Nuclear Environment. One Answer.

TOPWORX™

EMERSON™
Process Management

Emerson Process Management

Emerson Process Management is a powerful, global, single source of process improvement technology and expertise. We help major companies in selected industries optimize their plants and processes to achieve higher quality, greater reliability and faster time to market, while steadily advancing productivity and profitability.

We can build it: providing experienced project management, engineering and a single point of accountability for the entire instrumentation and automation system. **We can connect it:** seamlessly integrating people and technology at every level of the process. **We can improve it:** creating more efficient utilization of energy and raw materials. And **we can sustain it:** producing greater reliability, month after month, year after year. From the field, to the plant, to the bottom line: where performance is the question, Emerson is the answer.

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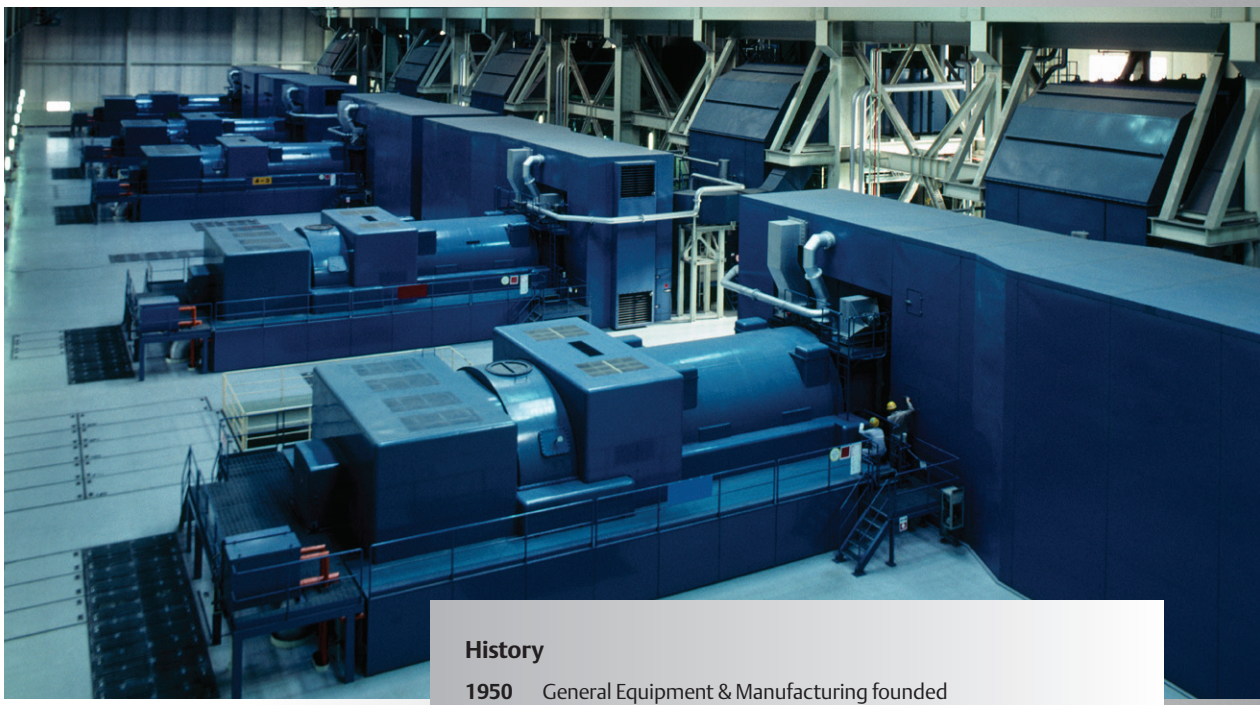
The Advantage of Being A Leader.

TopWorx, a business unit of **Emerson Process Management** has been supplying the nuclear industry with Nuclear Qualified Proximity GO Switches for over a decade. With over ten thousand GO Switches installed in Nuclear Power Plants all over the world, they have a proven track record for reliability and durability in the toughest, most demanding conditions.

Benefits:

- Reduce installation time and cost
- No maintenance required
- Considerably reduce REM exposure to maintenance personnel
- Significantly lowers switch replacements and adjustments
- Seamlessly integrates with legacy and PLC control systems
- Improves plant safety
- Addresses Fukushima concerns
- Eliminate unscheduled down time



History

1950	General Equipment & Manufacturing founded
1958	GO Switch invented
1997	Company Renamed “TopWorx”
2001	Development of 1st Generation Nuclear Proximity Switch
2008	Acquired by Emerson
2008	Development of 3rd Generation Nuclear Proximity Switch
2009	Selected for the Westinghouse AP1000 platform 10CFR50 Appendix B and Part 21 program
2011	Certified for the Westinghouse AP1000 platform Selected for the Advanced EPR K1+ Severe Accident qualification
2014	Certified for the EPR K1+ severe accident (pending)

Turnkey Nuclear Solutions

TopWorx is the world's first manufacturer of Nuclear qualified proximity switches and provides support, application assistance, and training at all levels (OEM, EPC, and End-User) to ensure smooth integration.

Emerson's Instrument & Valve Services offer highly trained technicians, proprietary data and advanced technology to insure successful installation.

Nuclear Logistics Incorporated (NLI) will assist in integrating the GO Switch into your facility by performing the equivalency for you. NLI can also assist with bracket design and manufacturing as well as dedication and environmental testing.

These services free up your maintenance personnel for other activities, while proving to be time-saving and cost-effective.

C7 – Containment Qualified (LOCA)

The C7 proximity switch was designed for use in containment and can withstand a Loss of Coolant Accident (LOCA) event for 1 year. It is certified to meet the highest vibration and submergence requirements in the nuclear industry.
Available SPDT and DPDT

Features:

- 106 year qualified life
- LOCA / Fully Submersible – Triple Seal
- Exceeds Global and Post Fukushima Submergence and Seismic requirements 10G RIM
- Highest Operating Temperature 400°F (204°C) Operating - 500°F (260°C) Peak

H7 – Containment Qualified (Non-LOCA)

The H7 proximity switch is designed for use in or outside containment Non LOCA. It has the pedigree to meet the highest vibration and Non LOCA Environmental requirements in the nuclear industry. Available SPDT and DPDT

Features:

- 106 year qualified life
- Exceeds Global Environmental Non-LOCA and Post Fukushima Seismic requirements 10G RIM
- Highest Operating Temperature vs competition (400°F Operating - 500°F Peak)

SV7 – HELB/MSIV Qualified

Designed to endure a high energy line break (HELB) environment, the SV7 proximity switch can withstand 260°C (500°F) peak temperature during a HELB and operate continually at a temperature of 204°C (400°F).

Features:

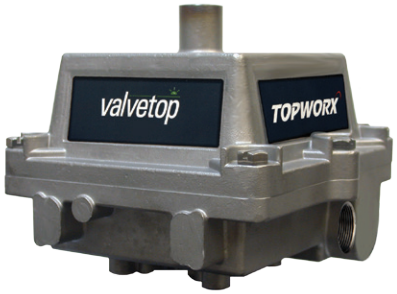
- 106 year qualified life
- Sealed from steam, leaks and water ingression
- Exceeds Global Environmental HELB Non-LOCA and Post Fukushima Seismic requirements 10G RIM
- MSIV Pedigree and Qualification

M7 – Non-Containment

The M7 is specifically designed for outside of containment and critical to operations BOP. The M7 has a 106 year qualified life and will operate continually at 250°F.
Available in SPDT and DPDT

Features:

- 106 year qualified life
- Exceeds Global Seismic requirements 10G RIM Sealed



DXN – Containment Qualified (LOCA)

The DXN discrete valve monitor is qualified for use in containment and is the best solution for quarter-turn AOVs. It contains two GO Switches to give open/close indication, a ceramic terminal block for quick and easy wiring and it mounts directly onto the actuator for a seamless valve package. Solenoid valve can be nipple mounted to monitor and terminated inside.

Features:

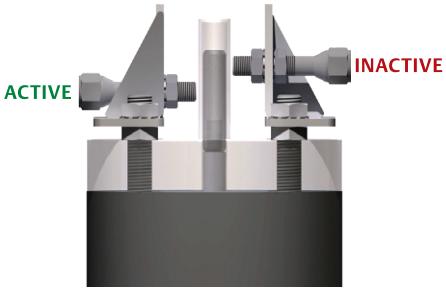
- 106 year qualified life
- Negates the need for separate junction box
- Reduces piping and number of disconnects for easy set-up
- Exceeds Global LOCA and Post Fukushima Seismic requirements 10G RIM
- Global Qualifications LOCA - IEEE/Gen 2 and 3/ AP1000 /RCC-E/ CANDU/Qinshan/KHNP

Defender Turbine Valve Position Monitor – Nuclear Harsh/Non LOCA

The GO Nuclear DEFENDER is the most dependable Turbine Valve Monitor System available today. Combining GO Switch technology and value with an all-in- one cabinet for easy installation.

The GO Nuclear DEFENDER offers a robust, sealed, modular design, that is packed with up to 10 Nuclear Qualified GO Switches. Designed to withstand high dose radiation, high intensity seismic (6.6G RIM) and high temperature and direct steam leaks, the GO Switch Nuclear DEFENDER Turbine Valve Position Monitor is far superior than any conventional mechanical switch for Turbine Valve position indication.

Available in commercial versions.



TopWorx Nuclear “See Through” Technology

In the past, linear and swing check steam valve position could only be done by providing an external target magnet for a mechanical lever arm switch to sense. This method created a high probability of steam leaks and was a design nightmare for OEMs.

TopWorx Nuclear “See Through” Valve Position Packages offer a Non-Intrusive Valve Position Monitor Package that allows Valve Manufacturers to provide Position Sensing without penetrating steam valve’s pressure boundary or designing an external target.

- Patented Non Intrusive Valve Position Sensing Through Non Ferrous Metals
- For use on Linear and Swing Check Steam valves.
- Application Engineering Assistance Available.

TOPWORX

Performance On. Worries Off.

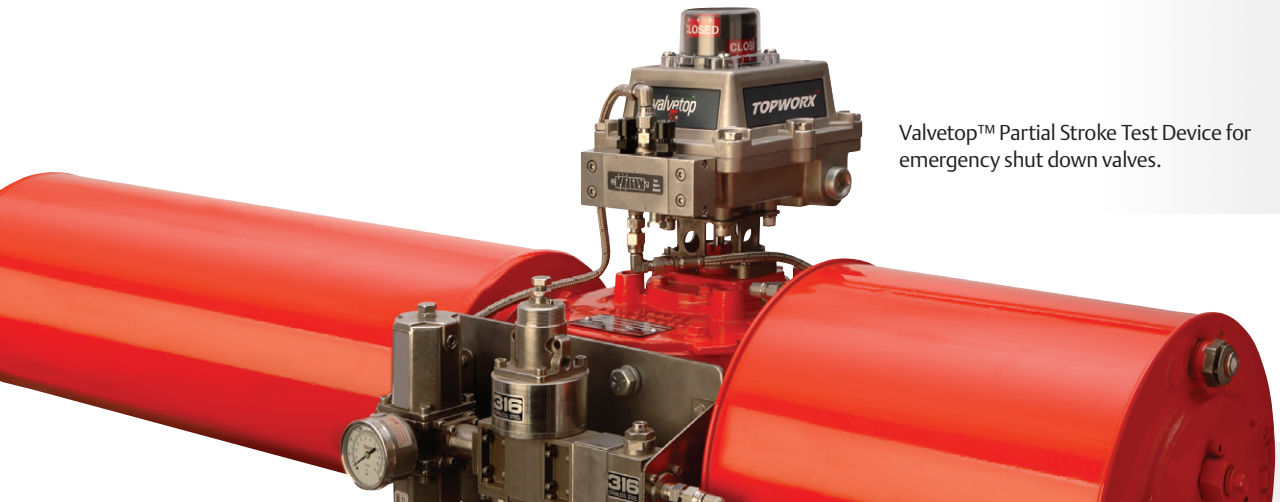
Our products offer solutions throughout plants across the globe. Reliability and performance are an integral part of process industry success. Need results? Visit us at www.topworx.com for more process industry solutions.

valvetop™ discrete valve controllers enable automated on/off valves to communicate via FOUNDATION Fieldbus, DeviceNet, AS-Interface, Profibus, Wireless HART and HART protocols. They attach to all rotary and linear valves and actuators, operate in the most demanding environmental conditions, and carry a variety of hazardous area certifications.

GO SWITCH™ is the most versatile sensing solution and provides position sensing when conventional switches fail. It detects like a proximity switch and functions like a limit switch. Providing higher reliability in extremely hot, cold, wet, dirty, abusive, corrosive, and explosive environments.

GO Gets It.

Smart Wireless The TopWorx™ 4310 Wireless Position Monitor and on/off controller is a component of Emerson's Smart Wireless solutions for field instrumentation. Smart Wireless extends PlantWeb's predictive intelligence into areas that were previously out of physical or economic reach, opening the door for new possibilities in process management. This non-obtrusive position monitor won't disrupt your existing process and is easy to overlay. The 4310 can be used to monitor and/or control equipment such as process valves, regulators, and displacement.



Valvetop™ Partial Stroke Test Device for emergency shut down valves.

EMERSON™
Process Management

Global Industry Expertise

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GO SWITCH valvetop

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ES-04329-1 R1