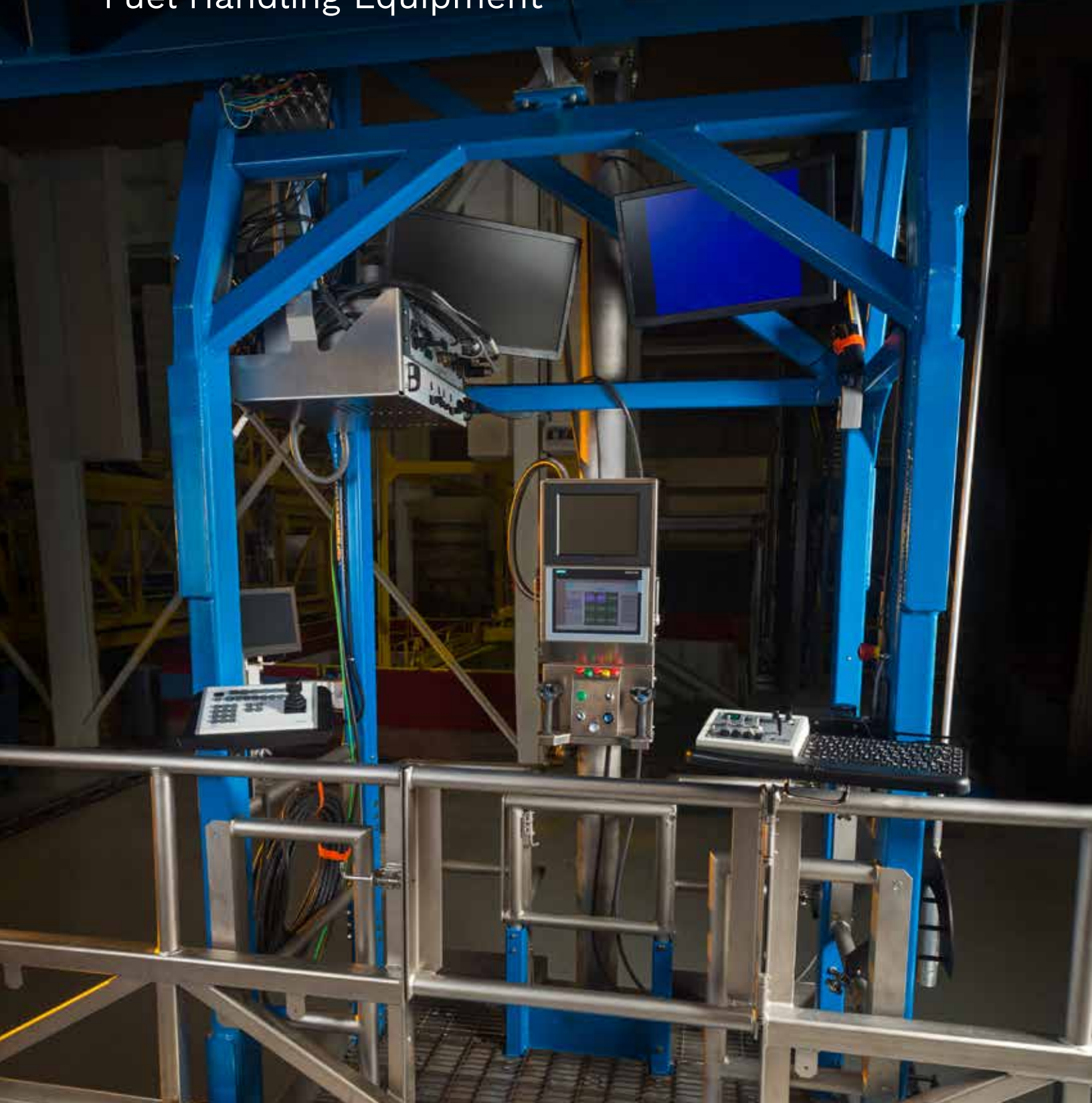


framatome

Stearns Roger® Services
Fuel Handling Equipment



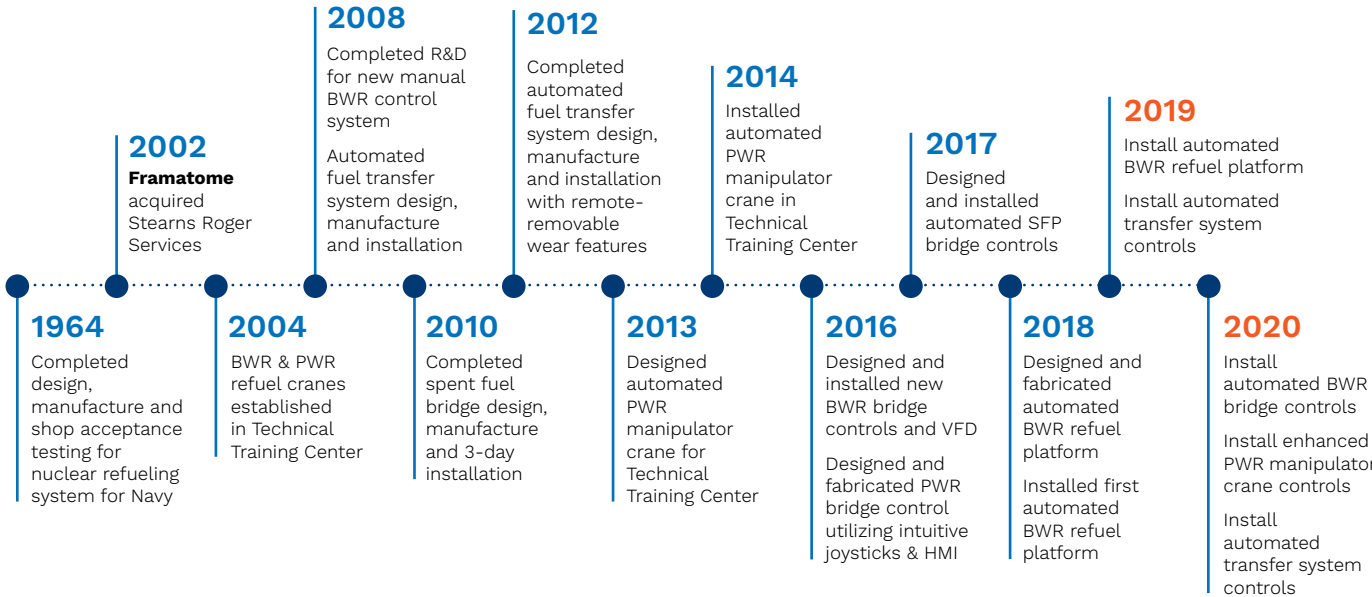


Framatome's Stearns Roger Services

Enhancing Safety, Quality, Performance and Delivery

Who is Stearns Roger Services?

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, and fuel transfer systems
- Installation of upgrades and replacements
- Inspection and testing
- Engineering
- Outage field service support
- Spare parts supplier

Challenge

Utilities require a full range of services for all PWR and BWR fuel handling systems since these systems are instrumental to a successful refueling outage. Typical requirements include engineering support for mechanical, electrical, digital design and software as well as site outage support for fuel moves. Today's plants need a vendor they can trust to handle turnkey fuel handling equipment support from design through installation and training for their teams.

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. Framatome's 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 includes Framatome's expertise at providing engineering, equipment and installation support with 10 CFR 50.59 evaluations and DCP writing. Framatome has a 24-hour hotline to ensure rapid response services during outages.

Your performance is our everyday commitment

Framatome's Stearns Roger Services

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

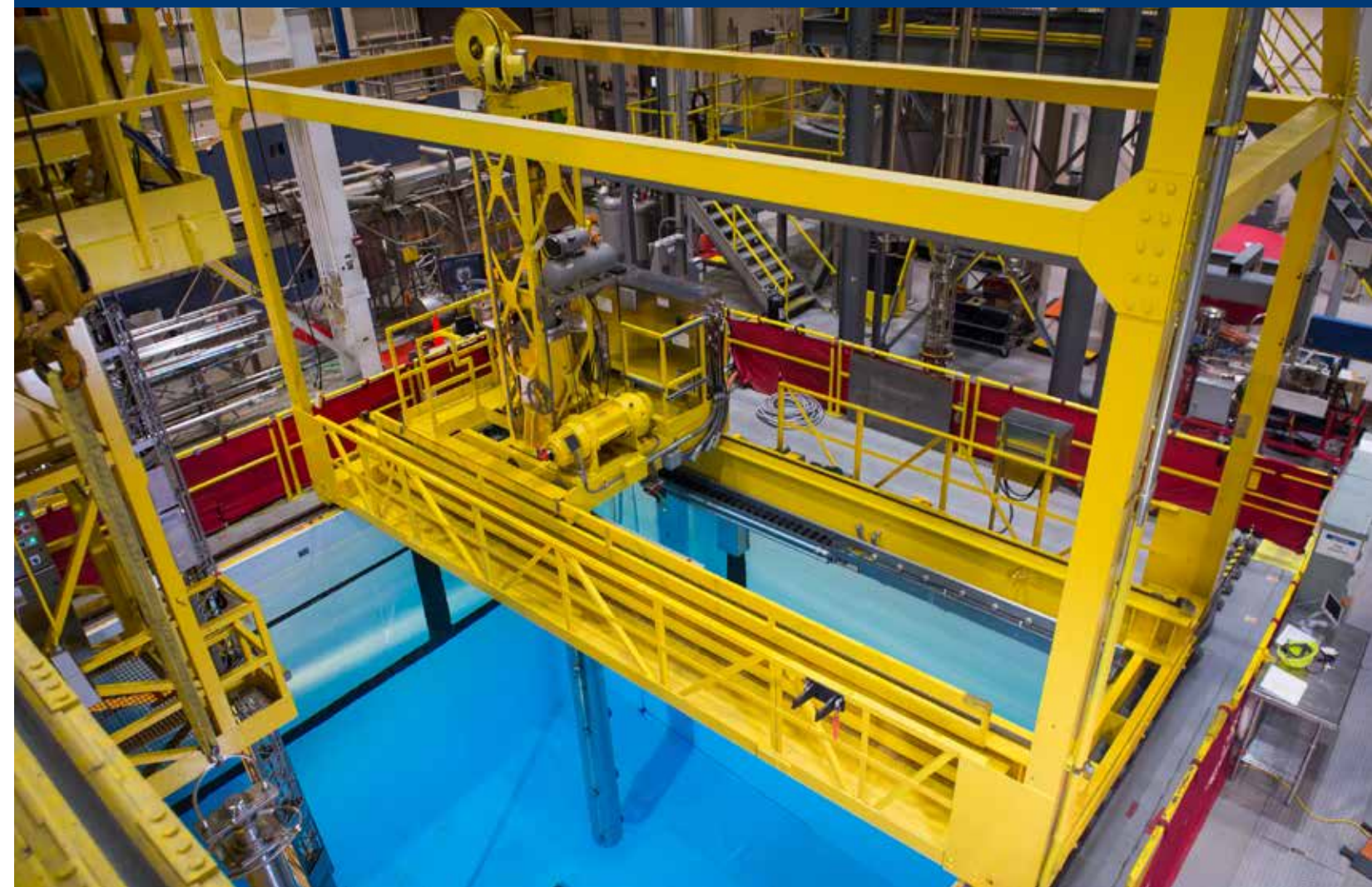
- Improved safety and reliability
- Increased speed
- Improved loading/unloading control
- Reduced maintenance and down time
- System fault tracking
- 24-hour support
- Standardized equipment
- Advanced system diagnostics
- Reduced terminal connections
- Cabinet power division for safety
- Supervisor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

Framatome's Stearns Roger Services

Automated Refueling Bridge

Improved Safety, Reliability and Enhanced Performance

- Automatic, semi-automatic and manual modes
- Boundary control
- Cyber security 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 (specific trajectories)
- 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



Framatome's Stearns Roger Services

Automated Spent Fuel Bridge

Improved Functionality and Maintenance Accessibility



Features

- Automatic, semi-automatic and manual modes
 - proven, optimized I&C architecture; high safety features with redundancies and interlocks
- Increased speed
- Cyber security 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 (specific trajectories)
- 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 — verify system operation during use

Maintenance Platform

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

Operator Control

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

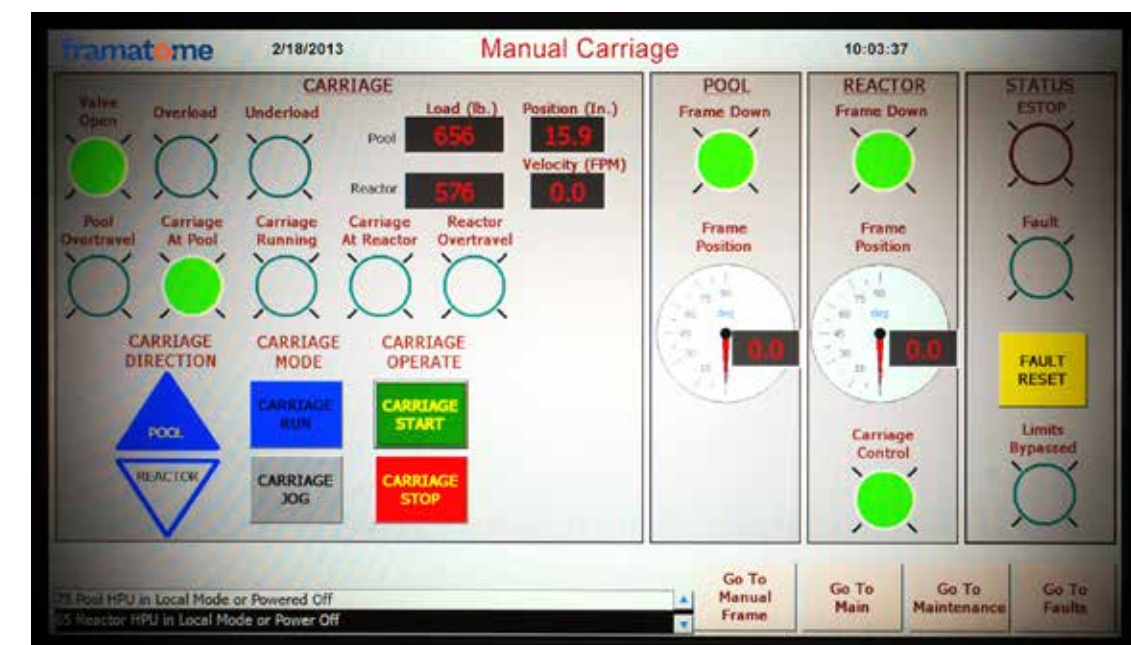
Framatome's Stearns Roger Services

Automated Transfer System

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

Benefits

- Programmable Logic Controller (PLC) control with HMI
- Increased flexibility
- 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 trending
- Manual control available as necessary
- Above-water limit switches
- Display shows cart position during transfer move
- Remote wear component replacement option



Framatome, previously known as New NP (former subsidiary of AREVA NP), is a major international player in the nuclear energy market focused on designing, building, maintaining and advancing the global nuclear fleet. In North America, Framatome Inc. combines U.S. and Canadian leadership to deliver innovative solutions and value-added technologies to support the operation of the commercial nuclear fleet and prepare for the next generation of nuclear power plants. Leveraging the expertise of its 2,300 North American employees, Framatome Inc. is helping its customers improve the safety and performance of their nuclear plants and achieve their economic and societal goals.

Join the energy conversation with Framatome Inc. on Twitter: @FramatomeUS and Facebook: @FramatomeUS.

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

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The logo for Framatome, featuring the word "framato" in a dark blue sans-serif font, followed by "me" in a lighter blue sans-serif font. The letter "o" in "me" is replaced by a stylized orange circle with a white dot in the center, resembling a nuclear symbol or a stylized 'o'.

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