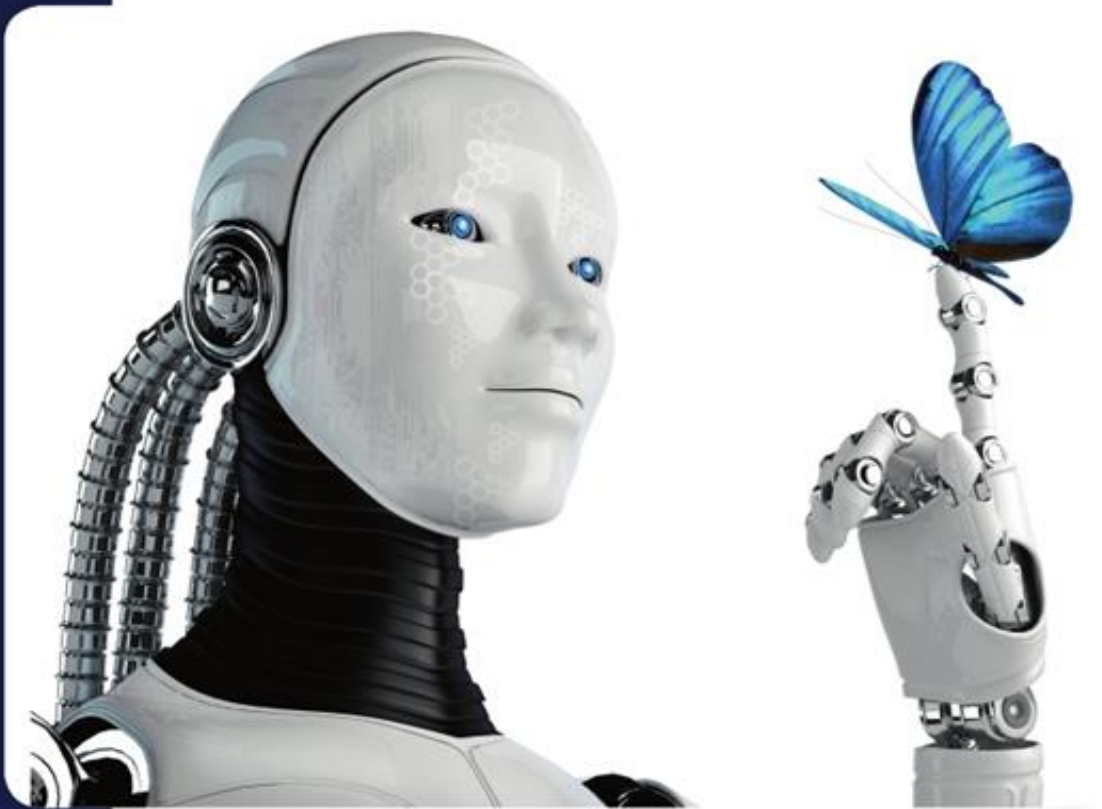


# Newsletter September, 2024



# ICR



# Hot Issue

1. **Korea Hydro & Nuclear Power Co., Ltd.**  
**Selected as the preferred bidder**  
**for the New NPP Project in Czech Republic.**
2. **ISO 19443:2018**  
**Guide to obtaining certification**
3. **TN, TT, IT System Earthing Methods**





# Korea Hydro & Nuclear Power Co., Ltd. Selected as the preferred bidder for the New NPP Project in Czech Republic.



[source : Korea Hydro & Nuclear Power Co., Ltd. Press Release]

## ▣ Selected as Preferred bidder for the New Czech NPP Project

The Czech government officially selected **Korea Hydro & Nuclear Power Co., Ltd.** as the preferred Negotiator for the construction of two new nuclear power plants in Dukovany, Czech Republic, in mid-July. With this, Korea has secured a bridgehead for entering the European market for the first time in 15 years since the UAE nuclear power plant in 2009, and has made the excellence of Korea's nuclear power technology and construction capabilities known on the international stage.

※ NPP : Nuclear Power Plant.



# Korea Hydro & Nuclear Power Co., Ltd. Selected as the preferred bidder for the New NPP Project in Czech Republic.

## ■ The significance of entering the European nuclear market

The fact that Korea Hydro & Nuclear Power Co., Ltd. was selected as the preferred negotiator for the new nuclear power plant construction project in Dukovany, Czech Republic, is a significant achievement for Korea, as it re-enters the European nuclear power plant market for the first time in 15 years since winning the contract for the UAE nuclear power plant in 2009.

This is more than just a simple contract achievement; it is also significant in that **Korea's nuclear power plant technology and construction capabilities have been recognized internationally.**

Europe is known as a market with very strict nuclear power technology and safety standards, and Korea's entry into the European market will serve as an opportunity to solidify its technological excellence and reliability in nuclear safety.

# Korea Hydro & Nuclear Power Co., Ltd. Selected as the preferred bidder for the New NPP Project in Czech Republic.



## ■ Growing interest in ISO 19443:2018 certification

Currently, major European countries are requiring ISO 19443:2018 Nuclear Supply Chain Quality Management System certification as a prerequisite for the supply of nuclear power plant equipment and services, and enquiries are increasing.

We are receiving inquiries from many domestic and international companies, including existing KEPCO qualified companies and new entrants to the nuclear industry, to obtain ISO 19443:2018 international standard certification.

 **Inquiries**

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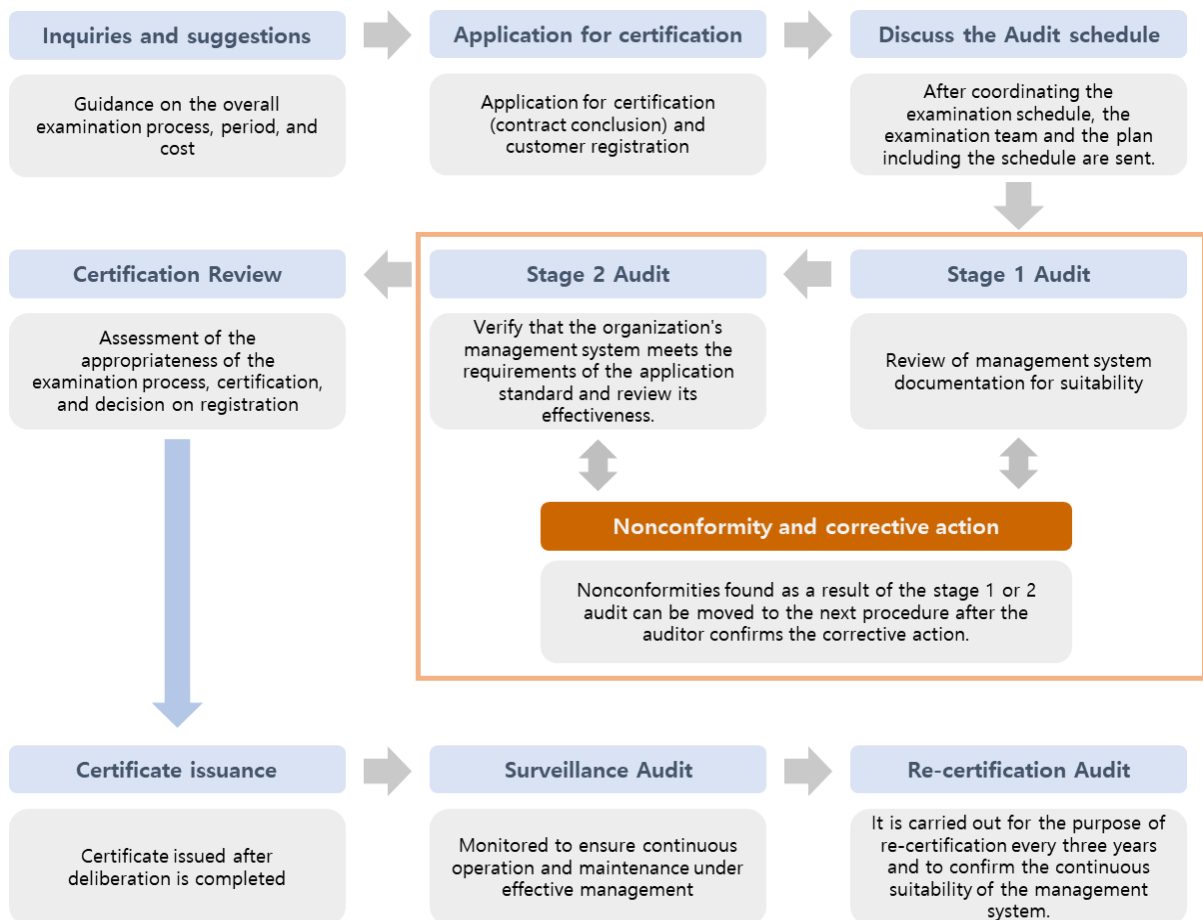
# ISO 19443:2018

## Guide to obtaining certification

### ■ What is ISO 19443:2018 certification?

ISO 19443 is a quality management system certification specific to the nuclear power industry and is **an essential international standard certification, especially for companies aiming to enter the European market.**

### ■ Process for obtaining ISO 19443:2018 certification





# ISO 19443:2018

## Guide to obtaining certification

### ■ Key Preparations for Obtaining ISO 19443:2018 Certification

#### Additional requirements for ISO 9001:2015

- ① Nuclear Safety Culture
- ② ITNS (Important to Nuclear Safety)
- ③ Graded Approach
- ④ Commercial Grade Item(CGI)
- ⑤ Counterfeit, Fraudulent or Suspect(CFS) Item
- ⑥ Lesson Learned
- ⑦ RCA(Route Cause Analysis)

#### Additional requirements for ISO 9001:2015 and KEPIC QAP

- ① Nuclear Safety Culture
- ② ITNS (Important to Nuclear Safety)
- ③ Graded Approach



# ISO 19443:2018

## Guide to obtaining certification

### ■ Contact us for ISO 19443:2018 certification

**ICR System Certification Center** provides ISO 19443:2018 certification, which is recognised as an international standard in the nuclear energy sector, with competent professional auditors and long experience in certification.

**We contribute to our clients' compliance with quality management and safety standards by providing certification services not only in Korea but also in the global market**, and we will do our best to meet the diverse needs of our customers based on our reliability and expertise.

If you are interested in obtaining ISO certification, please feel free to contact us!

 **Inquiries**

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# TN, TT, IT System Earthing Methods

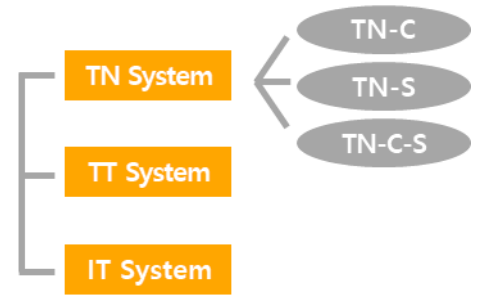


## Classification according to the KEC grounding regulations

According to KEC grounding regulations, there are three main types of grounding. Depending on how it is grounded, it is classified into **TN system**, **TT system**, and **IT system**, and TN system is further classified into **TN-C**, **TN-S**, and **TN-C-S** depending on whether the neutral and protective conductors are separated or combined.

**T**      **N** - **S**

First Letter    Second Letter    Other Letter



Division	Relationship	Symbols	Meaning	Contents
First Letter	The relationship between the power system and the earth	T	Terra	Ground a point directly to the ground
		I	Isolate	Ungrounded or impedance grounded
Second Letter	The relationship between exposed conductive parts and the earth	T	Terra	Expose Ground the entire device directly to the ground
		N	Neutral	Connect the exposure directly to the neutral point of the power grid
Other Letter (Only if applicable)	The relationship between exposed conductive parts and the earth	S	Separate	Disconnect the neutral and protective conductors
		C	Combine	Combined neutral and protective conductor (PEN conductor)

# TN, TT, IT System Earthing Methods



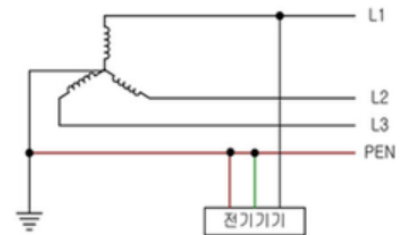
## 1. TN systems

This is classified according to the arrangement and connection method of neutral and protective conductors by directly grounding one point and connecting the exposed conductors of the facility with protective conductors.

In the case of TN system, the fault current flows through the protective conductor instead of the ground, and since a large fault current flows, it can be automatically cut off by an overcurrent protection device.

### 1) TN-C systems

The neutral wire and protective conductor are used as a dual purpose. In addition, when a ground fault circuit interrupter is installed, the PEN conductor passes through the inside of the built-in image current transformer, and the ground fault cannot be detected when it breaks, so a ground fault interrupter cannot be used.

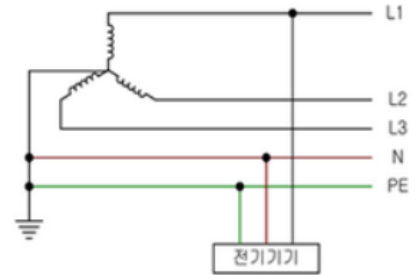


# TN, TT, IT System Earthing Methods



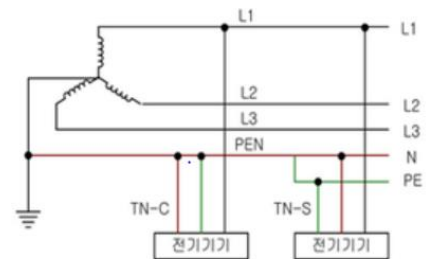
## 2) TN-S systems

The safest of all grid grounding methods. It is used by grounding the power source and separating the neutral and PE. The TN-S system is often used in places with faucet facilities such as apartments.



## 3) TN-C-S systems

This is a system that partially uses TN-C and TN-S. If a PEN conductor is used when installing a ground fault circuit interrupter, the ground fault interrupter will not operate in the same way as a TN-C system.



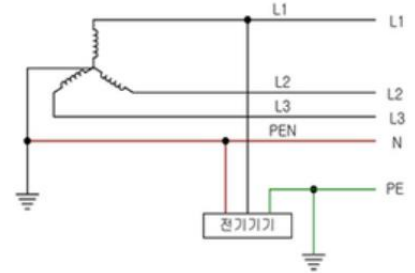
Therefore, to use a ground fault interrupter, the neutral wire and the protective conductor must be separated, and the protective conductor connected to the exposed conductor must be connected to the PEN conductor on the power side of the ground fault interrupter.

# TN, TT, IT System Earthing Methods



## ■ 2. TT systems

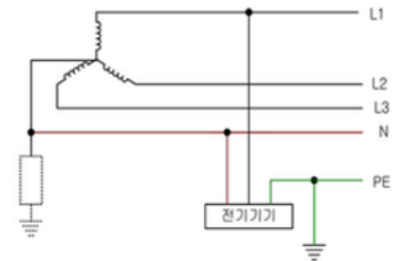
TT systems are grounded by installing a grounding pole at each receptor, separate from the generator or grounding pole. In general, when a fault occurs, ground fault current flows to the ground, so in most cases, electric shock protection by a ground fault interrupter is adopted.



Also, unlike TN system, it has the advantage of blocking the inflow of noise signals.

## ■ 3. IT systems

The IT system is an ungrounded system in which the power side is ungrounded or impedance grounded, and the exposed conductors are independently grounded. This system is rarely used because it is difficult to be adopted in large-scale power systems, and there is little risk of electric shock because the fault current in the event of a ground fault is quite small.



 **Inquiries**

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