JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

UPS Maintenance and Fault Diagnosis Level 2 Training Course

29 August – 2 September 2027
Manama

UPS Maintenance and Fault Diagnosis Level 2 Training Course

Ref: 1332_49917 **Date:** 29 August – 2 September 2027 **Location:** Manama **Fees:** 5500 GBP

UPS Maintenance and Fault Diagnosis Level 2 is a 1-week training course for electrical maintenance technicians and engineers that produces a UPS fault diagnosis and battery test plan for each critical unit. Data centres, hospitals and process plants depend on continuous power, so a wrong diagnosis can turn a rectifier alarm into an outage. Jupiter Prime Training delivers this UPS Maintenance and Fault Diagnosis course.

Why UPS Maintenance and Fault Diagnosis Matters Now

Three forces shape UPS work today. Loads are more sensitive, with servers, drives and control systems tripping on short voltage dips. Battery fleets are ageing and mixing chemistries, as valve-regulated lead-acid strings sit beside newer lithium-ion cabinets. Fewer experienced technicians can read an event log and isolate a failed IGBT module. Sites that diagnose well keep critical loads on conditioned power and plan replacements; sites that do not discover weak strings during a mains failure. The course draws on ISO 55001 asset management principles and EN 13306 maintenance terminology.

Who Gains Most from UPS Maintenance and Fault Diagnosis

- Technicians responsible for routine inspection, cleaning and thermal checks of UPS cabinets
- Engineers who isolate rectifier, inverter and static bypass faults on site
- Battery specialists who test strings, record impedance and plan replacements
- Shift electricians who carry out transfers to maintenance bypass during outages
- Maintenance planners who schedule UPS service windows in the CMMS

Facility and data-centre electrical crews gain most when several members attend together and agree one switching and testing routine.

UPS Maintenance and Fault Diagnosis Capabilities

Participants move from replacing parts on suspicion to proving each fault with measurements, waveforms and event records.

- Interpret UPS alarm codes and event logs — the first isolation decision on a failed unit
- Test rectifier and DC bus performance under load — repair or replace choices for power modules
- Diagnose inverter and static switch faults safely — protection of the critical load during repairs
- Measure battery string impedance and discharge capacity — replacement timing for battery strings
- Execute maintenance bypass transfers by procedure — operations staff and load owners
-

Build a preventive service routine for each UPS — maintenance planners and site managers

Key UPS Maintenance and Fault Diagnosis Terms

- Double conversion — a UPS topology that converts mains to DC and back to AC so the load always runs on the inverter.
- Static switch — a thyristor switch that transfers the load between inverter and bypass supply in milliseconds without interruption.
- Maintenance bypass — a manual switch path that lets technicians isolate the whole UPS while the load stays powered from mains.
- Float voltage — the constant charging voltage that keeps a battery string fully charged without overcharging it.
- Internal impedance — a measured battery cell property whose rise signals sulphation, dry-out or connection problems before capacity is lost.
- Autonomy — the time a fully charged battery string can support the rated load after mains failure.

UPS Maintenance and Fault Diagnosis Day by Day

Day 1: UPS Architecture and Power Path

- Double Conversion Topology — Choosing Online Versus Line-Interactive Units
- Rectifier, DC Bus and Inverter Blocks — Tracing Energy Flow Under Load
- Static Switch and Bypass Lines — Transfer Conditions and Synchronisation Limits
- Parallel and Redundant Configurations — N+1 Load Sharing Decisions
- Lockout and Arc-Flash Precautions — Safe Access to Live Cabinets

Day 2: Alarm Reading and Fault Isolation

- Event Log and Alarm Code Review — Ranking Faults by Load Risk
- Rectifier Input Fault Finding — Fuse, Thyristor and Input Filter Checks
- Inverter IGBT and Driver Board Tests — Module Repair or Swap
- Oscilloscope Waveform Capture — Spotting Harmonic and Switching Defects
- Thermal Imaging of Power Sections — Locating Loose Joints and Hot Spots

Day 3: Battery Strings and DC Health

- Valve-Regulated Lead-Acid and Lithium-Ion Cells — Ageing and Failure Modes
- Impedance and Conductance Testing — Trending Weak Cells Before Failure
- Load Bank Discharge Testing — Verifying Real Autonomy Against Design
- Float, Boost and Temperature Compensation — Charger Settings and Battery Life
- Battery Room Ventilation and Terminal Care — Hydrogen and Corrosion Risks

Day 4: Bypass Operations and Performance Tuning

- Maintenance Bypass Switching Sequence — Keeping the Critical Load Powered
- Static Transfer Testing — Confirming Break-Free Changeover to Mains
- Input Power Factor and Harmonic Filters — Generator Compatibility Decisions
- Efficiency Modes and Eco Operation — Energy Savings Versus Protection Level
- Firmware, Calibration and Spare Module Stock — Readiness for Next Failure

Day 5: Practising the UPS Fault Diagnosis Plan

- Simulated Rectifier and Inverter Faults — Applying Isolation Sequences
- Battery Test Result Review — Setting Replacement Priorities per String
- Bypass Transfer Drill — Rehearsing Switching Roles and Communications
- Preventive Service Checklist and CMMS Entries — Fixing Service Intervals
- UPS Fault Diagnosis and Battery Test Plan — Completing the Unit Plan

Applying UPS Maintenance and Fault Diagnosis After the Course

- Run an impedance survey on every battery string of one critical UPS and rank cells for replacement.
- Rehearse a maintenance bypass transfer with operations staff using the written switching sequence.

UPS Maintenance and Fault Diagnosis Questions FAQ

What is UPS Maintenance and Fault Diagnosis and why does it matter now?

It is the skill of keeping uninterruptible power supplies healthy and proving faults by measurement. It matters now because sensitive loads, ageing batteries and fewer experienced technicians make every outage more costly.

Which roles gain most from UPS Maintenance and Fault Diagnosis training?

Electrical technicians and engineers who service UPS cabinets gain most. Battery specialists, shift electricians and CMMS planners also benefit.

How does UPS Maintenance and Fault Diagnosis Level 2 differ from a general power electronics course?

It focuses on servicing installed UPS units rather than circuit design theory. You work on alarm logs, battery strings and bypass switching, not converter engineering.

What do you bring back from UPS Maintenance and Fault Diagnosis training?

You bring back a fault diagnosis and battery test plan for a critical unit. It sets isolation sequences, test intervals and replacement priorities for your crew.

UPS Maintenance and Fault Diagnosis: The Way Forward

The UPS fault diagnosis and battery test plan first informs which battery strings and power modules to replace before the next peak season. Maintenance engineers, planners and operations leads use it to book service windows and switching drills. After its first use, revisit the impedance trends and alarm history to decide whether service intervals should tighten or relax.