

framato™

| Total Training Solutions



Every Innovation Has a Mission

Challenge

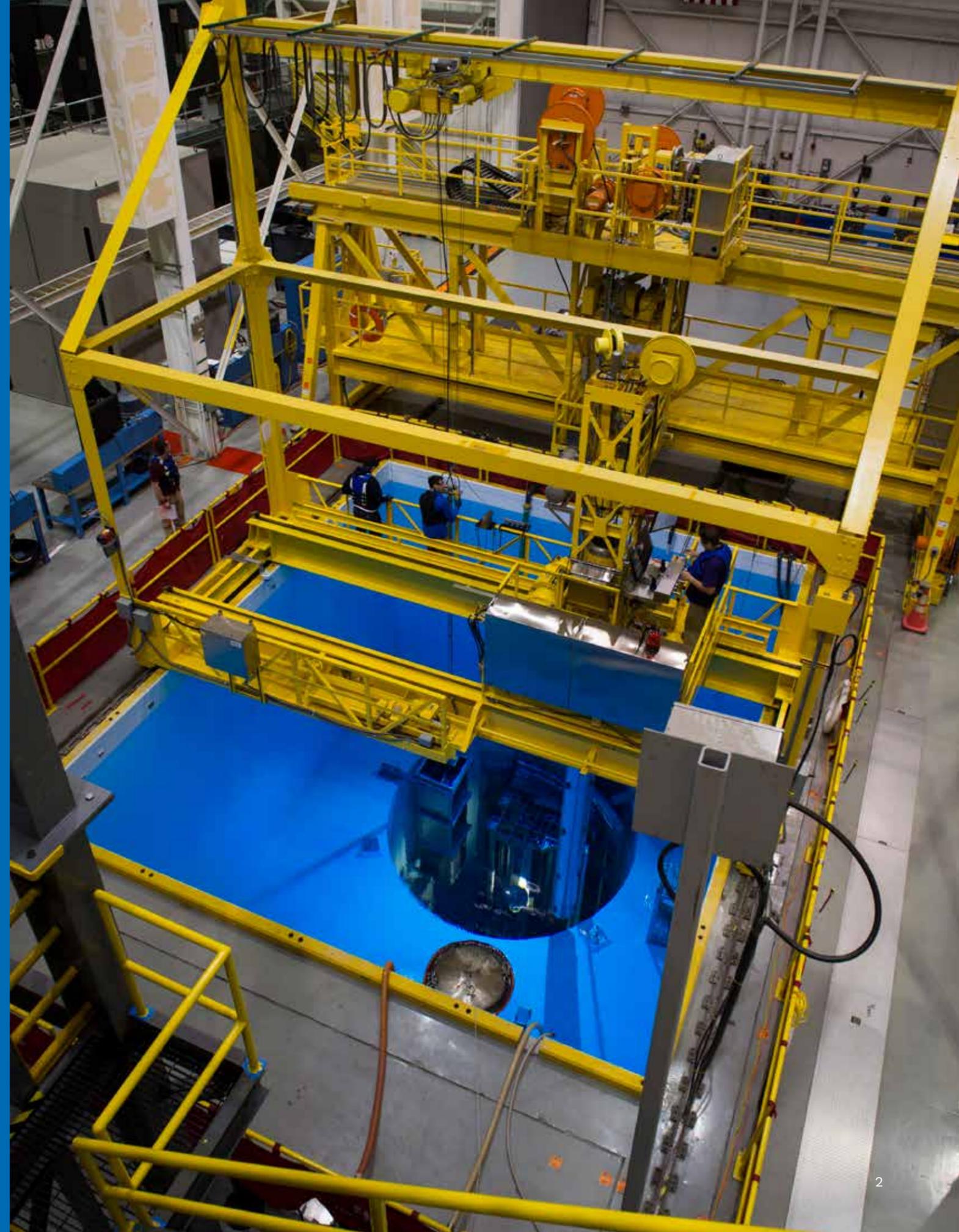
One of utilities' top priorities in the 21st century is securing operational excellence. Tangible results that ensure safety, quality, performance and delivery are paramount. Today's nuclear fleet needs teams they can count on to:

- Reduce cost, critical path time and dose
- Increase task safety and efficiency
- Resolve emergent issues quickly
- Improve plant performance

Plant operators, whether BWR or PWR, need a skilled team that's fully trained in the latest tools, equipment, and technology for any issue as well as safe solutions for emergent issues, should the need arise.

Solution

To offer the industry the latest technology to keep personnel, techniques, and designs up-to-date in the face of ever-changing regulatory and technological advances, Framatome continues to invest in its Technical Training Center (TTC) — a 27,000-square-foot non-contaminated facility with classrooms, office space, and full-scale mockups. Opened in 2004 in Lynchburg, Va., Framatome's Technical Training Center is the only U.S. facility of its kind that has both PWR and BWR training capabilities in the same full-scale refueling canal as well as mockups for reactor vessels, BWR tower and well, multiple PWR configurations and other heavy equipment. In addition to soft skills, such as human performance, safety, and leadership, we can offer rigging, overhead crane use, BWR and PWR fuel handling training, PWR reactor disassembly/re-assembly training, and BWR under vessel training.



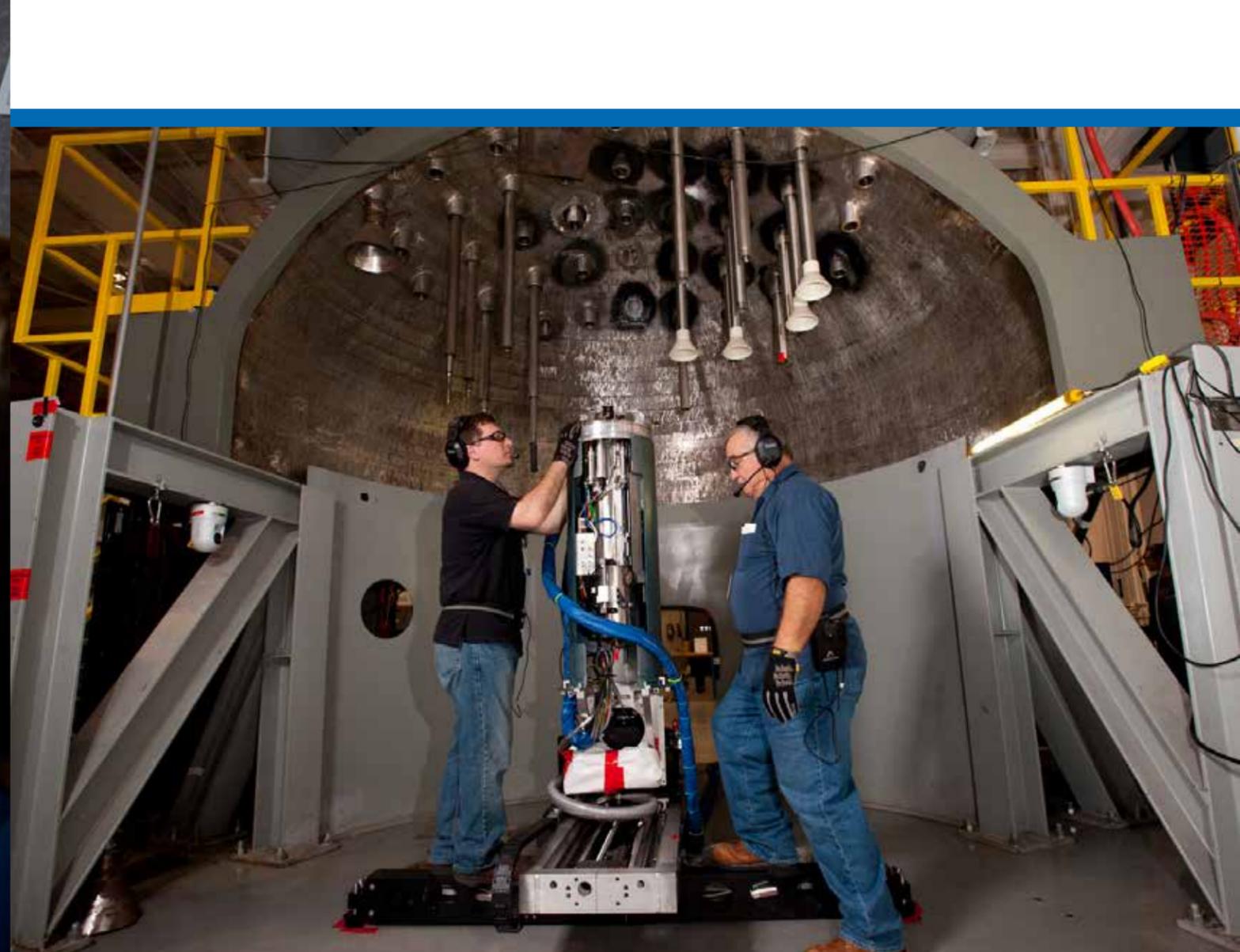
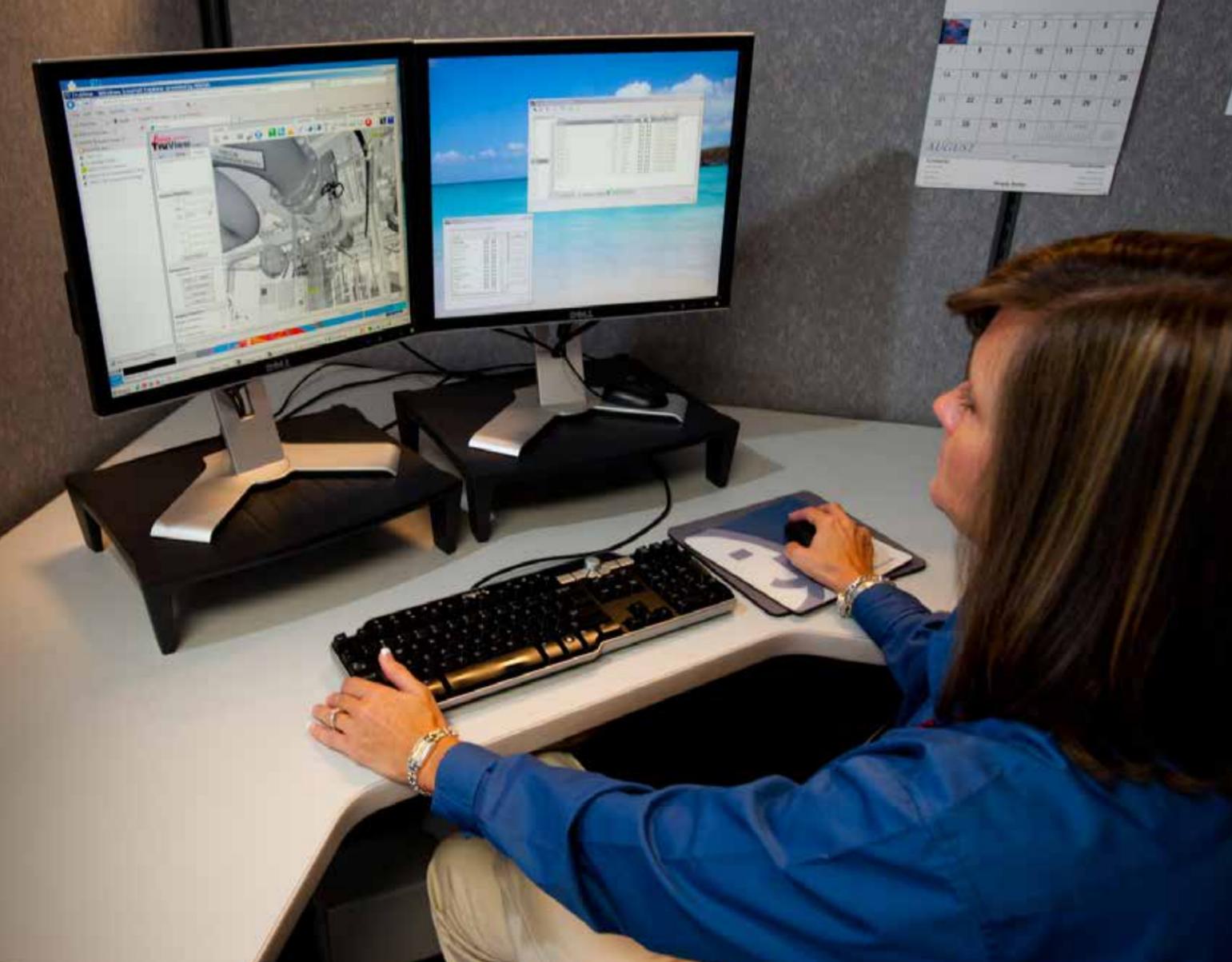


Embracing Innovation. Valuing People.

Using the resources at the Technical Training Center, Framatome continues to build a highly responsive force of skilled nuclear maintenance technicians ready to provide tailored non-destructive examination (NDE), component repair & replacement (CR&R), and refueling services to address your specific challenges. We develop and implement integrated services that consider how maintenance and training evolve at your site and can provide custom services to qualify Framatome, utility or global personnel for working to U.S. nuclear

industry standards. But that's not all. At Framatome's Technical Training Center, we work daily to adapt and develop technology with you in mind. Need solutions for emergent industry issues? The research is ongoing at the Technical Training Center. Have emergent needs? Our teams thrive on the opportunities. After all, it's not only a chance to help your plant stay on the grid during times of peak demand. It's also a chance to help you succeed — 24 hours a day, 7 days a week.





Features

- State-of-the-art classrooms
- 27,000 ft² for training bays
- Multiple overhead cranes with up to 50 ton capabilities
- Multiple PWR and BWR mockups
- Reactor vessel closure head (RVCH) mockups
- Reactor vessel (RV) mockups
- PWR and BWR refueling bridges
- 177,000 gallon reactor vessel & cavity
- Tower/well BWR mockup
- Component repair & replacement (CR&R) mockups and weld tools
- RVCH and BMN cavitation peening mockups
- NDE lab

Overall Capabilities

- RVCH maintenance and examination training for CE, B&W, and Westinghouse designs
- BWR and PWR fuel manipulator crane operator training
- Control Rod Drive Mechanism (CRDM) training
- RV NDE training & tooling development
- SGR primary pipe severing and beveling
- CR&R machining training & tooling development

Generic Training Capabilities

- Safety
- Rigging
- Human performance
- Foreign material exclusion
- Dynamic learning activities
- Hazardous materials handling
- Audio and video

Framatome offers numerous state-of-the-art BWR mockups and configurations to train and qualify the next generation of nuclear worker — the latest addition is a full BWR under vessel mockup including full 360-degree rotating platform and sub-pile room simulation.



BWR Training Capabilities

Used to familiarize or fully train and qualify our personnel — or yours — on a full-sized mockup of what they will encounter in the field, our BWR under vessel mockup training includes:

- Tip tubing removal and installation
- Shoot-out steel removal and installation
- CRDM removal and installation
- Control rod drive rebuild training
- Use of full carousel and leveling tray
- Uncoupling control rod blades
- Thermal sleeve removal and installation
- Blind flange removal and installation
- Instrumentation and control maintenance
 - RPIS probe removal/install
 - LPRM disconnect/reconnects
 - LPRM hardware removal/install
 - LPRM drain can removal/install
- BWR fuel handling on full-scale BWR refueling platform
 - Basic and advanced fuel handling and fuel spotter training
 - In-vessel maintenance including:
 - Control rod blade (CRB) exchange
 - LPRM and dry tube replacement
 - Jet pump maintenance
 - Camera handling/video for in-vessel visual inspection activities
 - Actual in-vessel visual inspection for IVVI Level II qualification
 - Remote IVVI tooling qualifications using HawkEye

PWR Training Capabilities

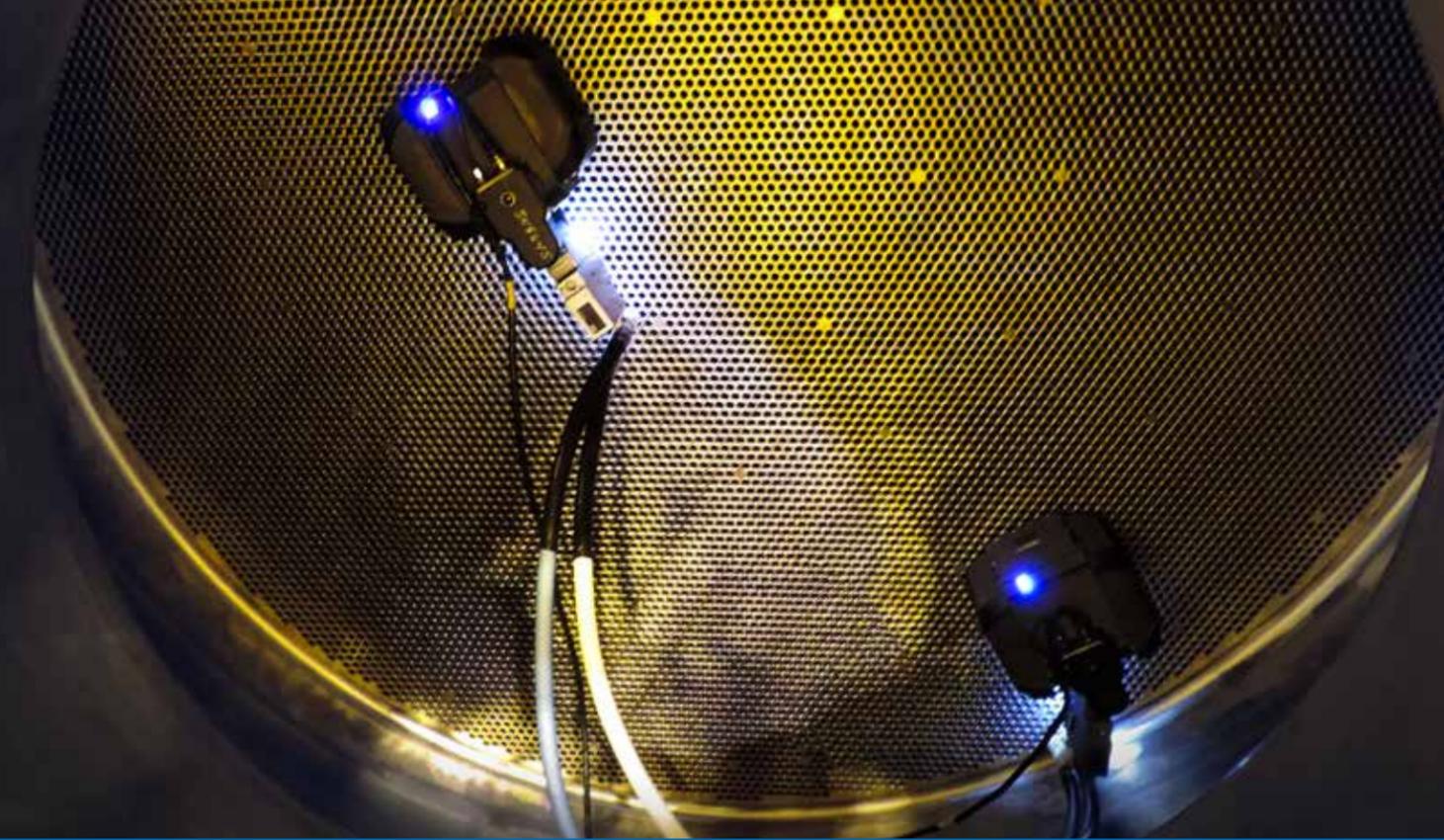
- Westinghouse, B&W, and Combustion Engineering reactor vessel disassembly/re-assembly
- Guide studs installation, stud hole plug installation
- CRDM latching, unlatching, and verification
- CE design blind flange removal/installation
- Core exit thermocouple nozzle assembly (CETNA) disassembly/re-assembly
- CEA extension shaft coupling/uncoupling
- ICI flange disassembly/re-assembly
- Diamond Power/Biach stud tensioner operation and refurbishment
- Cavity hatch cover removal/installation
- Segmented cavity seal ring installation
- PWR fuel handling on full-scale wet Stearns Roger bridge
 - Basic and advanced manipulator crane operator
 - Refuel canal spotter
 - Refueling SRO familiarization
 - New fuel receipt
 - Spent fuel handling operator
 - Transfer system operator
 - Fuel handling tools:
 - New fuel handling tool
 - Spent fuel handling tool
 - BPRA tool
 - RCCA change tool
 - CRDM unlatching tool
 - Thimble plug tool

Framatome's extensive PWR mockups provide hands-on training for plant-specific configurations and new procedures in a safe, realistic environment that is conducive to learning and sharing information.



Since the opening of its Mill Ridge Road facility — even prior to opening the Technical Training Center — Framatome has continued to develop and procure a variety of steam generator (SG) mockups to aid in training for existing processes as well as emerging issues in the SG market. Perfecting our processes is key to our success and will remain a

fundamental attribute for Framatome's steam generator teams going forward. In addition to perfecting our processes through rigorous training, R&D is also conducted in the SG mockup area including new tooling and process development/enhancements, probe testing, tube-to-tube wear and other industry emergent issues.



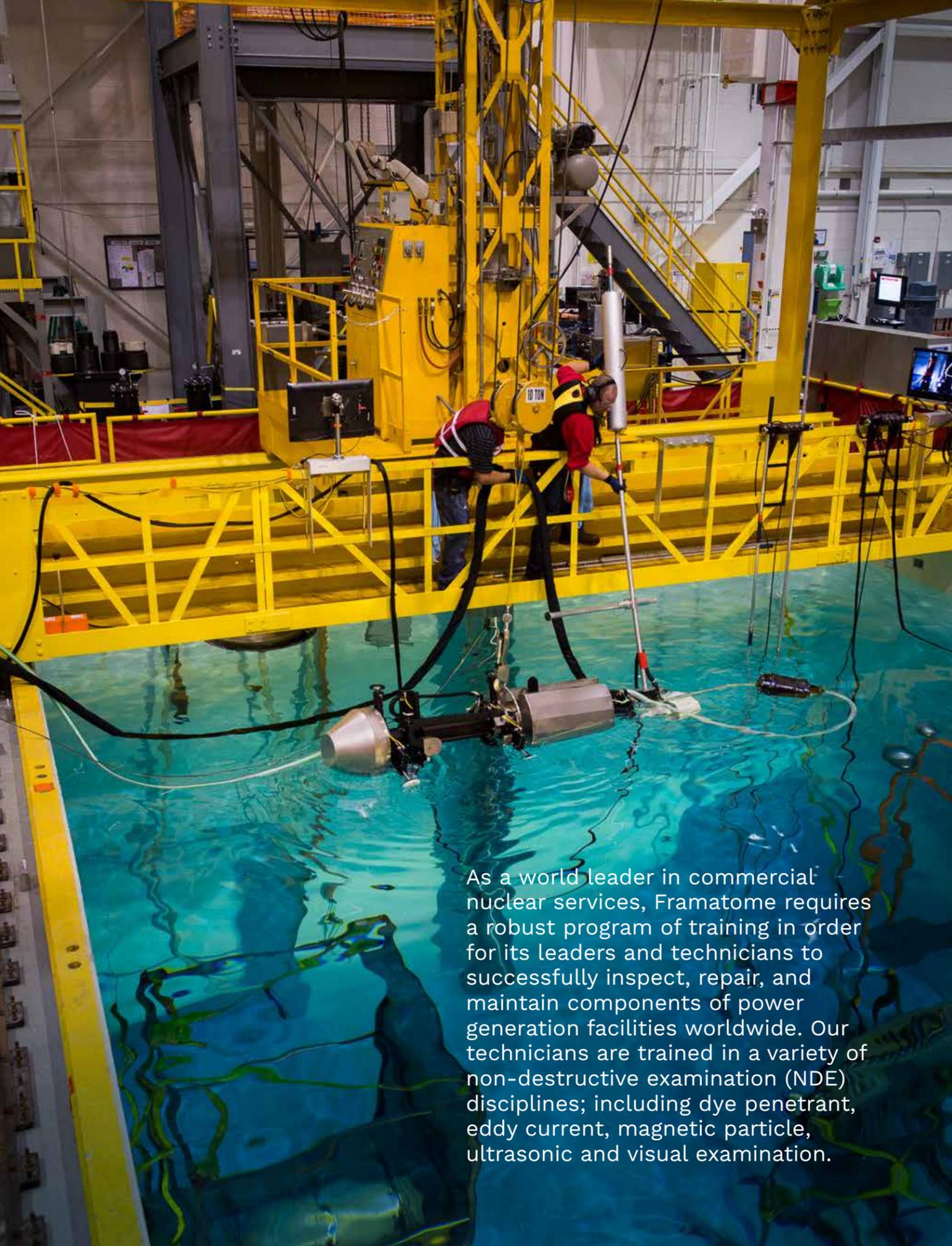
Steam Generator Training Capabilities

Steam Generator Training:

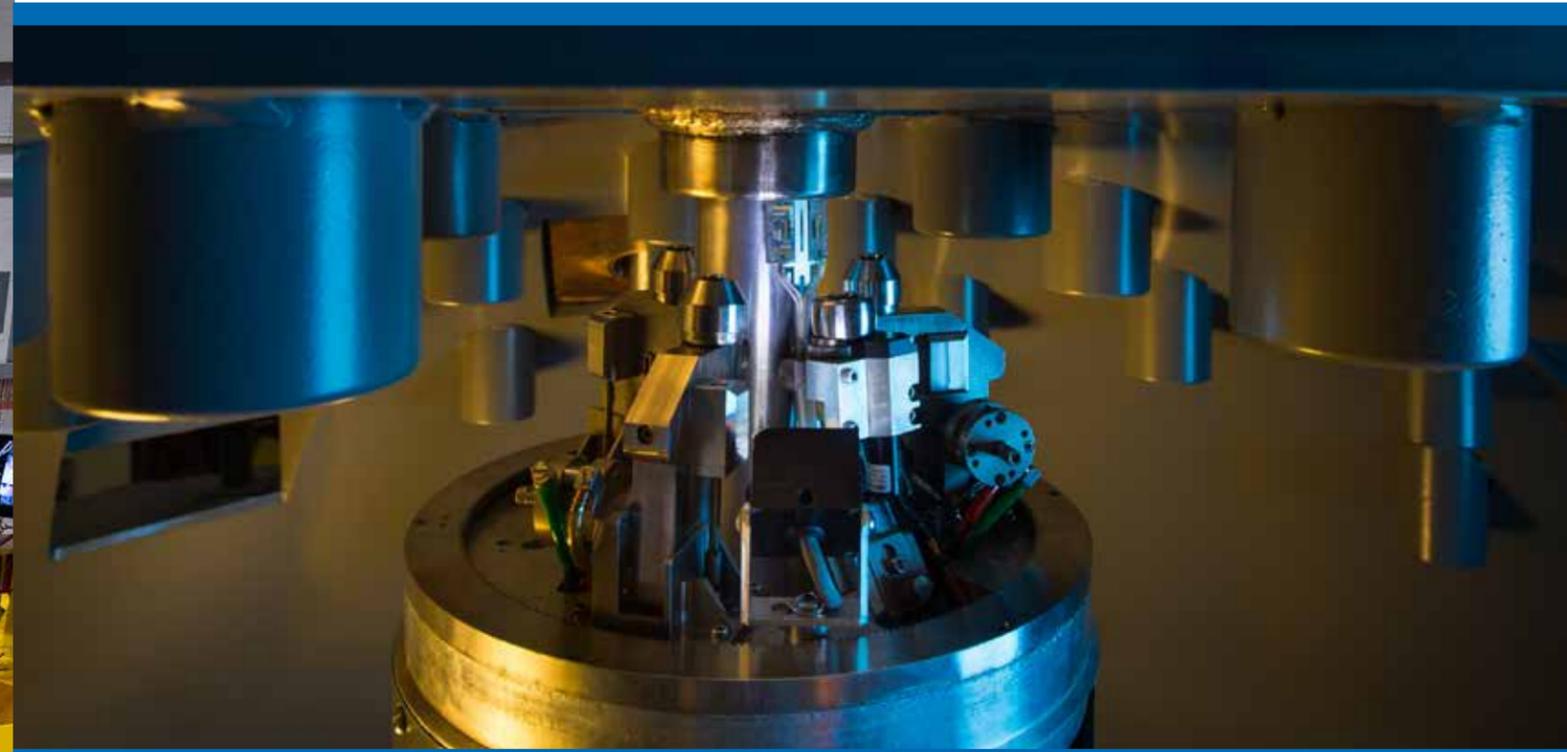
- SSI/FOSAR
- Lancing
- Manway
- Nozzle dam
- In-situ pressure test
- Nozzle cover installation
- Remote weld plug
- Manual weld plug plugging
- Eddy current setup and acquisition
- Manipulator installation/removal and operation
- Radiological awareness training
- Steam generator tube ultrasonic testing
- Tube pull
- Plug removal
- Sleaving
- Mechanical tube plugging

Steam Generator Mockups:

- OTSG upper head mockup
- OTSG lower head mockup
- Manway mockup
- CE mockup
- SSI mockup
- Water lance mockup
- Replacement RSG mockup
- Open-faced mockup
- Steam drum mockup



As a world leader in commercial nuclear services, Framatome requires a robust program of training in order for its leaders and technicians to successfully inspect, repair, and maintain components of power generation facilities worldwide. Our technicians are trained in a variety of non-destructive examination (NDE) disciplines; including dye penetrant, eddy current, magnetic particle, ultrasonic and visual examination.



NDE Training Capabilities

The Framatome NDE training courses are based on the requirements of Title 10 of the Code of Federal Regulations (10 CFR 50.55a), the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, the American Society of Non-Destructive Testing ASNT-TC-1A and ANSI/ASNT CP-189 guidelines. Other equally important nuclear industry standards, such as the EPRI Pressurized Water Reactor Steam Generator Examination Guidelines, are implemented as required to fulfill customer requirements.

- RVCH nozzle inspections
- 10 year RV in-service inspections (ISI)
- RVCH bare metal visual inspections
- MRP-227 RV internals inspections

- BWR inspections (i.e. core shroud, core spray piping, jet pump diffuser, etc.)
- Level I & II ultrasonic examination classroom & laboratory (UT)
- Visual inspection
 - Level I & II visual examination (VT)
 - ASME Section XI Level II visual examination (VT)
- Eddy current platform support, techniques/principles, and analysis
- ASME Section III & XI
- NDT instructor
- Level I & II magnetic particle testing (MT)
- Level I & II dye penetrant testing (PT)
- Condition monitoring and operational assessment

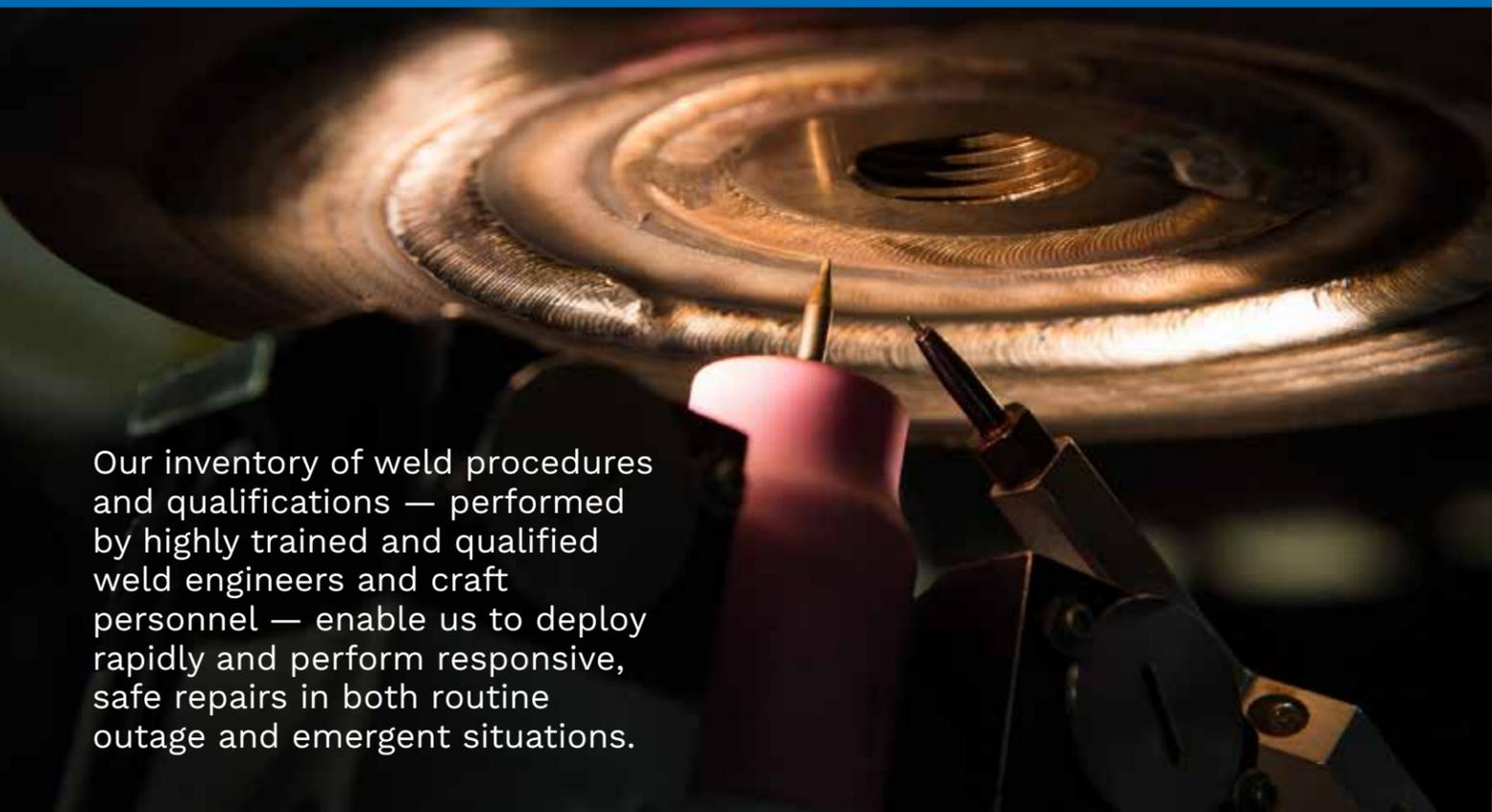
Component Repair & Replacement

Training Capabilities

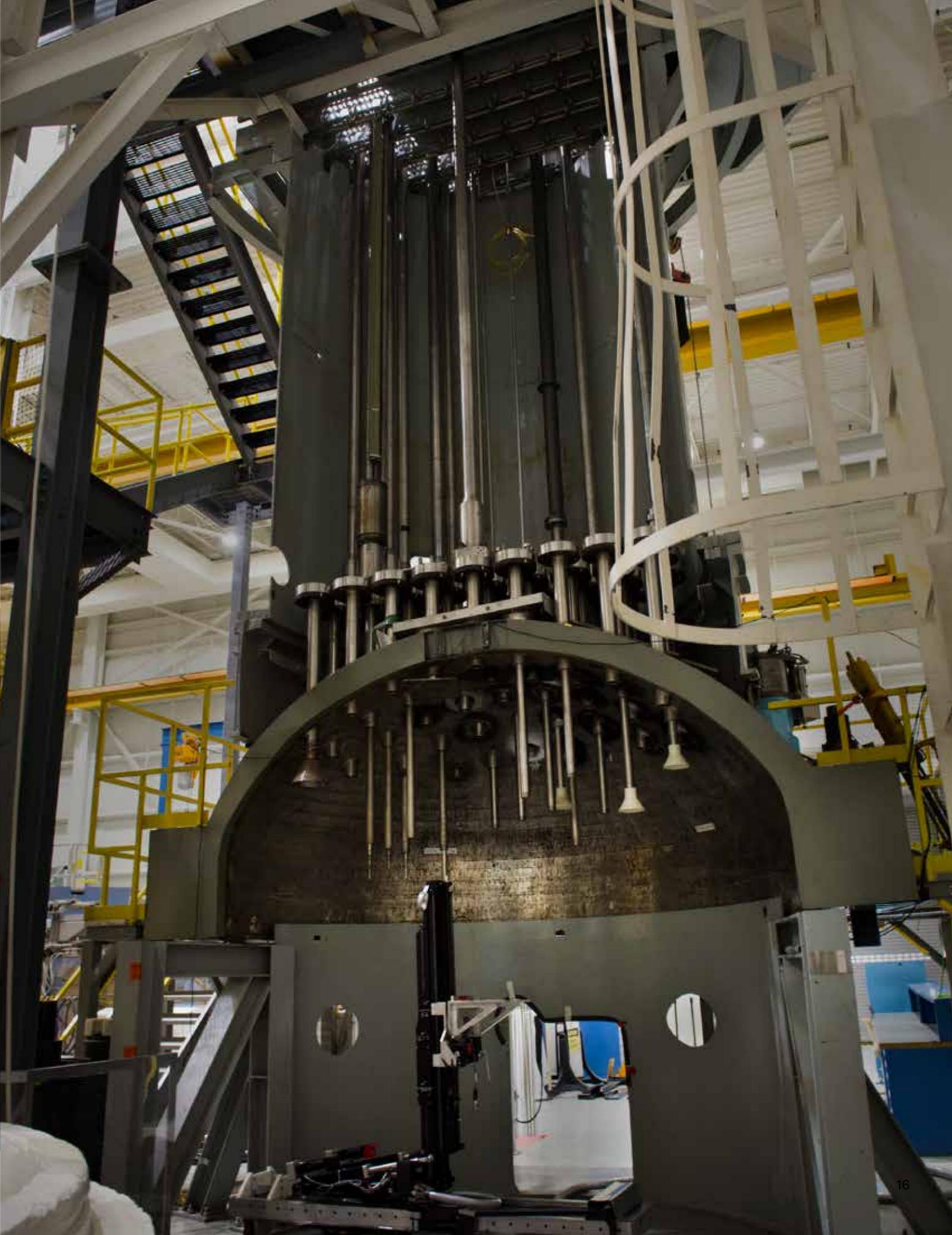
Framatome's Component Repair & Replacement teams utilize the Technical Training Center to perform equipment development, qualification and training on full-scale mockups for welding, machining and other specialty processes. With full-scale pressurizer and upper reactor vessel head mockups, we can train welders and welding operators prior to site deployment for modifications and repairs to nozzle penetrations. Our Technical Training Center also features a full-scale mockup of a lower reactor vessel head for personnel training and

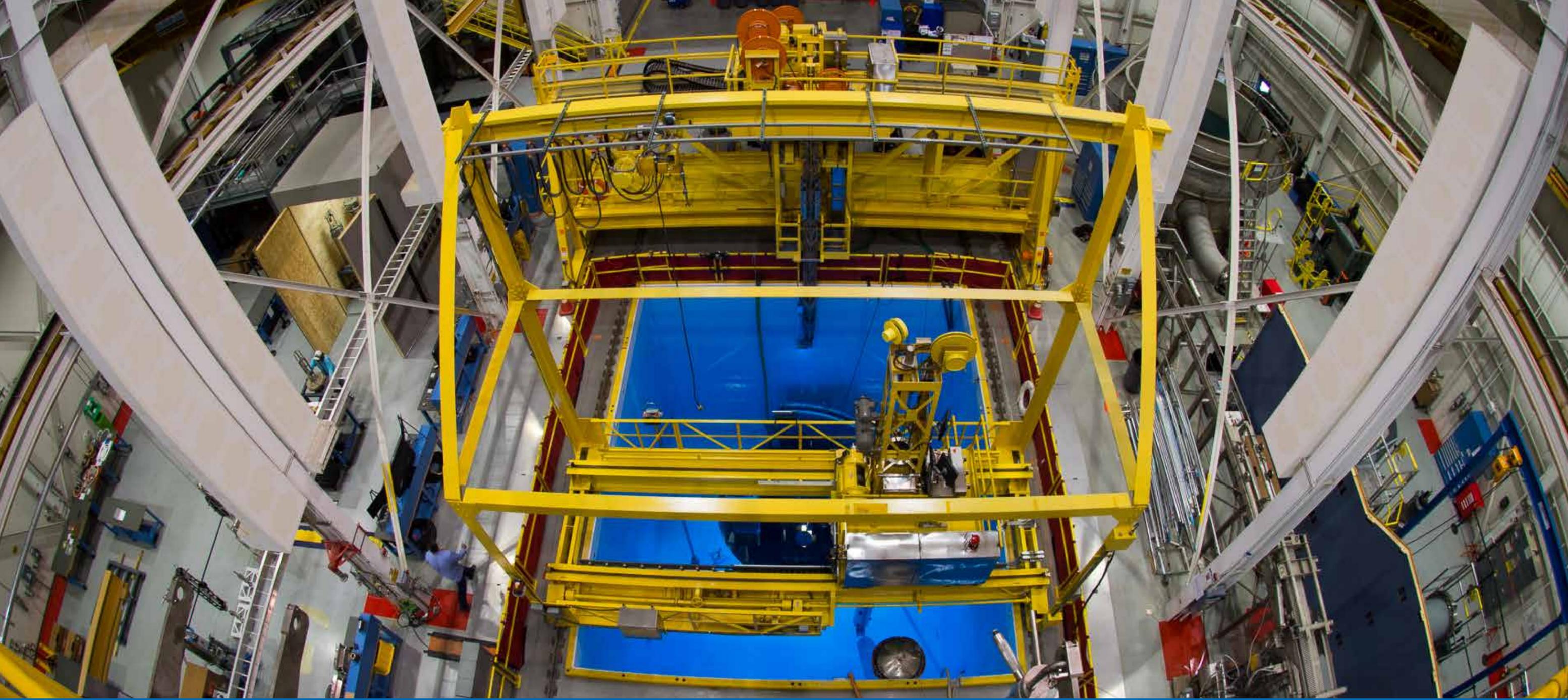
innovative tool development for bottom-mounted instrumentation nozzle repairs and modifications. We have the facilities to perform this qualification and training with contaminated equipment.

In particular, the Technical Training Center houses a full-scale reactor vessel head mockup, as well as a test chamber, to facilitate testing and training for Framatome's innovative process for surface mitigation — ultra-high pressure cavitation peening.



Our inventory of weld procedures and qualifications — performed by highly trained and qualified weld engineers and craft personnel — enable us to deploy rapidly and perform responsive, safe repairs in both routine outage and emergent situations.





Benefits

- The latest equipment and innovation to keep personnel, techniques, and designs up-to-date in the face of ever-changing regulatory and technological advances
- Highly responsive force of skilled nuclear maintenance technicians ready to provide services to address your specific challenges
- Custom services to qualify Framatome, utility or global personnel and technology to U.S. nuclear industry standards
- Ongoing R&D for tool and process development/enhancement to meet emergent and long-term needs
- Access to soft skills such as human performance, safety and leadership
- The only training facility in the U.S. that has a full-scale, wet refueling canal with BWR and PWR refueling machines in the same refueling canal

Framatome is an international leader in nuclear energy recognized for its innovative solutions and value added technologies for the global nuclear fleet. With worldwide expertise and a proven track record for reliability and performance, the company designs, services and installs components, fuel, and instrumentation and control systems for nuclear power plants. Its more than 14,000 employees work every day to help Framatome's customers supply ever cleaner, safer and more economical low-carbon energy.

Visit us at www.framatome.com, and follow us on Twitter: @Framatome_ and LinkedIn: Framatome.

Framatome is owned by the EDF Group (75.5%), Mitsubishi Heavy Industries (MHI – 19.5%) and Assystem (5%).

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