

framatome

IC academy
Training Solutions 2021

IC academy

With more than 40 years of training experience, Framatome's full training portfolio includes courses on virtually every aspect of nuclear power plant construction and operation. We also design individually tailored training programs and courses to suit our customers' specific requirements. Our long-standing relationships with global experts, utilities, and institutions give us the necessary expertise to offer valuable insights into nuclear safety policy and procedures.

Our training solutions focus on:

- Certified, experienced instructors and experts in all fields of nuclear technology
- Competent advice and support regarding your intended training goals
- Practical courses with applied training on real-life systems
- Training curriculum customized to your needs
- High-quality training materials individually tailored for each course and customer

Our promise to you

Framatome offers comprehensive training solutions for the development, construction and maintenance of nuclear power plants. Our IC 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.

Your performance

is **our** everyday **commitment**

TRAINING LOCATIONS

Framatome offers extensive system and operations training at our modern training facilities or on-site at customer locations worldwide.

 **France**

Framatome France offers instrumentation and control trainings drawn from decades of operational experience and best practices. Courses are available at Framatome sites in Lyon and Paris, as well as at actual plant sites like Flamanville. To ensure the best training for all customers, classroom and hands-on instruction are provided by our training experts.

 **Germany**

For more than 40 years Framatome has provided extensive training courses covering both nuclear plant construction and operation at our Training Center in Karlstein and Erlangen. Comprehensive instrumentation and control training is further supported by actual platforms and component mock-ups allowing participants to learn in realistic environments.



**USA**

Located in Lynchburg, Va., Framatome's Technical Training Center is located on 3.5 acres, with full-scale mock-ups, classrooms, offices, and labs to meet the growing nuclear site maintenance needs in the U.S. and around the world. Course participants receive classroom and hands-on training for plant-specific instrumentation and control configurations and new procedures in a safe, realistic environment.



**China****Slovakia**

We also offer instrumentation and control academy training courses near customer locations in China and Slovakia for our local customers in Asia and Eastern Europe. The full list of courses is continually expanding and is also available in customers' native language. Our teams of trainers look forward to welcoming you at one of the Framatome facilities, or provide training at your local facility.



TRICON

Safety Considerations

DURATION	LOCATION	LANGUAGES
3 days	 Customer on-site / Worldwide	 English

TARGET GROUP

Plant Engineers, Supervisory Staff, Technicians

OBJECTIVES

- Describe the safety concepts of protection layers, Safety Instrumented System (SIS), and Safety Integrity Level (SIL).
- Describe application guidelines for TÜV certification, general considerations, and Tricon controllers.
- Perform fault management with system architecture, system diagnostics, and external and internal fault types.
- Develop a safety application.
- Work through appendices on peer-to-peer and safety shutdown function blocks.

CONTENT

The primary objective of this course is the effective development and maintenance of safety-critical systems in a live plant environment. The course emphasizes both real-world applications and academic theory. The course also covers industry standard guidelines for safety applications, thereby improving knowledge of plant availability and utilization. Using TriStation 1131 Developer's Workbench, you build a project, test and debug logic, download a safety application to a Tricon controller, perform online safety application maintenance, and implement shutdown logic. Each module includes an overview from the Instructor, lab exercises, and validation of classroom participation through evaluations. Lab exercises address project development, safety download procedures, online safety application maintenance, and the implementation of shutdown logic.

PREREQUISITES

Working knowledge of Programmable Logic Controllers (PLCs) or Distributed Control Systems (DCSs); Familiarity with basic electronics and maintenance procedures; Course Tricon System and TriStation 1131 Configuration and Implementation and TriStation 1131 Standard Programming

OTHER INFORMATION

This course is delivered by Schneider Electric Process Automation Learning Services.

Contact: ic-academy@framatome.com
for more information

TRICON

Tricon Basic Maintenance

DURATION	LOCATION	LANGUAGES
2 days	  Customer on-site / Worldwide	 English

TARGET GROUP

Engineers

OBJECTIVES

- Describe TMR and Tricon Programmable Logic Controller (PLC) operations.
- Identify the components of the Tricon controller.
- Replace modules online in the Tricon system.
- Identify and respond to alarms in the Tricon system.
- Use Enhanced Diagnostic Monitor to:
 - Connect to the Tricon controller.
 - Monitor system status and troubleshoot the system. Identify, report, and clear faults. Collect events.

CONTENT

This course provides an overview of the Tricon system, with a primary focus on maintenance and troubleshooting. In this course, you identify the basic principles of Triple Modular Redundancy (TMR) architecture and system configuration, including field wiring, power distribution, and module capabilities. You gain practical experience with continuity checks, loop testing, and general field maintenance. Using Tricon Enhanced Diagnostic Monitor, you troubleshoot the system, respond to alarms, replace modules, and clear faults. Lab exercises and written evaluations validate classroom participation. This course is ideal for Engineers and Maintenance personnel who maintain an online safety-critical application.

PREREQUISITES

Working knowledge of PLCs in a safety environment; Knowledge of PLCs or Distributed Control Systems (DCSs); Familiarity with basic electronics and maintenance procedures




OTHER INFORMATION

This course is delivered by Schneider Electric Process Automation Learning Services.

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TRICON

Tricon System Advanced Maintenance

DURATION	LOCATION	LANGUAGES
2 days	  Customer on-site / Worldwide	 English

TARGET GROUP

Engineers, Plant Engineers, Supervisory Staff, Technicians

OBJECTIVES

- Describe the basic theory of Triple Modular Redundancy (TMR) and fault tolerance.
- Recognize and respond to internal, external, and system faults.
- Disable and force points during system maintenance.
- Connect to and navigate Tricon Enhanced Diagnostic Monitor.
- Display firmware status.
- Collect system events.
- Troubleshoot with Enhanced Diagnostic Monitor.
- Use advanced maintenance techniques to troubleshoot a Tricon system.

CONTENT

This intensive course offers advanced maintenance and troubleshooting techniques for the Tricon system. The course emphasizes real-world applications as well as theory. Specifically, you identify and respond to internal, external, and system faults.

PREREQUISITES

Familiarity with basic Programmable Logic Controller (PLC) programming principles; Working knowledge of PLCs or Distributed Control Systems (DCSs); Course Tricon Basic Maintenance




OTHER INFORMATION

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TRICON

TriStation 1131 Standard Programming

DURATION	LOCATION	LANGUAGES
5 days	  Customer on-site / Worldwide	 English

TARGET GROUP

Engineers

OBJECTIVES

- Describe operational concepts and basic features of TriStation 1131 software.
- Write program logic using TriStation 1131 FBD Editor.
- Perform diagnostics using Tricon Enhanced Diagnostic Monitor.
- Use the system administration features of TriStation 1131 software.
- Access TriStation 1131 documentation and the variable annotation features.
- Write comment macros and cross-reference program variables.
- Perform download procedures to the Tricon controller.
- Test and debug program logic.

CONTENT

This intermediate-level programming course covers advanced techniques for writing program logic from a flow chart using the Function Block Diagram (FBD) language. The course also covers writing customer function blocks using both FBD and Structured Text (ST) languages. Using IEC 61131-3 compliant TriStation 1131 Developer's Workbench, you acquire skills for effective project development and logic segmentation commonly used in safety and process control applications. Specifically, you develop a project, write and test program logic, partition logic, allocate memory, and download a control program. Real-time lab exercises involve a written design statement, logic segmentation, and program testing. This course is ideal for Engineers who program or maintain a Tricon, Trident, or Tricon CX system.

PREREQUISITES

Working knowledge of Programmable Logic Controllers (PLCs) or Distributed Control Systems (DCSs); Familiarity with basic electronics and maintenance procedures; Course Tricon System and TriStation 1131 Configuration and Implementation

OTHER INFORMATION

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TRICON

Tricon System and TriStation 1131 Configuration and Implementation

DURATION	LOCATION	LANGUAGES
5 days	  Customer on-site / Worldwide	 English

TARGET GROUP

Plant Engineers, Supervisory Staff, Technicians

OBJECTIVES

- Describe the basic theory of operation of Triple Modular Redundancy (TMR) architecture in a Tricon system.
- Navigate and use the key features of IEC 61131-3 compliant TriStation 1131 software, including programs, function blocks, and functions.
- Write a safety application using the Functional Block Diagram (FBD) and Structured Text (ST) languages.
- Test and debug the safety application.
- Configure a Tricon system and database.
- Perform download procedures to the Tricon controller, including forcing points and downloading changes.
- Troubleshoot, respond to alarms, and maintain a Tricon system.
- Perform system administration tasks related to project security, documentation generation, and reporting.

CONTENT

This course focuses on Tricon system configuration and implementation. Using Microsoft Windows-based TriStation 1131 Developer's Workbench, you perform basic navigation techniques. You configure, program, test, and download a TriStation 1131 project with digital and analog I/O to a Tricon system. You learn to generate documentation automatically using the features of TriStation 1131 software. Classroom-based training simulators help you perform maintenance, make online changes, and force points in a simulated field environment. Lab exercises and written evaluations validate classroom participation.

PREREQUISITES

Working knowledge of Programmable Logic Controllers (PLCs) or Distributed Control Systems (DCSs); Familiarity with basic electronics and maintenance procedures; Course Tricon Basic Maintenance and Tricon System Advanced Maintenance

OTHER INFORMATION

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IC academy

Organization
and information

SPECIFIC TRAINING REQUIREMENTS

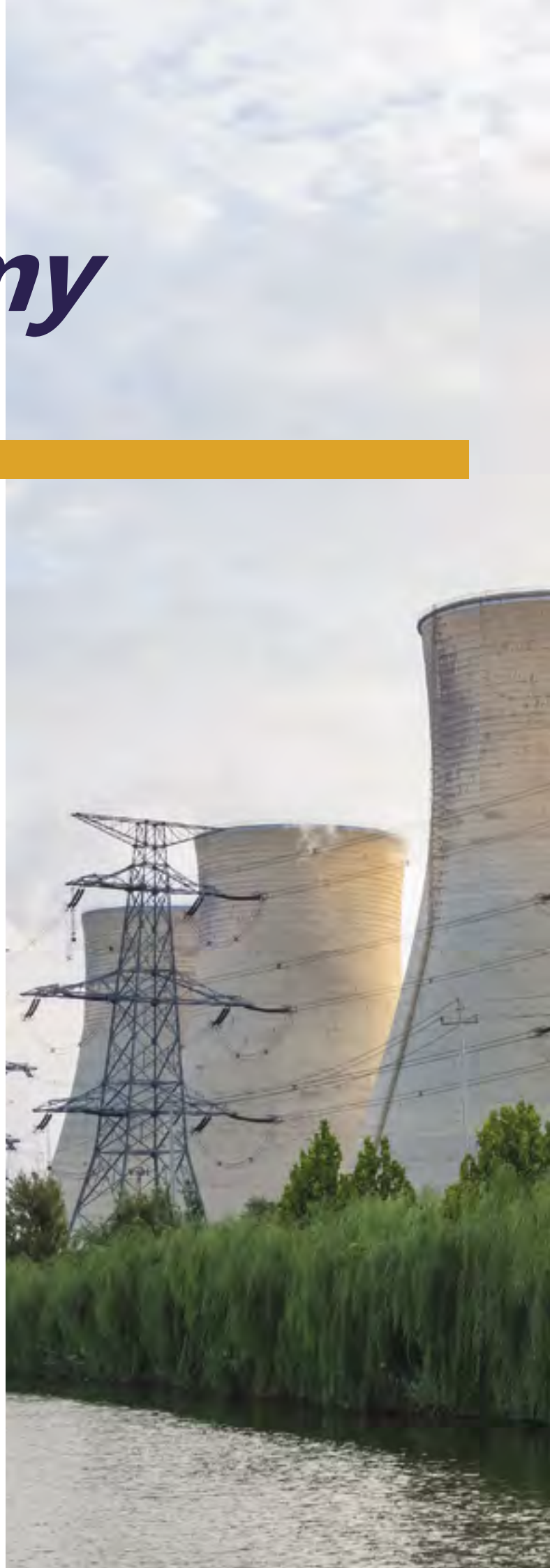
Do you have specific requirements for a training course? We can put together a tailor made course. Please contact us and we will be happy to advise you.

Please email us at:
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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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Framatome
Tour AREVA, 1 Place Jean Millier
92400 Courbevoie, France

ic-academy@framatome.com
ic@framatome.com
www.framatome.com

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