framatome

Stearns Roger Services

Fuel Handling Equipment

Challenge

Utilities rely on a comprehensive suite of services for PWR and BWR fuel handling systems, since these are vital for ensuring a successful refueling outage. Achieving reliable equipment performance is critical, especially in the face of aging and obsolete equipment, compounded by intermittent use between outages. To guarantee operational functionality during outages, thorough inspections, regular maintenance and timely upgrades are essential.

Solution

Framatome incorporates outage services lessons learned, operating experience and customer feedback to enable evolutionary fuel handling equipment upgrades.

Working with your teams, Framatome can assess, upgrade or replace all fuel handling equipment to ensure total reliability and optimal performance during all of your fuel handling operations. Our Technical Training Center houses an operational BWR refueling platform, PWR manipulator crane and fuel transfer system to provide practical experience in a controlled, safe, real-world environment. The exclusive advantages of working with a turnkey supplier include Framatome's expertise at providing engineering, equipment and installation support with 10 CFR 50.59 evaluations and DCP writing. And we have a 24-hour hotline to ensure rapid response services during outages. We are committed to minimizing downtime and strive for 100% equipment availability, ensuring uninterrupted service and optimal outage performance.

Framatome's Stearns Roger Services

Enhancing Safety, Quality, Performance and Delivery

Framatome's Stearns Roger Services (SRS) is a product line within the Framatome Outage Services organization. SRS is aligned with Framatome's Outage Execution organization for services and equipment implementation focusing on safety, quality, performance and delivery. SRS has experience on all nuclear fuel handling equipment in the U.S., and ensures that each customer receives the best qualified resources tailored to their specific needs.

Commitment to refueling equipment includes:

- Refurbishment and maintenance of existing fuel handling equipment
- Equipment upgrades and replacements — manipulator cranes, refueling platforms, spent fuel pool bridges, fuel transfer systems and new fuel elevators
- Installation of upgrades and replacements
- Inspection and testing
- Turnkey engineering
- Outage field service support
- Spare parts supplier

2002
Framatome acquires Stearns Roger Services, established in 1964

2004
BWR & PWR refuel cranes established in Technical Training Center

2008
Completed R&D for new manual BWR control system Automated fuel transfer system design, manufacture and installation

2010
Completed spent fuel bridge design, manufacture and 3-day installation

2012
Completed automated fuel transfer system design, manufacture and installation with remote-removable wear features

2013
Designed automated PWR manipulator crane for Technical Training Center

2014
Installed automated PWR manipulator crane in Technical Training Center

2016
Designed and installed new BWR bridge controls and VFD; designed and fabricated PWR bridge control utilizing intuitive joysticks & HMI

2017
Designed and installed automated SFP bridge controls

2018
Designed, fabricated and installed the first automated BWR refuel platform

2019
Installed automated BWR refuel platform; Installed automated transfer system controls

2020
Installed automated BWR bridge controls; Installed enhanced PWR manipulator crane controls; Installed automated transfer system controls

2021
Installed two automated BWR bridge automated controls upgrades and two complete automated fuel handling bridge replacements

2022
Installed automated transfer system controls

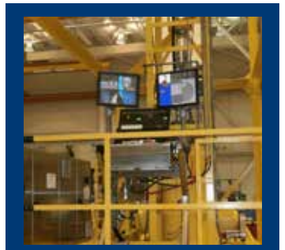
2024
Installed two PWR manipular crane upgrades, three fuel transfer system upgrades, and completed SMR fuel handling equipment design (machine, elevator, jib crane)

2025
Installed trolley and automated control upgrades for refuel machine and spent fuel handling machine; Installed major fuel transfer system upgrade, including automated controls

2026
Complete design of two large Advance Reactor automated refueling transports

Advanced Refueling Equipment

Reliable Equipment



Stearns Roger Automated Refueling Bridge

Stearns Roger Automated Fuel Transfer System

Stearns Roger Automated Spent Fuel Bridge

Reliable, Cost-Effective Fuel Handling Equipment

Customer Benefits

- Improved safety and reliability
- Increased speed
- Improved loading/unloading control
- Reduced maintenance and down time
- Historian database for system fault tracking
- 24-hour support
- Standardized equipment
- Advanced system diagnostics
- Reduced terminal connections
- Cabinet power division for safety
- Supervisor monitoring system

Automated Refueling Bridge

Improved Safety, Reliability and Enhanced Performance

- Automatic, semi-automatic and manual modes
- Field-configurable boundary control
- Cybersecurity compliant
- Advanced operating features and improved performance
- Advanced technology encoders/lasers for precise positioning
- Reliable digital processing
- Smooth positioning and acceleration
- X/Y combined movements for optimized travel paths
- Automatic moves loaded from electronic move sheet
- Emergency stop
- Ergonomic and sturdy design
- Gripper engage/disengage
- Fuel transfer system auto initiate
- Human Machine Interfaces (HMI)
- Optimizes floor space
- Reliable joystick control with dead man switches
- Simultaneous screens for system data visibility

Automated Spent Fuel Bridge

Improved Functionality and Maintenance Access

Features

- Automatic, semi-automatic and manual modes
  – proven, optimized I&C architecture; high-safety features with redundancies and interlocks
- Increased equipment speeds
- Cybersecurity compliant
- Precise positioning of trolley and bridge during refueling operations
- Mechanical architecture and mechanisms based on proven technologies with improved safety and reliability
- Laser and encoder positioning
- X/Y combined movements for optimized travel paths
- HMI for increased functionality
- Optional dual hoist design, added versatility
- Transfer system auto initiate from bridge, eliminates Fuel Transfer System (FTS) operator requirements
- Boundary zone protection system with programmable, in-work area exclusion zones
- Wider work platforms with stainless steel handrails
- Quality control validation of software and interlocks through extensive functional testing
- Off-bridge system monitoring and diagnostics

Maintenance Platform

- Upper platform can access hoist during scheduled preventative maintenance
- Components on upper platform positioned to improve ergonomics
- Maintenance walkways for hoist and electronics — removes scaffolding requirement

Operator Control

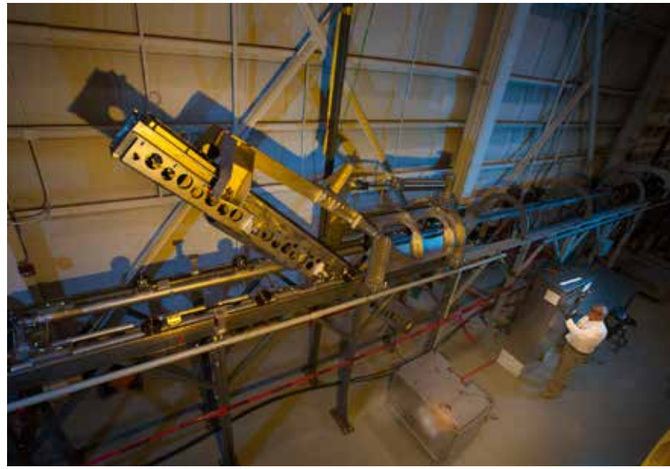
- Touchscreen, with on-the-screen control
- Advanced diagnostics
- Ergonomic industrial joystick controls
- Fuel tracking
- Field-configurable controls
- Improved human performance

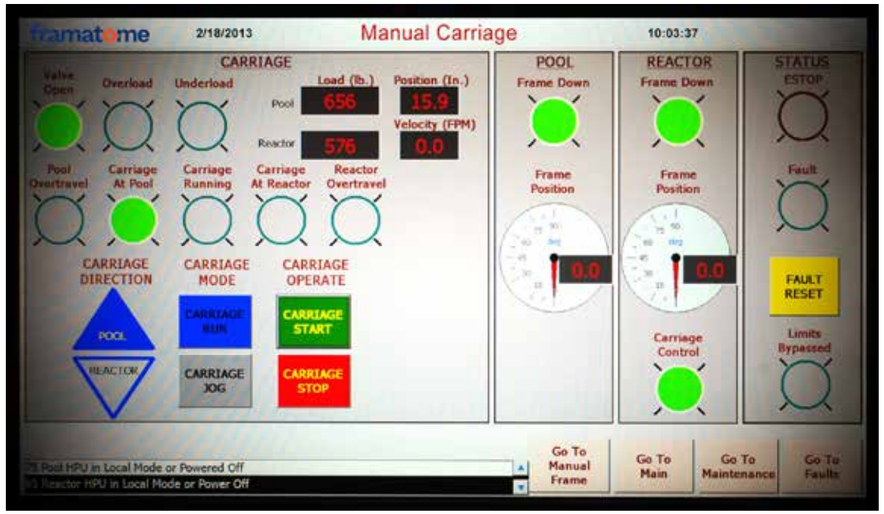
Automated Transfer System

Safety Improvement — Reliable operation and control from an easy-to-use Human Machine Interface

Benefits

- Programmable Logic Controller (PLC) control with Human Machine Interface
- Torque control for transfer system winches
- Variable speed control
- Speed profiling for uneven tracks
- Quick disconnect consoles can be removed from containment at end of outage for component protection
- Improved troubleshooting and data trending
- Manual control available as necessary
- Above-water limit switches
- Display shows cart position during transfer move
- Remote underwater component replacement option





Fuel Handing Equipment SMRs and ARs

- Adapting the commercial fleet to meet the criteria for SMRs/ARs
  - Using proven designs where applicable to support cost/risk avoidance, quality and delivery
  - Ability to customize FHE to meet specific needs of the equipment/customer
- Turn-key provide for SMR/AR fuel handling equipment
  - Design, engineering, fabrication, delivery
- Framatome is the sole fuel handling equipment and fuel rack supplier for Nuscale's VOYGR™ modular reactors
- Framatome is the fuel handling equipment provider for the TerraPower Ex-Vessel Handling Machines
  - Complete design and analysis, with option for fabrication and installation

Framatome is an international leader in nuclear energy recognized for its innovative, digital and value added solutions 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 20,000 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 X and LinkedIn.

Framatome is owned by the EDF Group (80.5%) and Mitsubishi Heavy Industries (MHI – 19.5%).

Framatome
155 Mill Ridge Road
Lynchburg, VA 24502

outage@framatome.com
www.framatome.com

Stearns Roger is a registered trademark of Framatome or its affiliates, in the USA or other countries. The data contained herein are solely for your information and are not to be construed as a warranty or other contractual obligation. ©2025 Framatome Inc. All rights reserved.
a0905-b-us-g-en-529-06-25-stearns-roger