# Training Program:

## UPS Systems & Battery Chargers Maintenance & Troubleshooting

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# Introduction:

A sudden loss of power will disrupt most business operations and could lead to a company being unable to trade. Where a company regards electrical power as critical then there will be a need for a continuous or back up power system. The installation of a UPS will provide the necessary continuity. There are however problems with these installations when there is a need for maintenance especially the use of by-pass. Power Quality compatibility problems may cause failure, which was the reason for the original UPS installation.

# Who Should Attend?

Electrical technicians, maintenance professionals and electrical engineers who would like to expand their knowledge of UPS systems

# Training Objectives:

**At the end of this course, participants will be able to:**

- Develop knowledge of the need for a UPS, types available, UPS components, batteries, generators and maintenance
- Gain with new knowledge and skills that will enable them to understand more fully the requirements, roles and maintenance of UPS and battery systems
- Understand the basis for the use of a UPS
- Understand Critical Load Applications
- Have an appreciation of Power Problems

- Be able to review the installation and maintenance requirements of a UPS and Stand-by power installation
- Be able to improve reliability by improving the resilience of an electrical installation

## Accreditation:

BTS attendance certificate will be issued to all attendees completing minimum of 80% of the total course duration.

## Course Outline

**Introduction to the Resilient System**

- Introduction
- Regulations
- Critical loads
- Purpose of an Installation
- Compatibility
- Protection and Devices
- UPS or Generator
- Maintenance

**What is a UPS?**

- UPS Rating
- Parallel systems
- What is available
- Maintenance by-pass
- Off Line systems
- Redundancy
- On Line systems
- Interactive systems

**UPS Components**

- Transformer methods
- Harmonics
- Invertors
- Twelve pulse rectifier
- Phase control
- Power factor
- Six pulse rectifier
- Static switch

**Batteries**

- What is a battery?

- Storage and Care
- VLRA
- Choosing a battery size
- Size and location
- Charging
- Configuration
- Battery safety

**Generators and Site Planning**

- Do I need a Generator?
- Environmental Constraints
- Mains failure
- Monitoring power
- UPS Compatibility
- Installing the UPS
- Generator size considerations
- Maintaining the UPS