

## Uninterruptible Power Supply (UPS)

*Kigali (Rwanda)*

*7 - 11 July 2025*

UK Traininig

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# Uninterruptible Power Supply (UPS)

Code: IT28 From: 7 - 11 July 2025 City: Kigali (Rwanda) Fees: 4000 Pound

## Introduction

An uninterruptible power supply UPS is a battery-powered electronic device that continues to supply electricity to the load for a certain period of time during a utility failure or when the line voltage varies outside the normal limits. It is a typical application. Besides the backup, most UPS also provide surge protection. Modern UPS can either be of the static type or the rotary type.

This course on the importance of Uninterruptible Power Supply UPS is of great interest where electrical installations require continuous power supply. Today's reliance on power from the grid sometimes poses new issues like power quality and interruptions. This training course will address issues pertaining to power quality and mitigation techniques. A closer look at the uninterruptible power supply components and functionalities will be discussed. The battery system which forms a tan integral part of the uninterruptible power supply will be scrutinized in view of its construction, characteristics, merits, and demerits. The state-of-the-art diesel rotary uninterruptible power supply will be deliberated in detail.

## Course Objectives

- Define the roles of an uninterruptible power supply with regard to the types of loads it should protect.
- Understand the different types and construction of batteries installed in an uninterruptible power supply.
- To appreciate the merits of the fully automated battery monitoring system.
- Identify the components in the uninterruptible power supply.
- Understand the functionalities and operations of each component of the uninterruptible power supply.
- Competence to perform maintenance by switching on to the bypass mode.
- Be able to interpret the alarms and execute troubleshooting techniques.
- To identify the particular type of uninterruptible power supply unit installed at your premises.

## Course Outlines

### Day 1: Understanding Uninterruptible Power Supply UPS Fundamentals

- Introduction to uninterruptible power systems and resilient design concepts.
- Comparison between single-input and double-input UPS systems.
- Advantages of installing an uninterruptible power system.
- Addressing power quality issues and outages with UPS.
- Simplified UPS design strategies.
- Comparing UPS systems with standby diesel generators.

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## Day 2: Exploring Battery Technologies and Chargers

- Overview of various battery technologies and their characteristics.
- Detailed construction and features of lead-acid batteries.
- Detailed construction and features of nickel-cadmium batteries.
- Best practices for battery care and maintenance.
- Insights into battery monitoring systems.
- Types, construction, and features of battery chargers.

## Day 3: Uninterruptible Power Supply Systems: Characteristics and Functions

- Differences between online and offline uninterruptible power systems.
- Key components and functions of UPS filters.
- Overview of double conversion UPS systems.
- Comparison of transformer-based and transformer-less UPS systems.
- UPS operation modes and their functionalities.
- Understanding parallel systems and redundancy in UPS.

## Day 4: Diesel Rotary Uninterruptible Power Systems DRUPS: Construction and Operation

- Introduction to diesel rotary uninterruptible power systems DRUPS.
- Construction and key features of DRUPS.
- Operating principles and functionality of DRUPS.
- Types and characteristics of DRUPS.
- Advantages and challenges associated with DRUPS.

## Day 5: Installation, Applications, Protection, and Maintenance of UPS Systems

- Safety protocols and care procedures for UPS systems.
- Importance of regular maintenance for batteries and UPS systems.
- Protective measures for UPS systems.
- Troubleshooting common UPS issues.
- Condition monitoring techniques for UPS systems.
- Case studies, selection criteria, and design considerations.
- Q&A and session wrap-up.



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