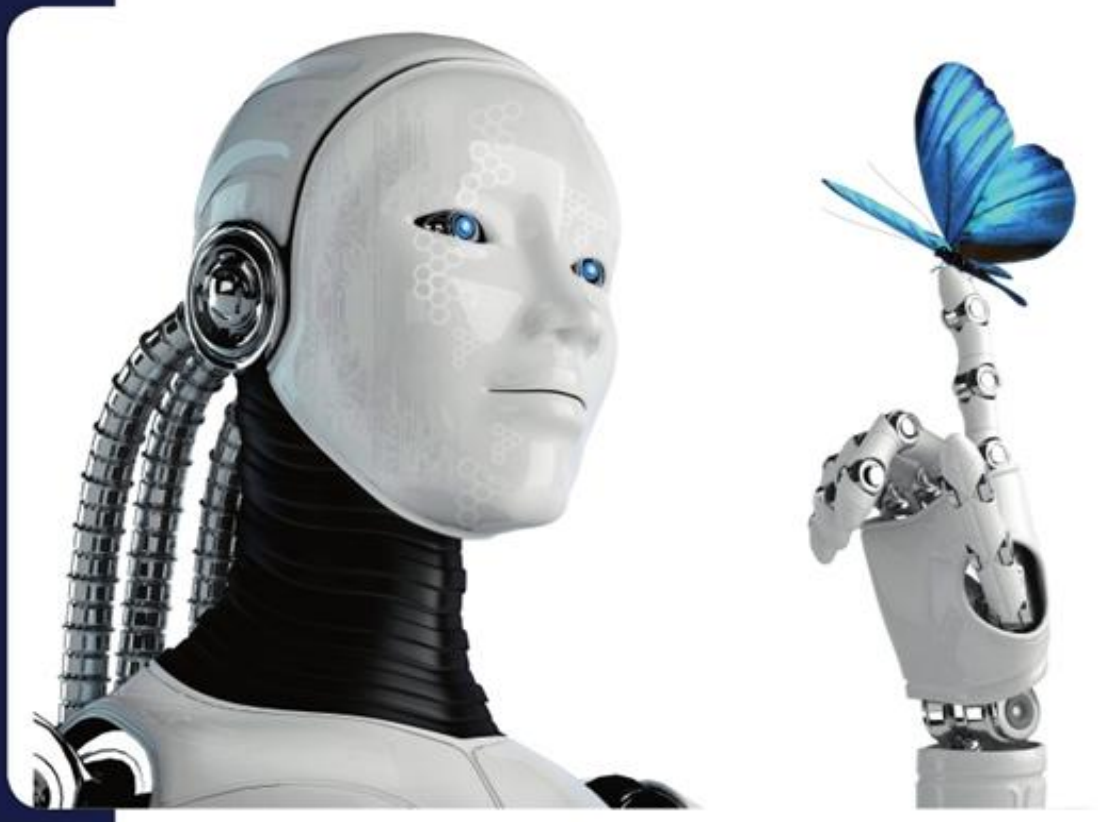
Newsletter
April, 2025

ICR



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Hot Issue

1. Introduction to ISO 19443 and the Need for Implementation
2. Electrical Fast Transient/Burst test

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Introduction to ISO 19443 and the Need for Implementation

▣ What is ISO 19443:2018?

With the growing global demand for certification in the nuclear industry, ISO 19443 is gaining attention.

It is an international standard based on the ISO 9001 Quality Management System (QMS), specifically designed to address the unique requirements of the nuclear industry supply chain.

Acquiring ISO 19443 certification is expected to become a key competitive advantage for companies participating in nuclear projects.

- **ISO 19443:2018 - Quality Management System requirements for organizations in the nuclear supply chain.**
- Based on: ISO 9001:2015.
- Applicable to: Suppliers providing Nuclear Safety-related Products and Services.
- Purpose: To systematically incorporate the nuclear industry's inherent risks and safety requirements into the quality management system.

Introduction to ISO 19443 and the Need for Implementation

▣ Key Requirements of ISO 19443

Category	Details
ITNS Management System	Establish a separate management system to identify and manage safety-related products and services.
Application of Nuclear Safety Culture	Mandatory implementation, education, and evaluation of the nuclear safety culture concept across the organization.
Enhancement of Risk-Based Thinking	Risk assessment and management required considering the high-risk characteristics of the nuclear industry.
Supplier Management	Require management of suppliers and sub-suppliers at the ISO 19443 level.
Verification and Traceability Enhancement	Strengthen documentation, record-keeping, and verification procedures to ensure complete traceability.

Introduction to ISO 19443 and the Need for Implementation

▣ Why Prepare for ISO 19443 Now?

1) Global Expansion Trend

- Major nuclear project owners in Europe, such as EDF (Électricité de France), are increasingly requiring ISO 19443 certification from their supply chains.
- The rise of SMRs (Small Modular Reactors), spent fuel management, and decommissioning markets is creating new entry barriers.
- Demand for ISO 19443 certification is also growing in new nuclear projects in Finland, the UK, and the Czech Republic.

2) Expansion of Domestic Application and Strengthening Export Competitiveness

- Major domestic project owners, such as KHNP (Korea Hydro & Nuclear Power) and KEPCO KPS, are raising quality requirements for suppliers.
- The government is actively promoting the 'TEAM KOREA' nuclear export consortium strategy.
- ISO 19443 certification is emerging as a critical selection criterion in overseas nuclear projects in countries like Saudi Arabia and the Czech Republic.
- Suppliers are expected to establish a quality assurance system that meets the ISO 19443 level.
- ISO 19443 serves as an official means to prove a company's technical capability and reliability.

Introduction to ISO 19443 and the Need for Implementation

▣ Companies Eligible for ISO 19443 Certification

ISO 19443 targets companies directly involved in supplying products and services related to nuclear safety. The following industries play key roles in the nuclear supply chain and should prepare for certification:

1) Nuclear Equipment and Component Manufacturers

- Companies manufacturing major components used in nuclear facilities such as reactors, steam generators, coolant pumps, piping, valves, and electrical/instrumentation parts
- Due to the strict quality and reliability requirements, even a minor defect can lead to serious accidents, making certification crucial.

2) Nuclear Design and Engineering Service Providers

- Companies engaged in nuclear design, system engineering, structural analysis, and safety assessments
- Since design errors can critically affect overall system safety, quality system management from the design phase is essential.

Introduction to ISO 19443 and the Need for Implementation

3) Radioactive Waste Management and Decommissioning Companies

- Companies managing spent fuel, handling radioactive waste, or participating in nuclear decommissioning projects
- As safe handling and management of radioactive materials are critical, ISO 19443 certification helps prove competence in radiation safety and quality control.

4) Instrumentation, Software, and Nondestructive Testing (NDT) Service Providers

- Developers and suppliers of instrumentation, monitoring systems, and control software for nuclear facilities
- As these services are directly linked to operational safety, ISO 19443 certification is essential to verify quality and technical competence.

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Introduction to ISO 19443 and the Need for Implementation

▣ Closing Statement

In the nuclear industry, quality and safety are directly tied to trust. ISO 19443 certification provides a strong framework to demonstrate that your products and services meet internationally recognized quality and safety standards.

ICR is committed to providing reliable certification services in the nuclear industry, both domestically and internationally.

☎ Inquiries

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Electrical Fast Transient/Burst test

▣ What is Electrical Fast Transient/Burst test?

Electrical Fast Transient/Burst testing is a test to evaluate the immunity of electrical and electronic equipment when a series of electrical transients* of very fast noise pulses are applied to the power supply ports, signal ports, and control ports.

There are **two ways** to test equipment to assess its immunity.

- Methods using coupled/uncoupled circuitry as specified in EN 61000-4-4.
- How to use capacitive clamps.

* **Electrical transient** - An electrical phenomenon in an electrical circuit that changes from one steady state to another steady state.

▣ What is Coupling/Decoupling Network(CDN)?

Coupling/Decoupling Networks are devices that transfer energy from one circuit to another. They also prevent voltages applied to the equipment under test from affecting other equipment or systems. It is used in conjunction with an Electrical Fast Transient/Burst generator.

Electrical Fast Transient/Burst test

▣ What is Capacitive clamp?

A capacitive clamp is a device that is coupled to the EUT circuit without electrical connection to the power lines, signal lines, etc. of the equipment under test. It is used in conjunction with an Electrical Fast Transient/Burst generator.

▣ Why are Electrical Fast Transients/Burst occurring?

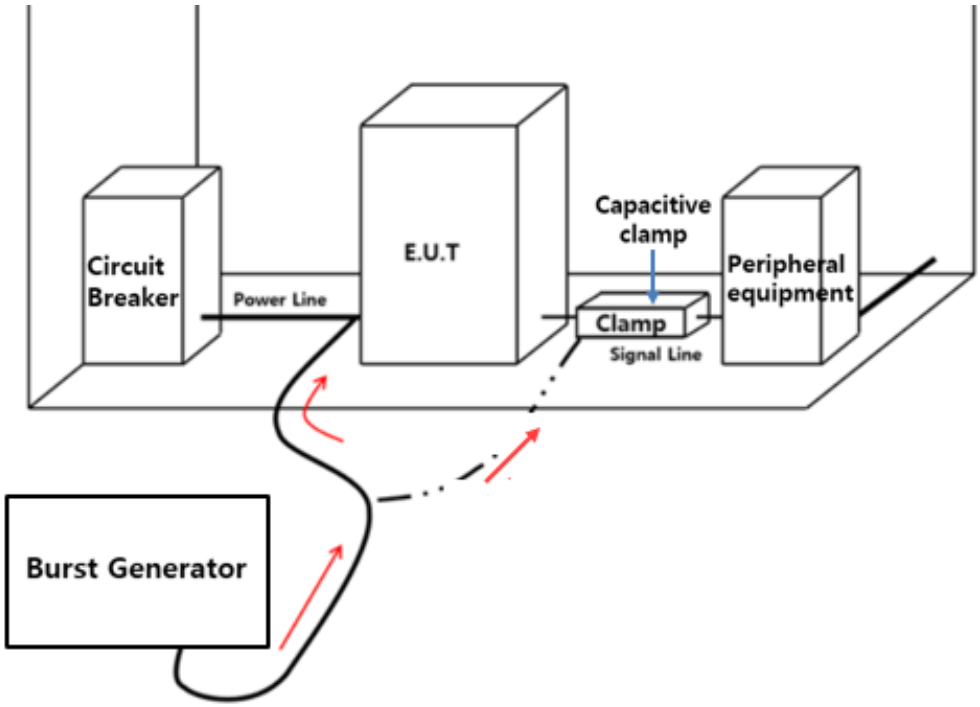
Electrical Fast Transient/Burst that occur on power lines are most often caused by sparks that occur when power cords are plugged in, equipment is turned off, or circuit breakers are opened or closed.

▣ Purpose of the test

This is an immunity test conducted to check whether the equipment operates normally when Electrical Fast Transient/Burst occur on the power port, signal port, control port, and ground port during equipment use.

Electrical Fast Transient/Burst test

▣ Test layout



Electrical Fast Transient/Burst test	
Applicable port	AC, DC power port, Signal port over 3 m
Test level	AC power port ±2 kV / DC power port, Signal port ±1 kV
Burst Duration / Period	15 ms / 300 ms
Measurement mode	Measurements are made in the mode where the EUT operates normally under the conditions specified in the equipment specifications.
Performance criteria	B

Electrical Fast Transient/Burst test

▣ Equipment photos

Capacitive clamp

Coupling/Decoupling Network

Electrical Fast Transient/Burst generator

▣ Test photos

Testing using
Coupling/Decoupling Network

Testing using Capacitive clamp

▣ **ICR** has equipments capable of **Electrical Fast Transient/Burst testing** and can conduct on-site testing.

☎ Inquiries

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