanical output of a proportional electrical input. Used to control the flow of fuel or other energy source to a prime mover, EG-3P/6P/10P actuators convert an electrical signal to position a proportional rotary output shaft. These hydro-mechanical actuators provide the muscle for a Woodward 2301A, 723PLUS, or similar integrating electric control system

UG: is a mechanical-hydraulic governor for controlling steam turbines. UG-Dial governors are particularly suited for constant speed applications, and features include:

Knob speed settings make synchronization easy for generator applications, motor speed setting is available for remote synchronization, adjustable droop makes load sharing between engines precise

UG-25+: The UG-25+ governor is a microprocessor-controlled, mechanical-hydraulic amplified governor for controlling diesel, gas and dual fuel engines, and steam turbines. The UG-25+ offers enhanced control capabilities, such as start fuel and boost limiting schemes. The additional transient fuel limiting (jump-rate) improves the engine load acceptance and reduces transient emissions significantly.