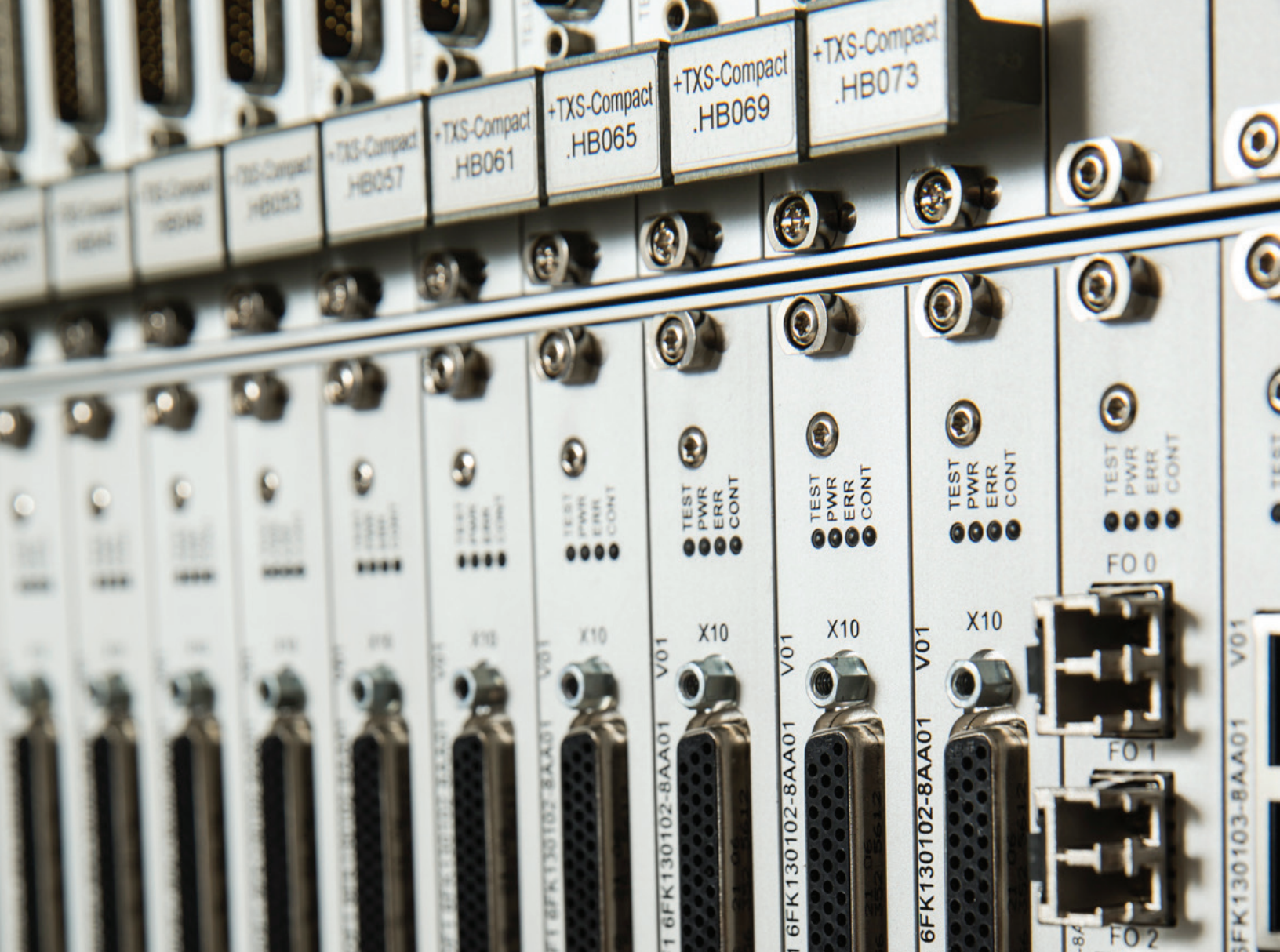# framatome

TELEPERM XS Compact

Built for nuclear
Built on success
Built for the future

A platform built on success

The goal is net-zero carbon emissions and improved plant performance.

TELEPERM XS Compact is the instrumentation and control platform that helps get you there.

Are you preparing for long-term operations by modernizing equipment and systems? Or are you designing and building the next generation of nuclear plants? Either way, you need a safety-related instrumentation and control (I&C) system that offers high performance in a compact and flexible design while meeting the latest regulatory requirements for ease in licensing.

Framatome developed the TELEPERM XS Compact safety I&C platform based on field programmable gate array (FPGA) technology. This innovative solution for Safety Class 1 systems is competitive, robust and scalable. A variety of enclosures & configuration allow for a compact footprint. The simplicity of its design makes qualification easier for both new build projects as well as modernization projects at existing nuclear plants. It can also be used to build technologically diverse systems.

Worldwide experience & expertise

You know the expertise of Framatome — our decades of experience developing, manufacturing and maintaining I&C systems as well as our fleet-wide implementations of digital I&C modernizations.

We've completed more than 440 comprehensive system installations worldwide, including over 250 digital I&C upgrade projects. That's more recent and relevant experience in performing digital upgrades for existing plants than any other supplier.

With the commissioning of our first TELEPERM XS system in 1998, we took nuclear power plant operation to the next level.

Since then, we've developed concurrent platforms that integrate seamlessly into existing systems, optimizing performance, safety, and security, while allowing for easy upgrades.

Now we've done it again with TELEPERM XS Compact.

New platform — same certainty

Building on the foundation of a proven platform with over 25 years of documented success, TELEPERM XS Compact is fully and natively compatible with TELEPERM XS. That means the same safety principles and the same ease of licensing.
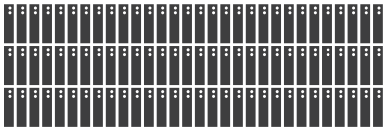
The solution is developed 100% in-house. That ensures long-term product availability and ongoing maintenance.

The entire supply chain system and production infrastructure for this product are mature and controlled by Framatome, improving lead time and component availability. Our continuous support of all digital installations ensures the long-term availability of not just spare parts, but also backward compatibility and future life cycle management for the life span of your plant.

When you decide on TELEPERM XS Compact, you are getting a comprehensive I&C solution for the long run.

TELEPERM XS Compact | built on the proven TELEPERM XS platform

90 units

In **17 countries**

installed in **45+ nuclear plants**

Global team of **2,000+ I&C experts**

At **20 sites**

In **10 countries**

Developed for nuclear and built to last ...

TELEPERM XS Compact has been developed from its initial conception to consider the requirements of international standards, in particular IEC standards for nuclear I&C. It's environmentally qualified and created with the expectation of a lifespan measured in decades, not years.

Tests and analyses are performed at different levels to ensure that the platform fulfills these requirements. Validation and testing activities are performed independently from the platform development and implementation team.

It's been specifically designed from the ground up for the nuclear industry, so licensing and authorizations are facilitated.
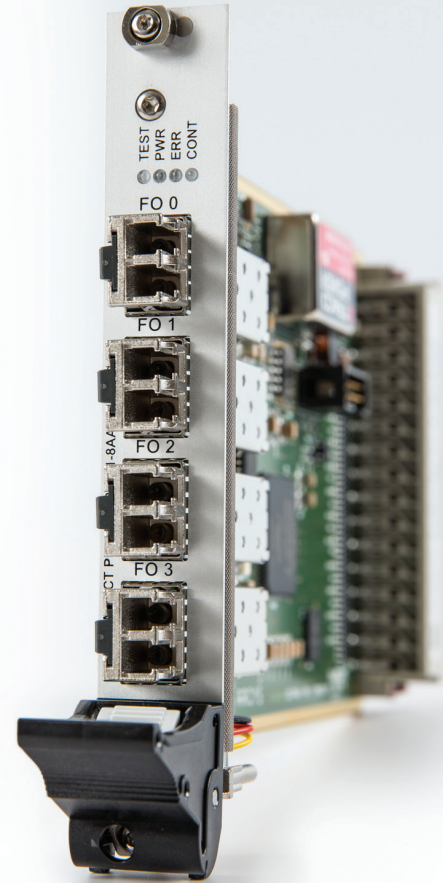
... with the flexibility to change

The TELEPERM XS Compact platform is based on field programmable gate array (FPGA) technology. That means it's modular — unlike microcontroller- or microprocessor-based platforms, there's no fixed hardware structure. Plus, the generic controller allows for configuration changes to the application alone — so you can change on the fly and modify parameters with no impact on the prequalified product.

This decentralized modular system also allows for easier qualification, whether you are constructing a framework from scratch or performing digital upgrades to your existing instrumentation and control.

> No matter how nuclear standards might evolve in the future, changes made to your TELEPERM XS Compact platform will not require new licensing or authorizations.
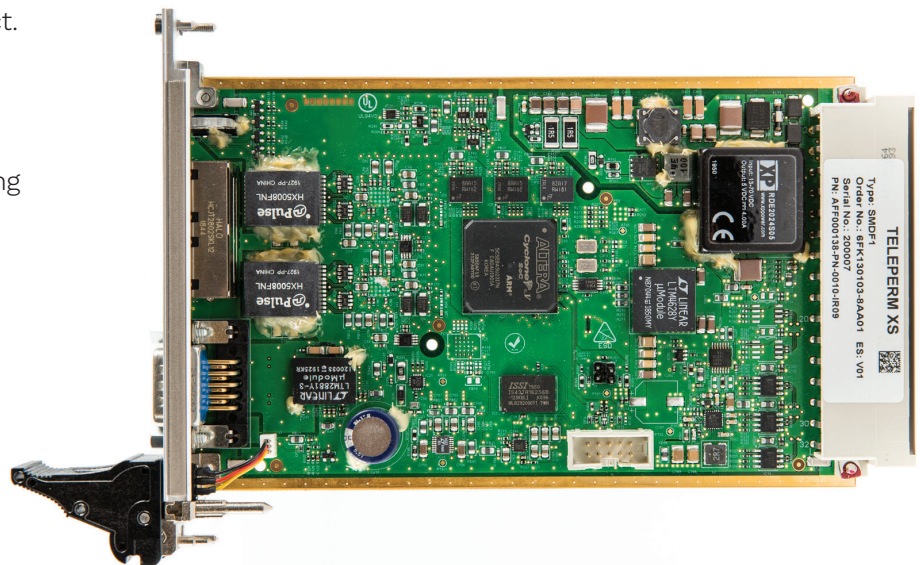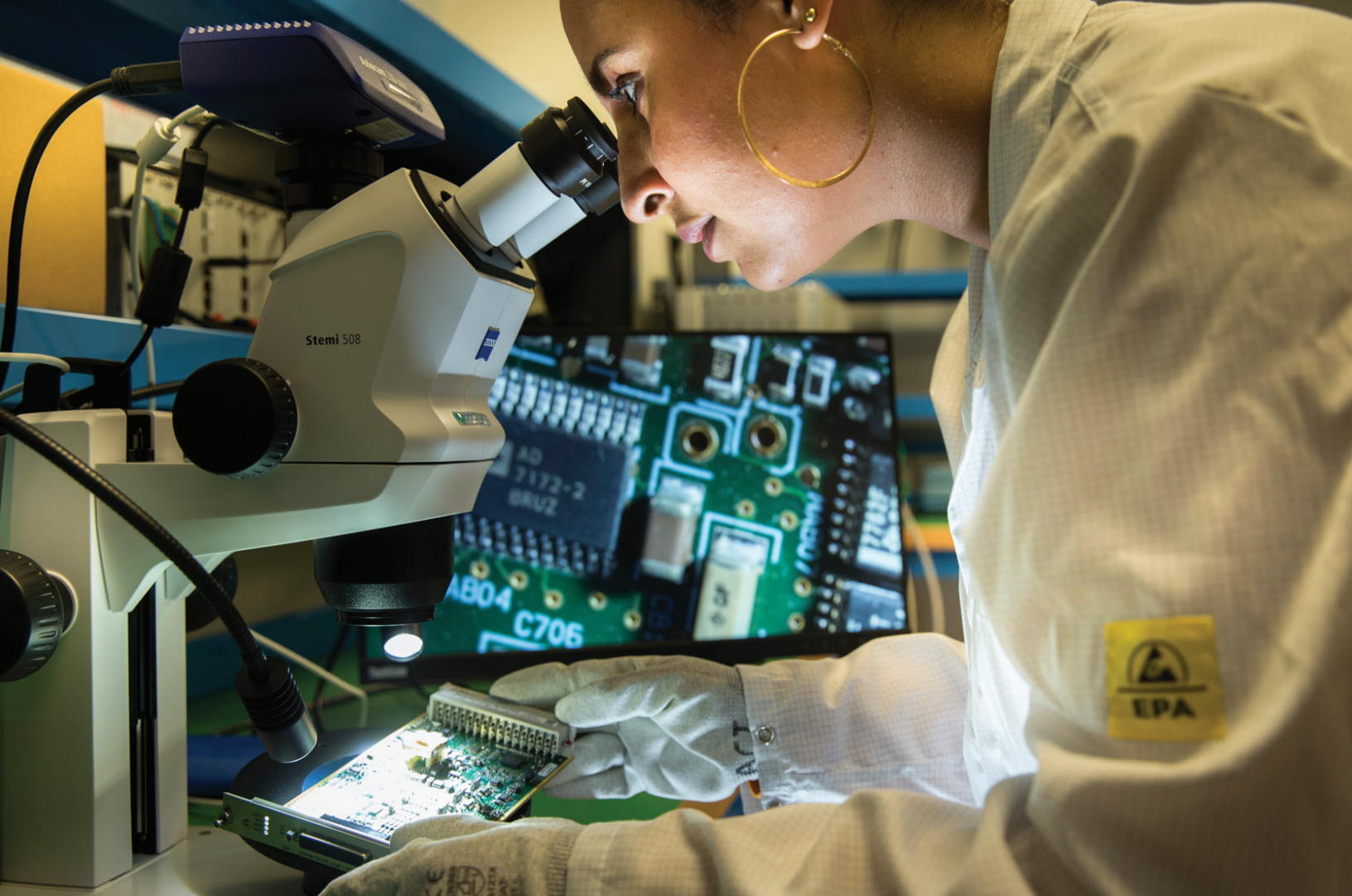
Cost-effective and Cost-competitive

What gives TELEPERM XS Compact its flexibility is also part of what makes it such a cost-effective platform. Self-diagnostic, permanently running self-monitoring detects potential errors in the hardware and FPGA HDL program. This significantly reduces the need for periodic tests and calibrations, saving you money over the lifetime of the equipment. The FPGA base also makes the platform less prone to obsolescence.

TELEPERM XS Compact saves money on cabling, as only one cable is needed to the rack. That's due to the outstanding signal processing performance the combination of FPGA and the compact 3U form modules provides. And the environmental qualification means TELEPERM XS Compact racks can be situated closer to the sensors, shortening the cable needed.

Our extensive experience with the licensing process means a cost-effective path to approval is clearer. It lowers project risk while increasing schedule and cost certainty for you.

Installing TELEPERM XS Compact, whether for new plant construction or current plant modernization, will lower operating costs by improving reliability.

> **All these features, along with the competitive total cost of ownership, means this platform quickly pays for itself.**
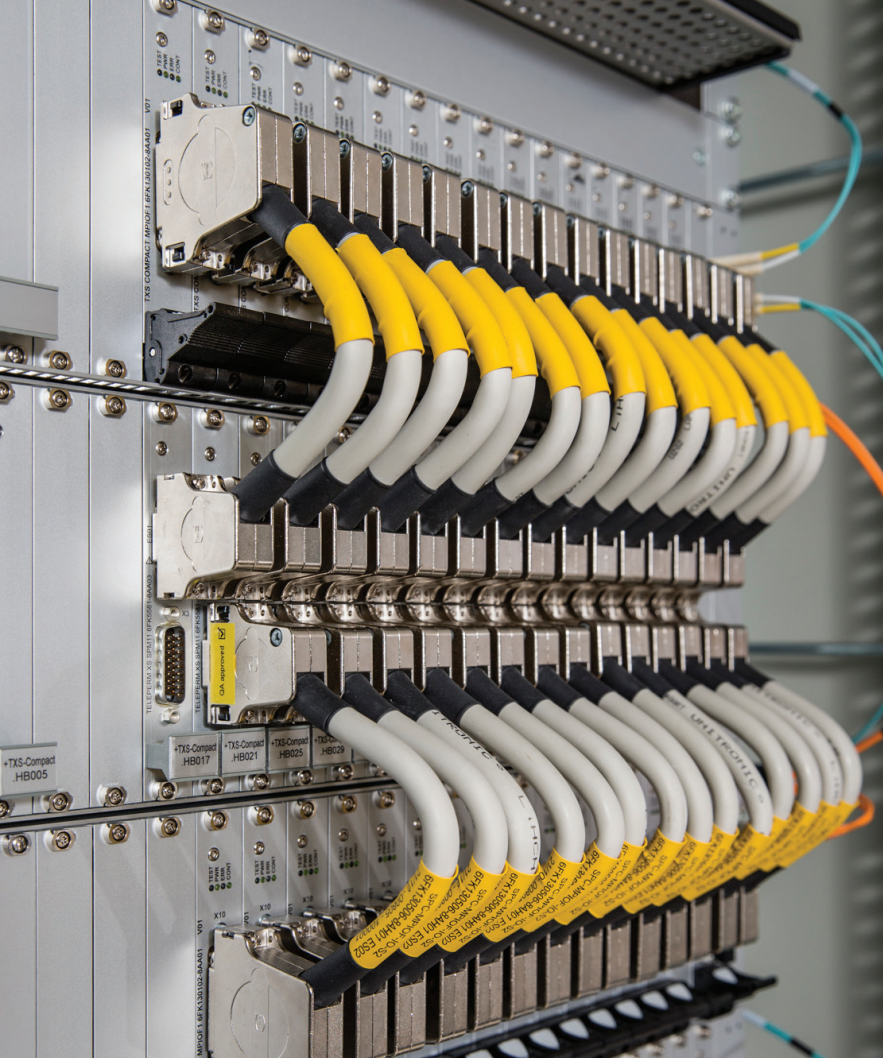
For the Future of Nuclear

The next generation of power generation, whether small modular reactor (SMR) or advanced reactor, will require great adaptability in all I&C designs. TELEPERM XS Compact supplies that adaptability.

Small form factor and industrial 3U racks, along with multiple output modules and interfaces, provide a compact footprint that can be used for a variety of enclosures, from recycled racks and full-height cabinets to small wall-mounted boxes.

That compact footprint is also flexible, thanks to remote I/O sub-racks and networking, which allows for many types of remote monitoring — including neutron flux.

Plus, TELEPERM XS Compact's design not only takes up less space, it operates using front access to racks; that allows back-to-back or back-to-wall cabinet configurations for easy maintenance.

Security you can depend on
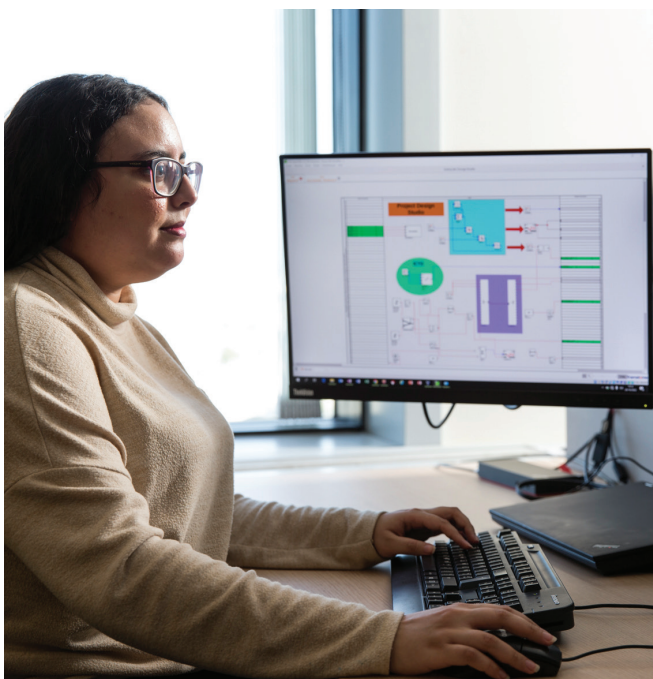
Because of its initial design to nuclear standards, TELEPERM XS Compact provides greater safety and cybersecurity than other I&C platforms. Codesigned with cybersecurity experts to have unprecedented level of self-reliance against external attacks, it has advanced, intuitive tools featuring standardization, modularity, multiple interfaces and a wide range of function block types.

> **TELEPERM XS Compact is developed 100% in-house so there is no external IP and no black box. All of that, along with end-to-end authentication of changes, lowers operational risk.**

Customized Systems

Maybe you need other, less classified (C2/C3) options for instrumentation and control, but still want the flexibility and durability of TELEPERM XS Compact.

We do allow third party developers, as part of a turnkey solution, to procure the modern and user-friendly engineering and service software suite along with the hardware needed to design and build non-safety related systems based on the platform.

The high performance and compact footprint of TELEPERM XS Compact allows for advantageous replacement of industrial PLCs while solving the challenge of qualification and maintenance in a nuclear requirements environment. Plus, the ability of TELEPERM XS Compact to have multiple isolated channels and clear network separation between safety and non-safety systems reduces the risk of safety system interference during I&C system operation and maintenance.

TELEPERM
XS
Compact

Built for nuclear
Built on success
Built for the future

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 16,000 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 and LinkedIn.

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

Learn more about our
I&C modernization solutions.

For more information contact:
IC@framatome.com

www.framatome.com