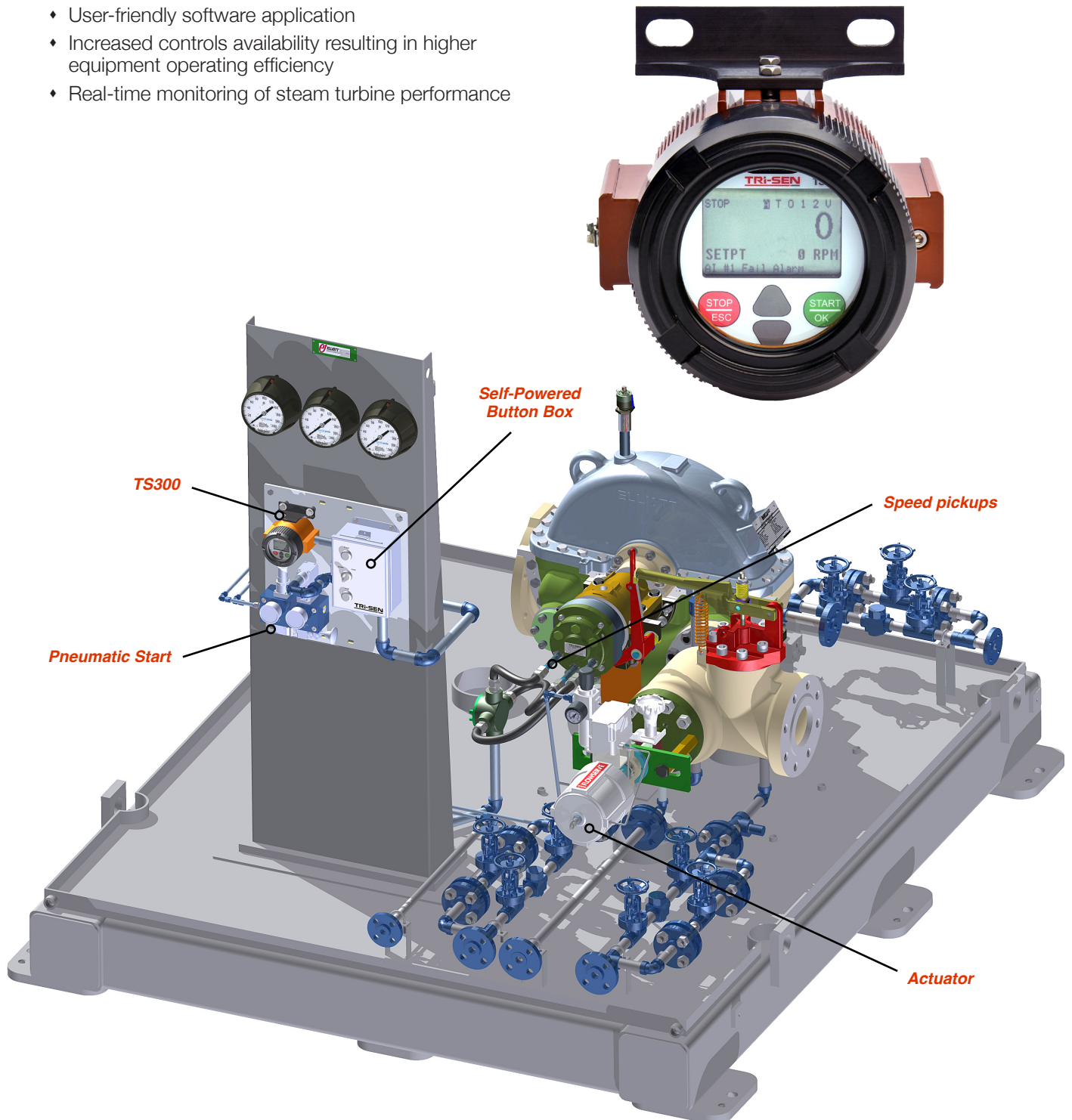




TS300 Self-Powered Digital Governor

The TS300 is a low-cost, compact, self-powered digital controller providing automatic startup and speed control for API-611 single-valve general-purpose steam turbines driving a mechanical load. Options include aluminum or stainless steel explosion-proof housing. Joint engineering between Elliott and Tri-Sen ensures a consistent controls interface with Elliott equipment. Standard configurations and project implementation standards ensure design efficiency and timely execution. The package benefits include:

- ◆ User-friendly software application
- ◆ Increased controls availability resulting in higher equipment operating efficiency
- ◆ Real-time monitoring of steam turbine performance



FEATURES

- ♦ Self-powered for remote/isolated applications (pneumatic air necessary for actuator)
- ♦ Configurable state accelerations ramp rate
- ♦ Auto Start (pneumatic startup assist when battery power is insufficient)
- ♦ Speed control with minimum and maximum governor speeds
- ♦ Front panel menu-driven configuration
- ♦ Valve-test
- ♦ Overspeed trip/test
- ♦ LiON battery backup
- ♦ UL (Class1,Div1), CL, ATEX (Ex d)

For applications where there is no power, the TS300 can run using power generated from two speed probes and has a battery backup, providing power when the turbine is stopped or operating at low RPM.

SPECIFICATIONS

Inputs

- ♦ Pulse: 2 passive inputs, 20-20,000 Hz, 1 to 10Vrms Sinusoidal to .05 RPM accuracy
- ♦ Analog: 1 input, 4-20mA
- ♦ Digital: 4 inputs, optically isolated with common return, 5V or 10V DC

Outputs

- ♦ Analog: 1 output, (self-powered: 0-5mA), (24V DC external power: 0-20mA)
- ♦ Outputs: 2, isolated, normally open contact, solid state relays

Power Supply

- ♦ External Power: 18 to 30 V DC 0.5typical @24 DC Manifold

Environmental Specifications

- ♦ Temperature: -20°C to 70°C
- ♦ Humidity: 0% to 90%, non-condensing
- ♦ Shock: 15G for 11ms, half sine, in each axis
- ♦ Vibration: Per axis: sinusoidal, 2.0G acceleration, 10 to 150 Hz

Control Logic

The TS300 Configurator is a Windows-based software application that allows the user to align the controller from a PC. Other features include: Simulate mode, which allows the user to test a configuration on a PC such as startup, speed ranges, ramp rates and digital functions remotely without running the turbine or connecting the TS300 controller. It also has real-time monitoring and trending mode, which shows actual I/O values and states, calculated values and alarm and trip history.

Retrofit Upgrade Kit

When upgrading from a mechanical governor or retrofitting existing controls, the Elliott aftermarket single-stage configurable control solution is the Tri-Sen TS300 series digital governor - a single source for rotating machinery excellence integrated with advanced turbomachinery controls. An installation kit provides customers with the necessary materials and instructions to ensure an accurate and safe installation. The kit includes:

- ♦ The governor in the explosion-proof housing mounted on a steel plate
- ♦ Junction box with push-buttons for field operations
- ♦ Low-powered I/P (for self-powered application)
- ♦ One (1) MG-10 (Uses existing TG-13 coupling)
- ♦ Two (2) MPU's for control signal
- ♦ One (1) governor valve actuator
- ♦ One (1) mounting hardware kit for actuator assembly
- ♦ TS300 configurator program



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