

Solenoid Valve Solutions

for Nuclear Power



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Fluid Automation. Right. Now.™



Presenting ASCO Solutions

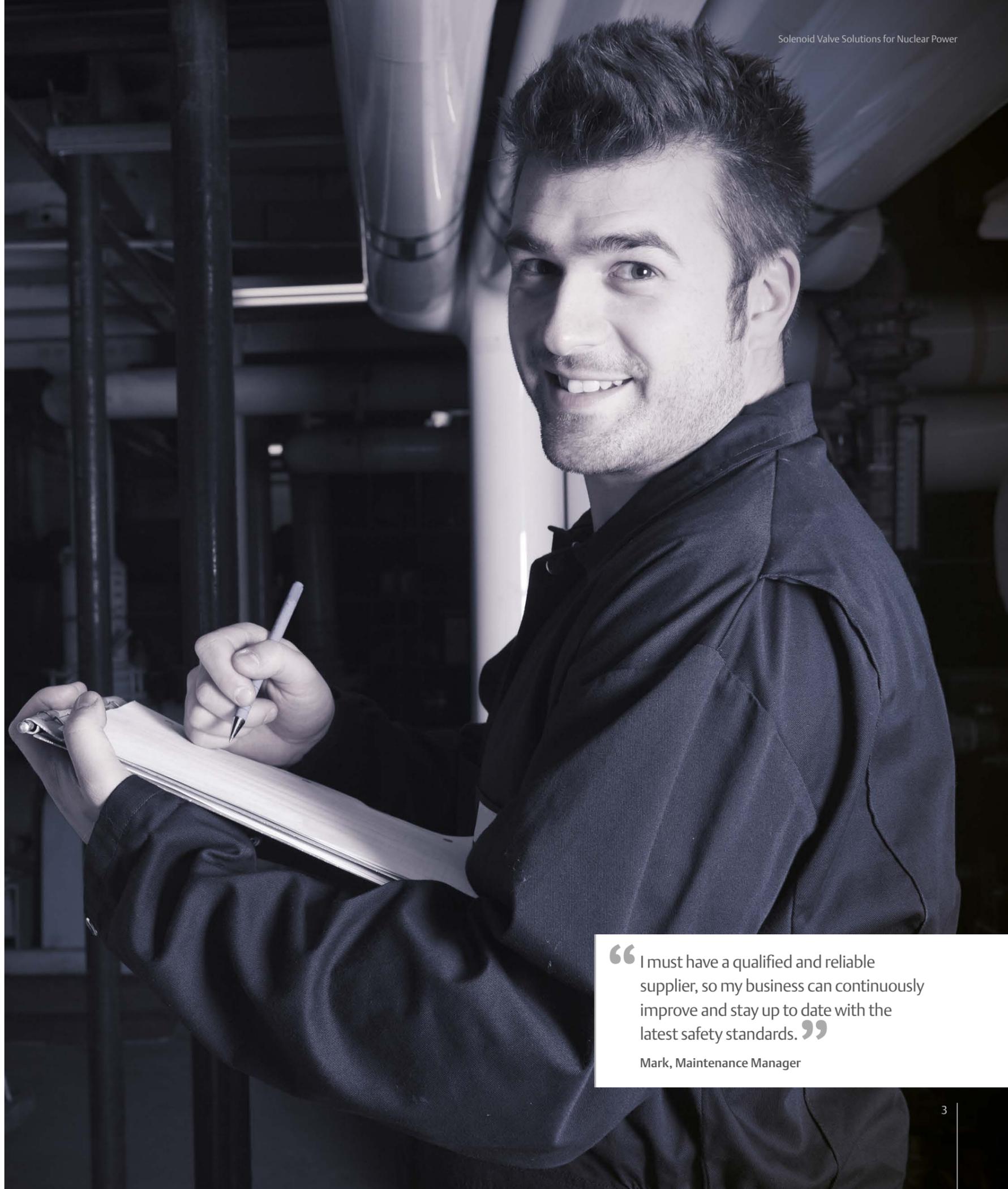
Choose from the industry's most reliable, proven, qualified selection of control solutions for global nuclear power applications. No other supplier can match the experience, applications expertise, and in-depth local response that have made ASCO the leader in its field.

The trusted choice for nuclear power

ASCO is the global leader in nuclear-qualified solenoid valves for nuclear power plants. The ASCO heritage of leadership in this field began with the nuclear industry's inception. Original equipment manufacturers (OEMs), architect engineers, project managers, and utility engineers rely on us for all their nuclear power projects — from grassroots construction to life extension to modernisation and power uprates.

Our nuclear-qualified and critical-application solenoid valves, pressure and temperature switches, Hydramotor® actuators, and complete engineered valve solutions provide proven service in key safety and balance-of-plant applications, including the following:

- Emergency core cooling systems
- Emergency generator systems
- Steam generator feedwater systems
- Containment sampling systems
- Auxiliary feedwater systems
- Liquid radiation waste systems
- Turbine bypass systems



“ I must have a qualified and reliable supplier, so my business can continuously improve and stay up to date with the latest safety standards. ”

Mark, Maintenance Manager

The greatest experience

ASCO solenoid valves were onboard the first nuclear-powered submarine, the USS Nautilus, in the 1950s. Later, our valves protected the earliest commercial nuclear power plants. In 1978, ASCO valves were among the first and only to be nuclear-qualified to IEEE and RCC-E specifications.

More than 440 nuclear power plants are now in operation, with more under construction. From the Americas to Europe to Asia, ASCO has equipped nearly every plant. We've been the worldwide supplier of choice for PWR, BWR, and Candu reactors from major manufacturers including Westinghouse, AREVA NP, GE-Hitachi, Toshiba, Mitsubishi, AECL, EDF, and CGNPC.

When it comes to proven longevity; expert engineering, quality, and manufacturing; and unsurpassed customer support, no one else even comes close.

The most nuclear-qualified offering

ASCO products from our specialised nuclear line are specifically designed for environments with high radiation, temperature, and seismic requirements. Commercial, off-the-shelf offerings simply cannot compare for nuclear-critical applications.

Our products are also qualified to operate on demand during a design basis event (DBE), loss of coolant accident (LOCA), high-energy line break (HELB), or main steam line break (MSLB).

Moreover, ASCO products for key nuclear applications are manufactured with traceability. This greatly simplifies the task of providing information that regulators demand. Finally, these products are comprehensively qualified to meet requirements imposed under standards such as CNCC in China; RCC-E in France; IEEE in the U.S., Europe, and Asia; and JEAC in Japan.

ASCO also provides the same level of rigor and quality to non-safety nuclear valve solutions.



The most global response

ASCO matches global presence with responsive local support.

Unlike other nuclear suppliers in our class, we keep teams on the ground in the U.S.A., Canada, France, Japan, South Korea, India, and China — all with engineering, manufacturing, and support capabilities. Our experts not only speak your language: they speak nuclear. And their job is to make your job easier. For example, our engineers add new product features as needed.

Have a question about product development, equipment qualification (EQ), localized compliance, a specific application, or a service task? ASCO provides immediate response and fast solutions.

More ASCO advantages

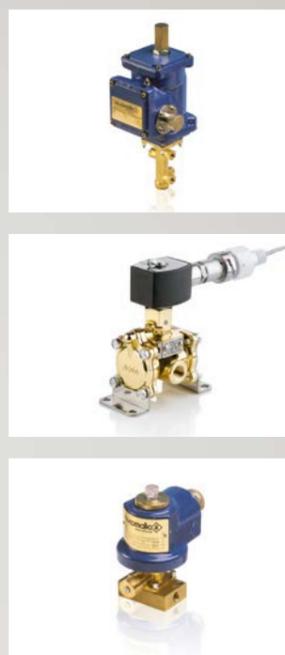
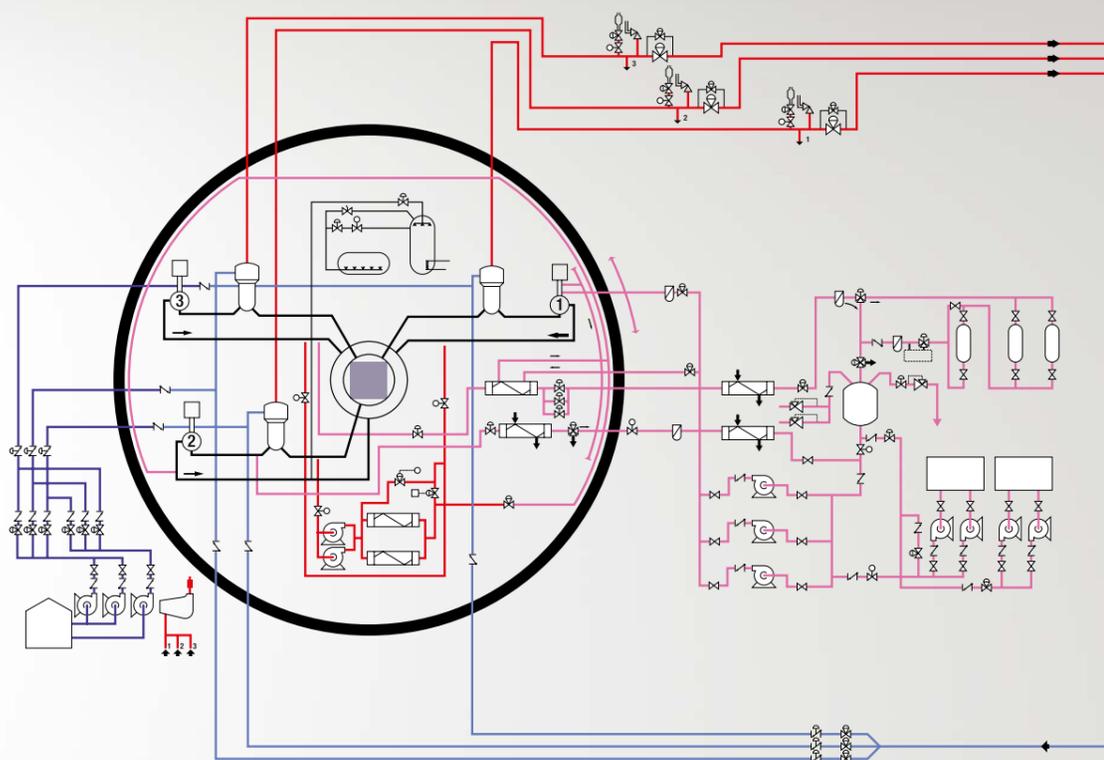
The products you want. Our quality nuclear-qualified 2-, 3-, and 4-way solenoid pilot valves; check valves; pressure and temperature switches; linear Hydramotor actuators; and complete engineered valve solutions are offered for all levels of nuclear plant use. **Safety-grade** products provide the features needed for safety systems, including traceability. **Critical-grade** products offer some of the same key advantages, including traceability, temperature rating, seismic testing, and radiation resistance. Additionally, ASCO offers desirable product advantages such as diodes that provide simple surge protection for your control, quick-disconnect connectors for increased safety and reduced maintenance, and radiation-resistant elastomers for long life.

The quality you demand. ASCO valves, switches, and Hydramotor actuators are designed and manufactured to meet stringent nuclear specifications and standards — at our ISO 9001-certified plants in Aiken, SC, U.S.A.; Luce, France; and Nishinomiya City, Hyogo, Japan. Our quality assurance programs comply with the most exacting regulatory requirements, such as those in 10 CFR 50, Appendix B; JEAC4111-2003; and SGAQ-EDF. All our nuclear products are 100% inspected and functionally tested prior to shipment.

Safety systems

ASCO nuclear-qualified valves, switches, and actuators are indispensable parts of any nuclear plant safety application. Each has passed the most rigorous testing for nuclear equipment and environmental qualification (EQ). No matter what the occurrence — DBE, LOCA, HELB, or MSLB — these flagship nuclear products are manufactured with a high degree of designed-in quality and proven performance. Additionally, they are backed by the most responsive local support teams in their class, from development through testing to operation and service.

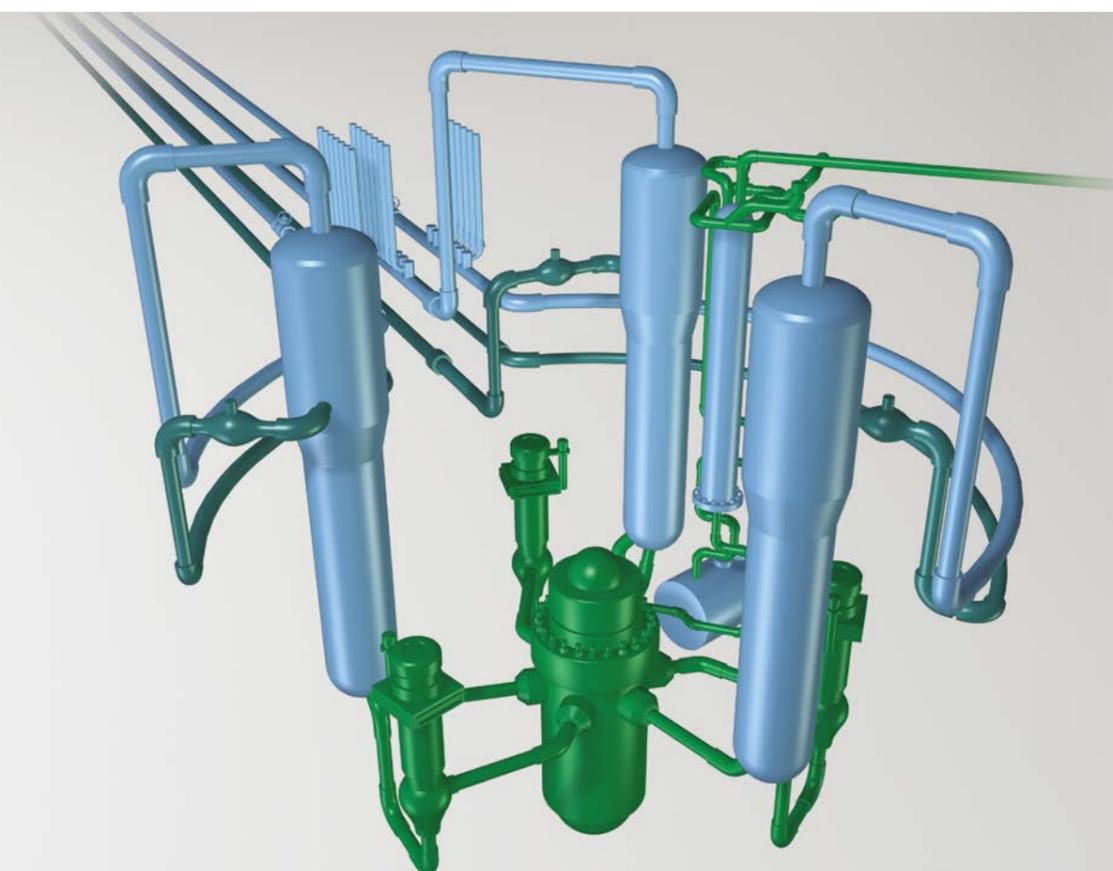
- Reactor Control
- Emergency Core Cooling
- Containment Sampling
- Chemical and Volume Control
- Reactor Cooling



Steam generator systems

In the harsh, often inaccessible world of the steam generator, you need ASCO traceable, environmentally qualified, nuclear-qualified products to help improve plant uptime. Offerings such as our nuclear-qualified pilot valves are tested and proven to function with high reliability — despite the high temperatures and constant cycling found in this area of a pressurised water reactor (PWR). Again, our local nuclear team offers comprehensive product support.

- Main Steam Isolation
- Steam Generator Feed Isolation
- Main and Auxiliary Feedwater
- Steam Generator Blowdown



In boiling water reactor (BWR) plants, ASCO provides and supports the original equipment safety system scram solenoid pilot valves (SSPV) for hydraulic control units (HCU), and directional control valves (DCV) for control rod drives (CRD).



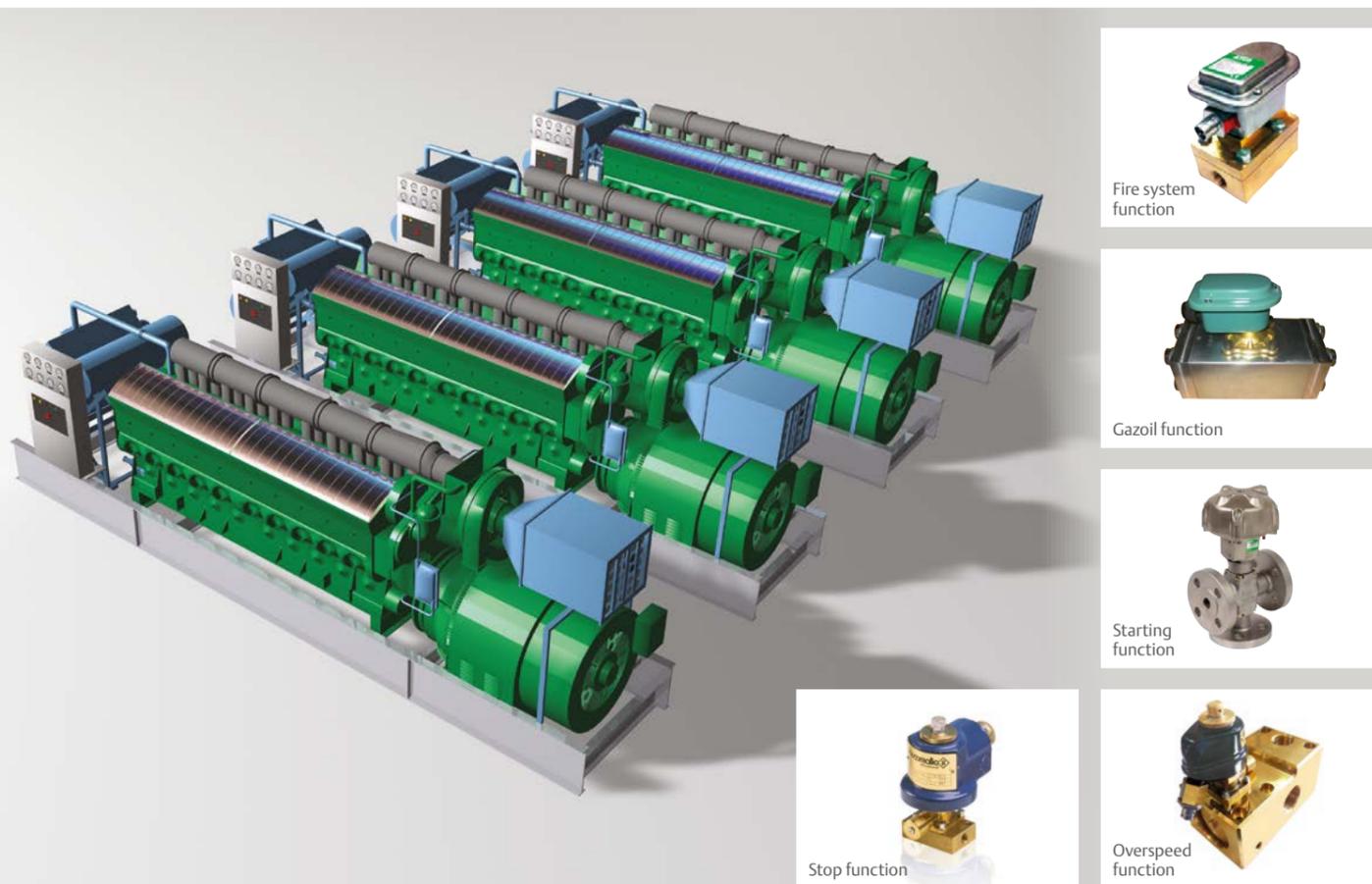
ASCO has been the worldwide supplier of choice for PWR, BWR, and Candu reactors from major manufacturers including Westinghouse, AREVA NP, GE-Hitachi, Toshiba, Mitsubishi, AECL, EDF, and CGNPC.



Diesel backup generator systems

When plant operating power goes out, the reliability of your diesel backup becomes essential. ASCO valves bring nuclear-qualified reliability to challenging tasks such as diesel air starts.

- Generator Coolant Control
- Diesel Air Intake Control
- Fuel Control
- Air Start
- Temperature Monitoring and Control



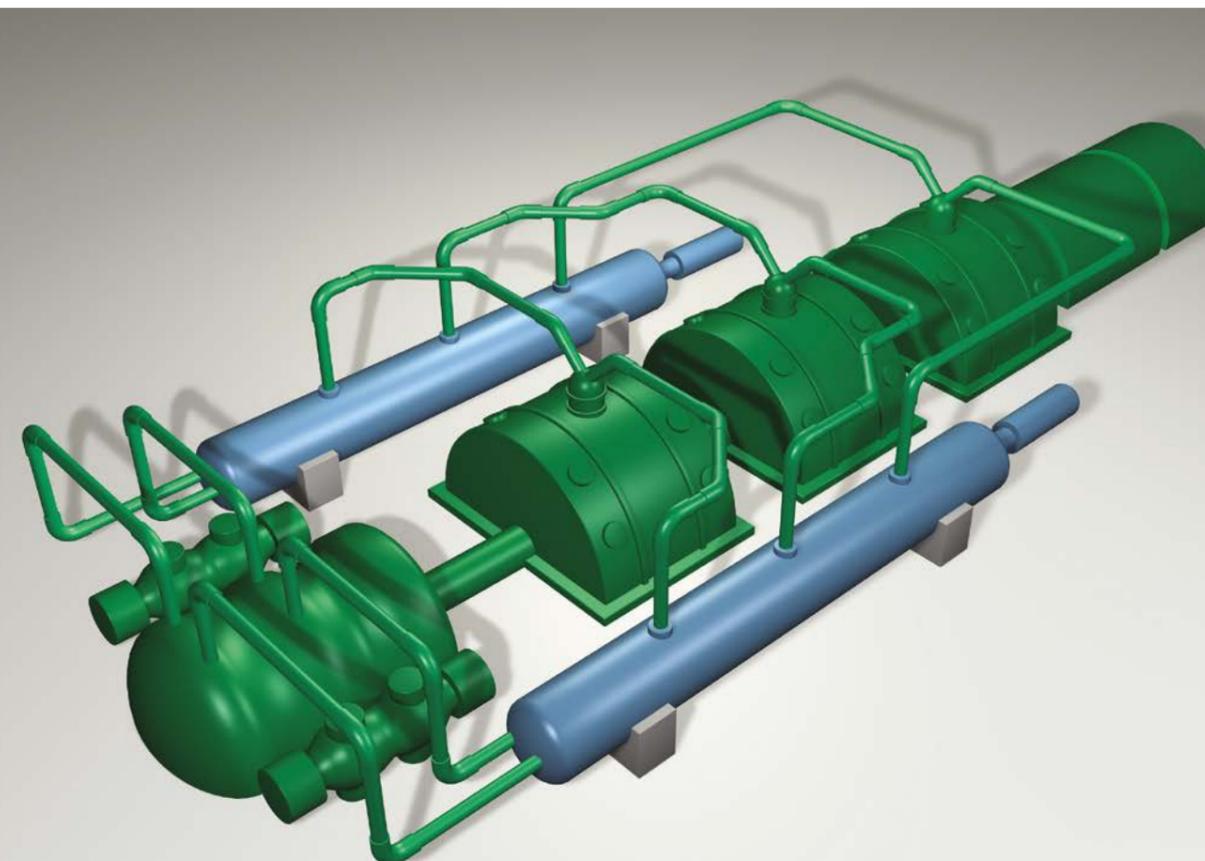
ASCO Hydramotors are electrohydraulic actuators with precise linear-motion output used to control dampers, louvers, or process valves.



Steam turbine generator systems

With these crucial applications in the nuclear power plant, failure leads to plant shutdown. Critical-grade ASCO valves possess the key attributes needed for this application, derived from our safety-grade nuclear offerings. They are tested to withstand seismic events and provide traceability. Your local ASCO nuclear team stands ready to respond quickly and completely to improve overall plant uptime and reliability.

- Turbine Oil Bypass
- Turbine Trip
- Steam Line Condensate
- Turbine Exhaust Drain
- Temperature and Pressure Exhaust Monitoring



ASCO solutions and service

ASCO provides global engineered solutions to integrate valves into a complete customer-qualified and tested package, including solenoid valves, a filter/regulator, switches, tubing, electronics, and a control panel.



Why Emerson

Emerson has an established worldwide reputation for technology innovation and industry leadership. Our technologies have served to transform entire industries, from the creative solutions provided by the smallest detail, to their greater collective impact on the environments we live and work in. Helping our customers achieve that distinct competitive advantage is our priority.

Problem solving is our passion. We are committed to driving technological progress and setting the standards of the future by maintaining a strong focus on research and development, and investment in training and future talent. Our approach includes extensive research on both emerging technology and key global market trends, and our own customer challenges enable us to prioritise our R&D efforts.

Emerson. Consider it solved.



Global leadership

ASCO, a company of Emerson, offers comprehensive fluid automation solutions, including flow control and pneumatics products, for a wide range of industry-focused applications. The ASCO line comprises more than 50,000 valves, an extensive selection of air preparation equipment, and a comprehensive line of motion control products. The company is the world's leading manufacturer of solenoid valves.

Emerson (NYSE: EMR), based in St. Louis, Missouri (U.S.A.), is a global leader in bringing technology and engineering together to provide innovative solutions for customers in industrial, commercial, and consumer markets through its network power, process management, industrial automation, climate technologies, and tools and storage businesses. Emerson's sales in fiscal 2010 were \$21 billion.