

PNEU-TRIP®

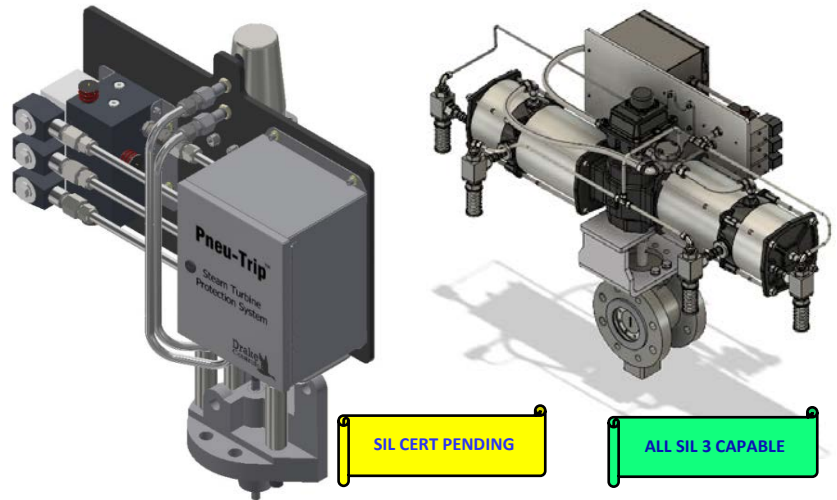


ELECTRO-PNEUMATIC TRIP SYSTEM FOR GENERAL PURPOSE STEAM TURBINES

PNEU-TRIP® is a state-of-the-art safety system designed for the protection of steam turbines. Each system includes a pneumatic trip block with SIL3-certified solenoid valves and SIL capable pneumatic actuator. When coupled with a Woodward ProTech SX, GII or TPS electronic overspeed detection system, PNEU-TRIP provides one of the most advanced, safe, high speed and reliable turbine protection solutions available.

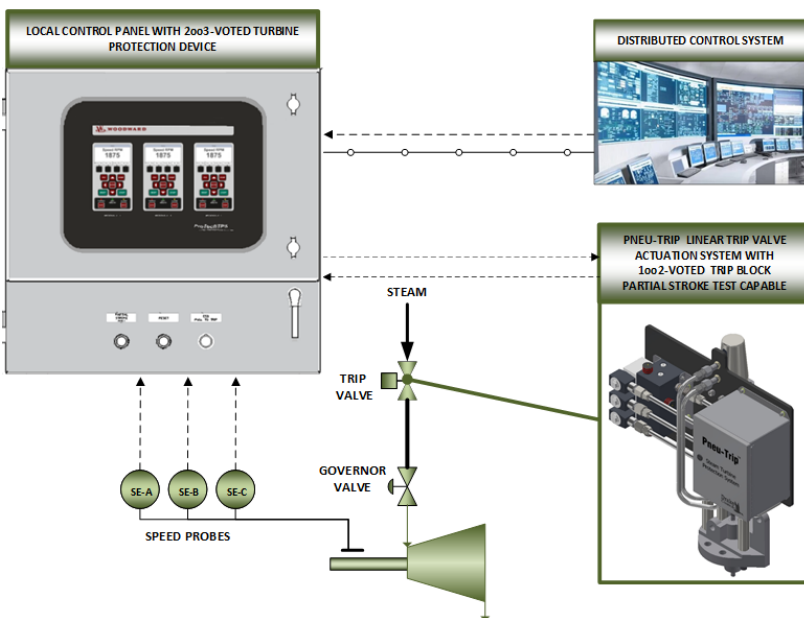
The system features the patented technology that employs a unique pneumatically engaged travel stop for partial stroke testing. While a typical pneumatic trip system falls short in exercising the emergency trip solenoid valves and actuator springs while introducing risks of tripping the turbine during partial stroke tests, the travel stop is immediately disengaged allowing for quick and safe shutdown of the turbine.

PNEU-TRIP components are designed to be fail-safe upon loss of electric or pneumatic power and are online replaceable in TMR configurations.



PNEU-TRIP Linear Trip Valve Actuation Assembly

PNEU-TRIP Rotary Trip Valve Assembly



Each trip actuation system can be furnished either standalone or as a complete safety solution, integrated with a Woodward electronic overspeed detection device such as ProTech SX or ProTech TPS. PNEU-TRIP also seamlessly integrates with the existing overspeed detection system, such as the ProTech-GII.

ProTech device is supplied in an industrial enclosure designed and fabricated to NEMA/UL standards by Drake Controls. The enclosure meets requirements of both area classification and ambient conditions of each specific installation.

Drake Controls also provides optional speed probes with mounting bracket and speed tooth gear.

Benefits

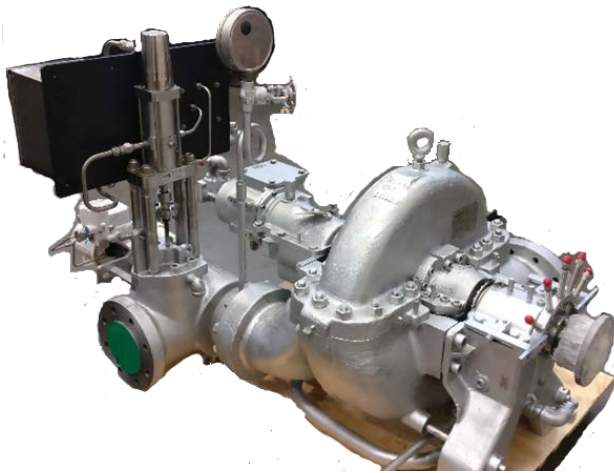
- Increase overall reliability of turbine trip system
- Reduce risks of overspeed trip failures that can lead to equipment damage and loss of life
- Eliminate human safety risks and high costs of mechanical overspeed trip tests
- Minimize insurance premiums
- Eliminate downtime and loss of production due to failures of mechanical trip system components
- Comply with latest API standards
- Accurately validate trip valve movement during PST
- Loosen buildup of deposits on valve stem
- Test trip solenoids and actuator springs online
- Obtain access to trip system diagnostic data

Features

- Complete Replacement of Mechanical Overspeed Trip
- Fast and Accurate Pneumatic Actuation
- Overall Trip Cycle Times below 100 Milliseconds*
- Seamless Integration with Woodward ProTech
- SIL-rated Safety System Components **
- High Safety (1oo2) and High Availability (2oo3) SOV Blocks
- Models with Online Replaceable Components
- Linear or Rotary Actuation Assemblies
- Pre-Configured & Tested, Ready to Be Installed on Turbine Chest/ Inlet
- No Turbine Disassembly Or New OEM Components Required
- UL/CSA/FM Approved, Class I, Div. I/II, Groups A,B,C & D Electric Components

Installation

A factory-assembled and tested PNEU-TRIP linear trip valve actuation system is mounted directly on the steam chest and coupled to the OEM trip valve.



PNEU-TRIP quarter-turn rotary actuation system is supplied fully assembled with a zero-leakage quarter turn valve. PNEU-TRIP rotary trip valve system is mounted on turbine inlet flange.

Controls & Instrumentation

- Digital speed governors
- Compressor control systems
- Custom control panels built to UL and NEMA standards
- Magnetic pickups
- Speed sensing gears
- Governor valve actuators

Services

- Systems engineering
- Site surveys
- Installation assistance
- Site acceptance tests
- Startup and commissioning
- Technical Support Call Center
- 24-hour response

* Will depend on actuator size/model and length of tubing for remote-mount trip block models

** Rotary actuators are SIL3 capable. Linear actuator SIL certification pending