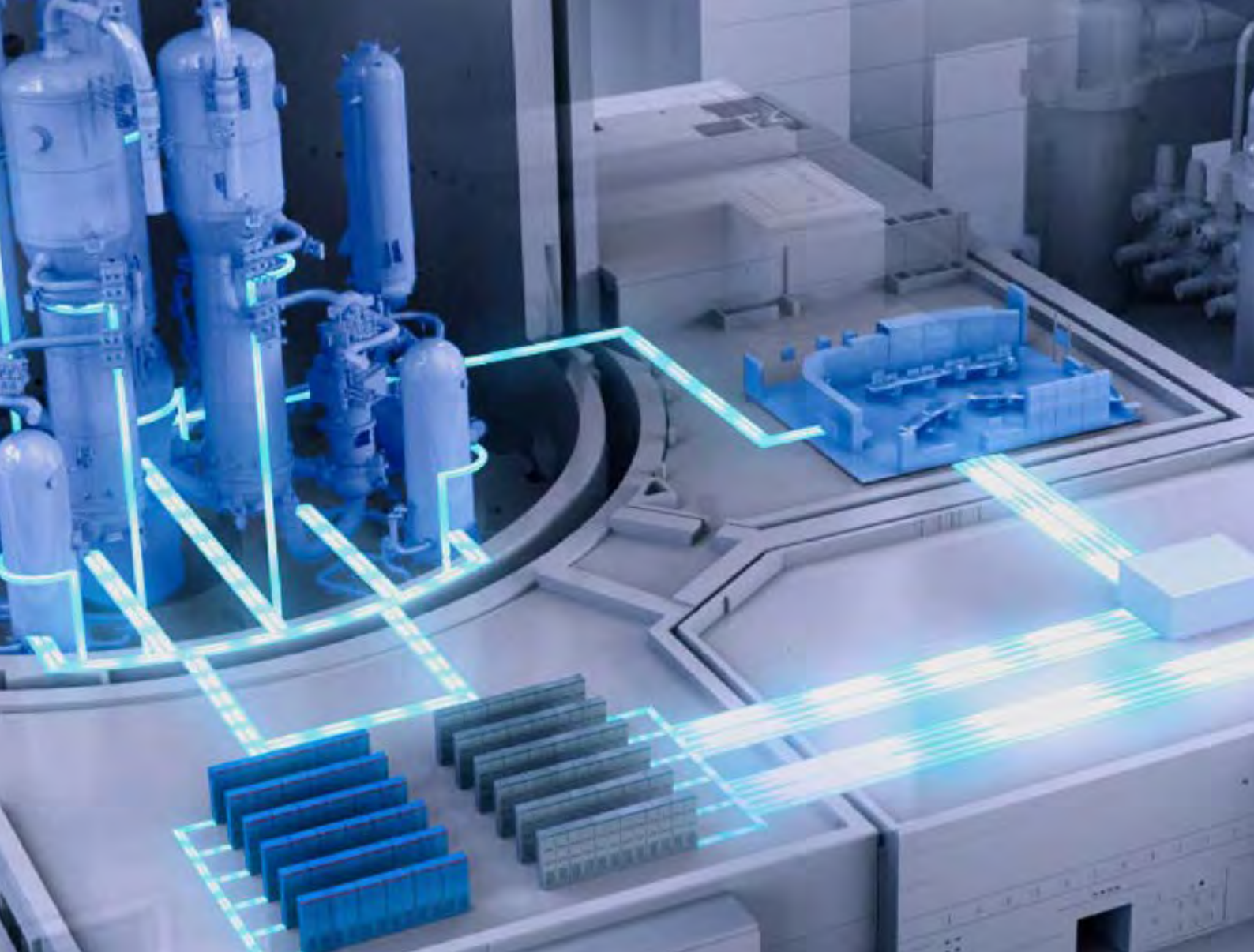




framatome

Long-term support and service
solutions for your Instrumentation
& Control systems



Framatome is your experienced choice for diverse, proven technologies and certainty for the long term.

Nuclear power plant safety, control, supervision and monitoring relies on critical instrumentation and control (I&C) systems. Reliable long-term support of these I&C systems is crucial to safe and cost-effective long-term plant operation.

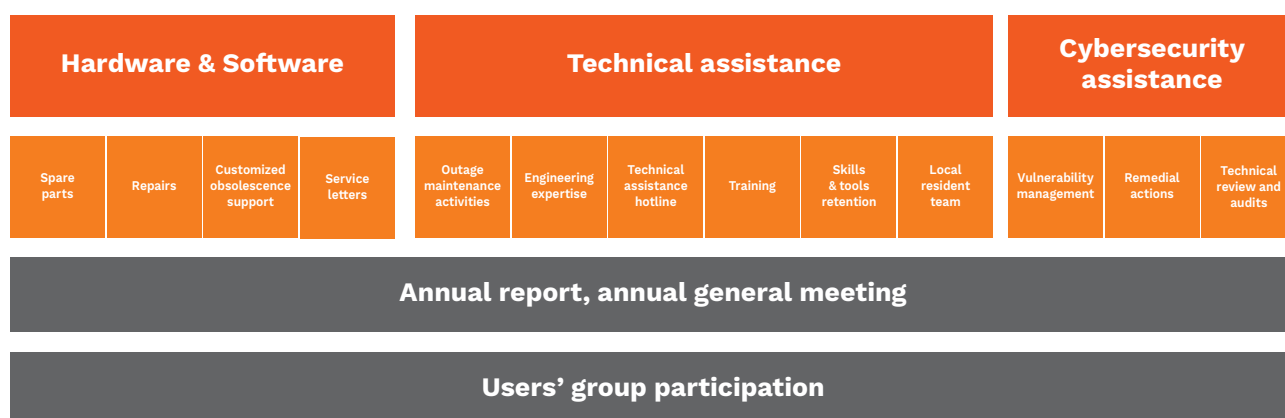
Utility operators require I&C technology that is dependable, easily maintained and fully operational throughout the lifetime of the plant. To ensure this reliability, periodic testing and maintenance of equipment and functionality is necessary, as is up-to-date training of plant operating staff.

Framatome's I&C service and support portfolio is the solution to all of these challenges, a key part of our partnership with nuclear operators over the functional lifetime of their I&C systems. From the delivery of new upgrades to the next modernization, our experienced specialists ensure long-term operation with services that go far beyond the standard scope. No matter whether it's outage support, maintenance, spares and spare parts management, or obsolescence service and training — with us, your plant is in the best hands for the long run.

Long-term service agreements

Each of Framatome's I&C systems comes with an offer of comprehensive long-term service agreements (LTSA) that can be tailored to each plant owner according to specific needs and expectations.

LTSA model



Our LTSA offer covers the three core service domains needed for successful plant operation:

Hardware activities:

- Annual issuance of service letters
- Obsolescence management
- Customized support
- Spare parts supply
- Equipment repair

Technical and engineering support:

- Outage and field maintenance activities
- Technical assistance hotline
- Skills retention
- Training activities
- Recommendations for upgrades and modernization

Cybersecurity activities:

- Vulnerability management support
- Remedial actions to anticipate and mitigate detected vulnerabilities
- Technical reviews and audits to perform continuous improvement

Framatome supports customers at each stage of their plant's lifecycle, and provides a wide range of services, including the following:

- Engineering support consultation regarding technical upgrades, specific technical issues
- Planning and performance of tests on digital and non-digital I&C systems as well as on safety and non-safety related I&C systems
- Proactive obsolescence management on all I&C components includes spare parts supply and repair activities
- A comprehensive range of training solutions covering all products and systems

Periodic system operations analysis, an annual report, and an annual meeting between the utility and Framatome teams all result in customized recommendations to keep systems fully operational over the coming years.

Our LTSA solutions are built upon 50 years of experience servicing installed I&C systems in nuclear plants worldwide. From standardized service activities to custom-tailored contracts, we provide a level of service that not only matches but exceeds our customers' expectations.

Obsolescence management and spare parts supply

Obsolescence is a key challenge that requires constant monitoring and mitigation. The speed of technology development, especially in the field of electronic components, can lead to short-term obsolescence and reduced spare parts availability. This may also affect short-term maintenance operations and jeopardize long-term safe, reliable and profitable I&C system operation.





Our offer:

Framatome offers a dedicated life-cycle management process that includes:

- Supply chain and component obsolescence management (including software and tools)
- Service letters
- Spare parts last buy order information
- Customized recommendations regarding spare parts and specific components procurement

Benefits:

Obsolescence solutions provided by Framatome for in-house and third-party products deliver the following benefits to NPPs:

- Avoid unplanned shutdowns and minimize downtime
- Shorten lead times of spare parts supply
- Early warning of component discontinuation (end of life) allows maximum reaction time
- Framatome technical expertise ensures early recognition of needed critical parts and a technically validated solution, resulting in maximized plant availability and safety
- Anticipation and mitigation of obsolescence risks minimizes costly redesign cycles
- Access to an international network for sourcing of obsolete parts makes the search and procurement easier and faster
- Proactive spare parts management reduces operating, maintenance and capital costs



Equipment repair and requalification

Repair capability depends not only on the availability of replacement sub-components but also on the retention of skilled resources, such as the skills and machine tools necessary for full life cycle support of individual customer equipment.

Failed equipment is expertly diagnosed, and once the root cause is identified, it is repaired and requalified before being shipped back to the utility. The repaired equipment is delivered with a quality compliance certificate along with a detailed repair report listing the diagnostic and operational tasks performed.

Our offer:

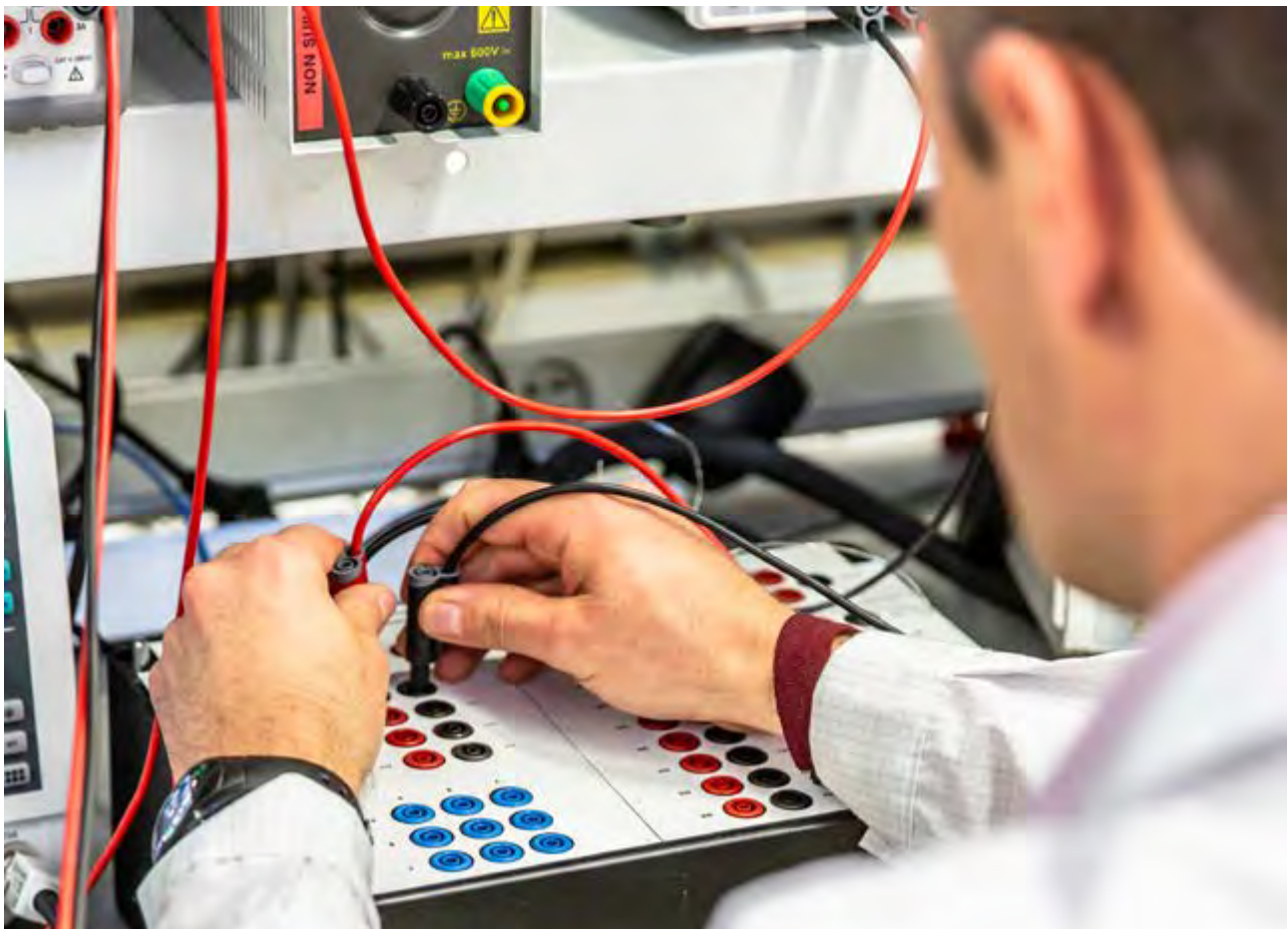
Framatome proposes three levels of service:

- Preventive
- Corrective
- Upgrade

All services are performed in dedicated workshops.

Benefits:

- Extended and optimized lifetime of I&C spare parts
- Reduced capital costs





Engineering & technical support

During daily I&C system operations, utilities may face technical failures or equipment behaviors requiring OEM support and advice. To address these challenges, Framatome has a team of skilled specialists to expertly handle technical assistance requests:

- Diagnosing technical problems, establishing root causes and implementing best solutions
- Conducting engineering studies to support modernization programs and qualification extensions

Technical support can be initiated and fully handled remotely and, based on the complexity of the subject, can be followed up with field service support as a next step.

Our offer:

- Dedicated hotline to reach technical specialists anytime
- Remote technical assistance
- Performance of specific engineering studies
- On-site expertise

Benefits:

- Quick, efficient solutions to emerging technical issues
- Improved plant reliability resulting in increased performance

On-site maintenance and outage support

Framatome maintains a strong network of skilled I&C field service technicians, fully trained and equipped to support customers on site and maintain I&C systems at each stage of the life cycle.

Our field service technicians provide support on a wide range of maintenance operations, including preventive, corrective and predictive upkeep.

Our offer:

- Functional testing of protection, limitation and control functions (safety and non-safety I&C systems)
- Planning and execution of periodic testing and surveillance program according to customers' and authorities' needs

- Interpretation of test results and recommendations on follow-up activities based on technical expertise and experiences
- Plant start-up support according to customers' and authorities' needs
- Predictive expertise on connecting lines

Benefits:

- Improved plant reliability resulting in increased performance
- Reliable outage planning and performance for cost and schedule savings







Training solutions: I&C academy

Framatome's comprehensive I&C training solutions for nuclear power plants are based on more than 40 years in designing, certifying and maintaining I&C systems. Our I&C academy is home to world-leading experts in the industry, ready to share their know-how and experience with your operational teams. Framatome delivers the training programs you need to help you achieve your team's development goals.

We also design individually tailored training programs and courses to suit your specific requirements. Our long-standing relationships with global experts, utilities, regulatory bodies and industry institutions give us the necessary expertise to offer valuable insights into nuclear safety policy and procedures.

Our training solutions feature:

- Certified, experienced instructors and authorities in all fields of nuclear technology
- Expert advice and support regarding your intended training goals
- Practical courses with applied training on real-world systems
- High-quality training materials and curriculum individually tailored for each course and customer

Our offer:

Framatome offers extensive system and operations training at our state-of-the-art training facilities or on-site at customer locations worldwide.

- France: Lyon, Paris, Grenoble
- Germany: Karlstein, Erlangen
- US: Lynchburg, Va.

Benefits:

- Dedicated mock-up platforms provide participants better "hands-on" experience
- Full access to highly skilled OEM instructors and uniquely qualified industry experts
- Availability of customized sessions makes it easy to plan need-specific training



Scan the QR code or click here to access the Framatome I&C training catalog

Cybersecurity support

Whether for your digital assets, physical assets or enterprise networks, Framatome's cybersecurity support solutions lay the groundwork for practical and cost-effective security improvements.

Using the optimal combination of plant engineering, regulatory proficiency and cyber expertise, our solutions use practical approaches to protect critical enterprise and industrial control infrastructure. This helps ensure the operational and economic viability of your business while preventing and mitigating security gaps that may be technical, programmatic or organizational in nature.

Our offer:

- Vulnerabilities management
- Remedial actions
- Technical reviews and audits

Benefits:

- Enhanced cyber protection for software and hardware reduces vulnerability and risks
- Access to Framatome's best-in-class cyber experts and solutions for greater asset reliability
- Enable continuous improvement of the cybersecurity posture

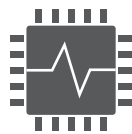


A complete range of proven nuclear I&C solutions



Solutions that fit your specific needs

Perfectly matched safety and non-safety I&C solutions for all tasks in nuclear installations of any type and rating



State-of-the-art technology

Innovative and proven digital and non-digital solutions for added certainty and improved performance



Enhanced safety

Qualified for all safety and process purposes



Regulatory certainty

From unique worldwide licensing and regulatory experience



Lower maintenance costs

High reliability and availability with self-monitoring for sustainability combined with lifecycle solutions for the entire lifetime of your plant



Operational certainty and improved performance

Ensuring high availability and safety of your reactor, combined with lifecycle solutions for the entire lifetime of your plant



Seamless integration

Delivered through unique nuclear process understanding for project certainty



Simpler process

From stand-alone to distributed control systems — comprehensive solutions from one source

Requirements, specifications, architecture and system design

Safety automation
Digital and non-digital solutions

Normal operation automation
Requirements, interfaces, solutions

Cybersecurity

Installation and commissioning

Human machine interface and human factors engineering



One source
for all your
I&C needs



Project management

Simulators
From engineering to full-scope simulators

Instrumentation solutions
Qualified for all safety and process purposes

Comprehensive long-term support and services

Verification and validation services

Unique worldwide licensing and regulation experience

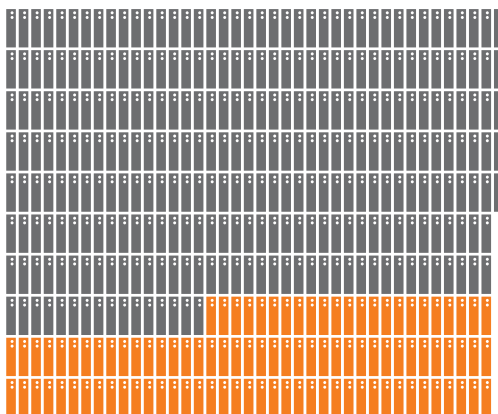
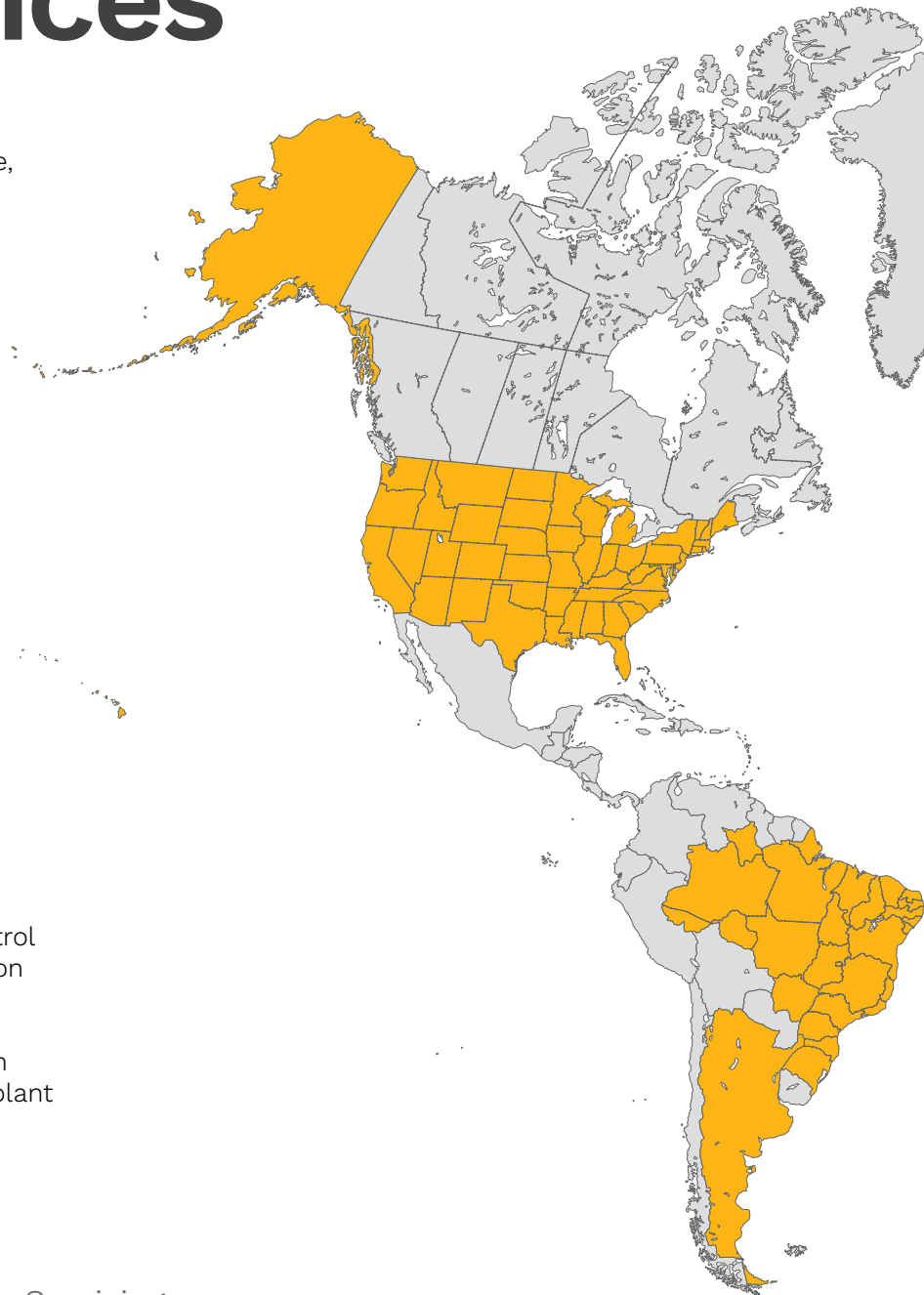


Scope of I&C services

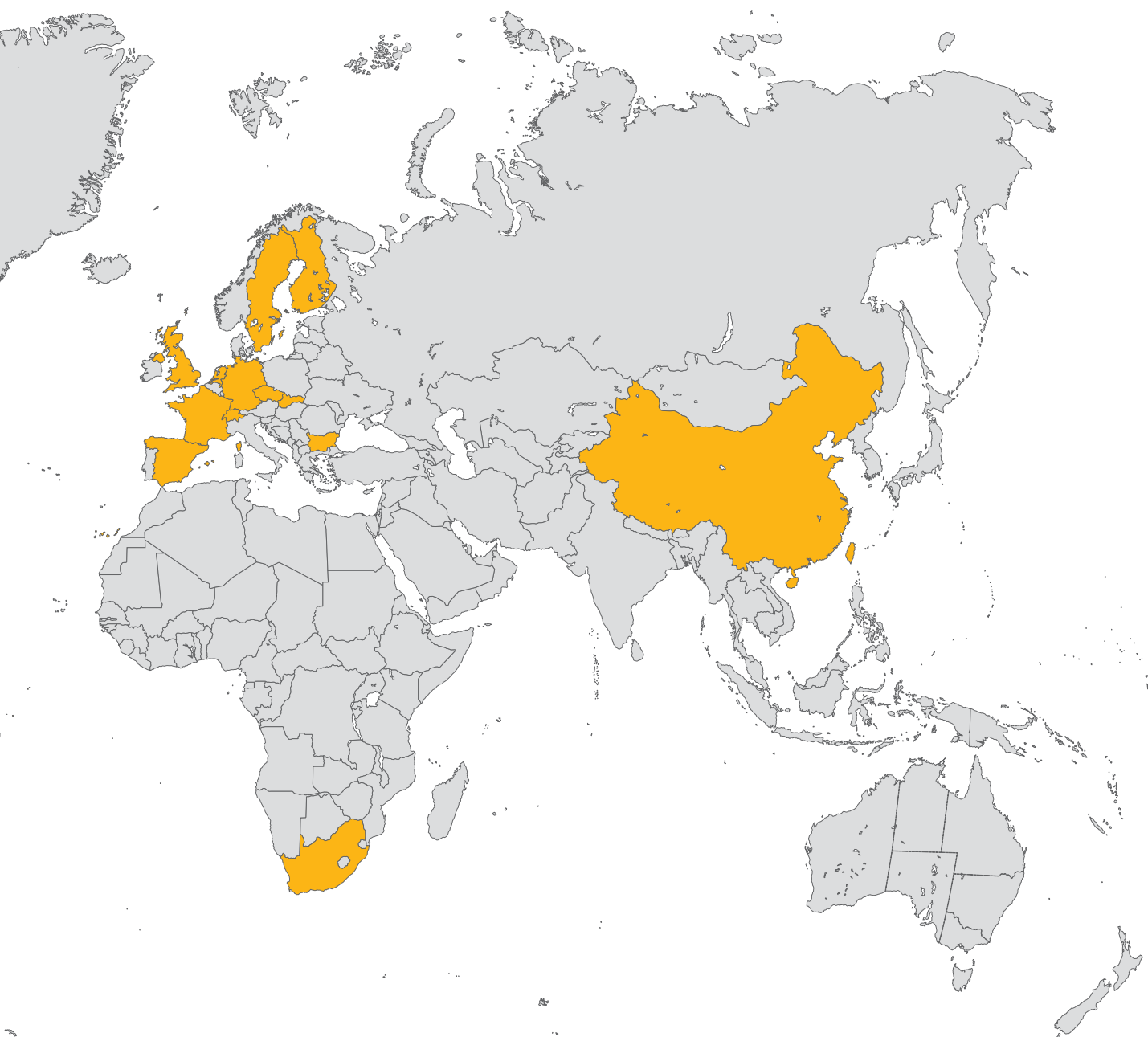
- Preventive and corrective maintenance, for planned and urgent requests
- Condition-based and reliability-centered maintenance
- On-site inspection services and plant start-up support
- Consultation and troubleshooting
- Engineering support
- Obsolescence management
- Spare parts management, supply and repair
- Customized trainings on I&C systems and equipment
- Dedicated hotline support

References

Worldwide I&C references for OEM and non-OEM plants, including reactor control and limitation system, reactor protection system, incore/excore instrumentation, instrumentation measurements, safety and non-safety related instrumentation and control systems, periodic testing, plant start-up support, interpretation of test results and many more.



Servicing
300+
comprehensive
I&C systems and
100+
nuclear
instrumentation
systems in operation



40+
years of
training
experience

200,000+
hours of I&C services
worldwide every year for

250+
international
customers



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 18,000 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%).



Learn more about
our I&C solutions.

For more information contact:
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www.framatome.com

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