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COURSE BROCHURE

# Electronic Circuit Board Fault Finding and Repair Training Course

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Registered in the United Kingdom and Saudi Arabia

# Electronic Circuit Board Fault Finding and Repair Training Course

**Ref:** 3266_124441 **Date:** 25 – 29 January 2027 **Location:** Rome **Fees:** 7200 GBP

Electronic Circuit Board Fault Finding and Repair is a 1-week training course for electronics technicians, instrument technicians and maintenance engineers, built around one work product: a board repair record and fault history log for the equipment they support. As spare boards grow scarce, component-level repair keeps plants running. Jupiter Prime Training links electronic circuit board fault finding and repair to the way boards actually fail in service.

## Why Electronic Circuit Board Fault Finding and Repair Matters Now

Three pressures shape board-level repair today. Many control cards and drive boards are no longer sold, so a failed card must be mended rather than swapped. Experienced repairers are retiring. And operations leaders expect shorter downtime with leaner spares stock. On manufacturing lines and in water treatment plants, a single failed card can halt a whole process. An organisation that diagnoses boards methodically restores equipment and learns from recurring faults. One that relies on trial-and-error swapping burns spares and sees the same failure return.

## Who Gains Most from Electronic Circuit Board Fault Finding and Repair

- Bench technicians who diagnose and mend returned cards
- Instrument technicians who maintain transmitters, analysers and signal conditioning modules
- Maintenance engineers who decide whether a failed board is repaired or replaced
- Control system technicians who look after controller racks and input and output cards
- Service engineers who support drives, chargers and power conversion equipment

A maintenance department gains most when bench and field staff attend together, so field symptoms and bench findings feed one fault history.

## Electronic Circuit Board Fault Finding and Repair Capabilities

Participants move from a reported symptom to the failed component and a documented repair.

- Apply a half-split fault finding sequence to a board — for technicians choosing the next probe point
- Test passive parts, diodes, transistors and regulators in and out of circuit — for repair staff deciding which component to replace
- Measure supply rails, ripple and switching waveforms with a multimeter and oscilloscope — for engineers judging power supply health
- Trace analogue and digital signals through sensor and control stages — for instrument teams isolating a faulty stage
- Carry out through-hole and surface mount rework with electrostatic discharge protection — for supervisors approving board repairs
- Build repair records that reveal repeat failures by board type — for maintenance managers planning spares and redesigns

## Key Electronic Circuit Board Fault Finding and Repair Terms

- Half-split method — dividing a circuit into halves and testing the midpoint to narrow the faulty section.
- Signal tracing — following a known signal stage by stage through a circuit until it disappears or distorts.
- Supply ripple — the residual alternating component on a direct current rail, often a sign of failing capacitors.
- In-circuit testing — checking a component while it remains soldered to the board.
- Rework — removing and replacing components on a finished board without damaging pads, tracks or nearby parts.
- Electrostatic discharge — a sudden static transfer that can weaken or destroy semiconductors during handling.

## Electronic Circuit Board Fault Finding and Repair Day by Day

## Day 1: How Boards Work and Why They Fail

- Reading Schematics, Block Diagrams and Board Layouts — Locating Functional Stages
- Common Failure Mechanisms of Capacitors, Semiconductors and Joints — Predicting Likely Culprits
- Heat, Vibration, Moisture and Contamination Effects — Linking Environment to Damage
- Electrostatic Discharge Handling and Safe Bench Setup — Protecting Boards During Repair
- Symptom Gathering From Operators and Event Logs — Framing the Fault Before Probing

## Day 2: Measurement Instruments and Component Testing

- Multimeter Voltage, Resistance and Diode Checks — Confirming Component Condition
- Oscilloscope Triggering, Probing and Grounding — Capturing Trustworthy Waveforms
- Testing Resistors, Capacitors and Inductors In Circuit — Avoiding False Readings
- Transistor, Thyristor and Regulator Checks — Separating Drivers From Loads
- Thermal Camera and Freeze Spray Techniques — Finding Intermittent Hot Spots

## Day 3: Power Supplies, Sensors and Control Electronics

- Linear and Switch Mode Supply Fault Patterns — Diagnosing Dead or Unstable Rails
- Ripple and Switching Waveform Interpretation — Spotting Ageing Electrolytic Capacitors
- Sensor Interface and Signal Conditioning Stages — Isolating Measurement Errors
- Input, Output and Communication Card Diagnosis — Restoring Controller Functions
- Half-Split Sequence on Mixed Analogue and Digital Boards — Choosing the Next Test Point

## Day 4: Soldering, Rework and Repair Verification

- Through-Hole Desoldering and Replacement Practice — Preserving Pads and Plated Holes
- Surface Mount Rework With Hot Air and Fine Tips — Handling Small Packages
- Track and Pad Repair Methods — Recovering Damaged Copper Safely
- Substitute Component Selection for Obsolete Parts — Matching Ratings and Footprints
- Functional Testing and Burn-In After Repair — Confirming a Lasting Fix

## Day 5: Practising the Board Repair Record and Fault History Log

- Faulty Power Supply Board Exercise — Applying Day 3 Rail Diagnosis
- Intermittent Sensor Card Case — Applying Day 2 Instrument Techniques
- Rework of a Damaged Control Card — Applying Day 4 Repair Methods
- Repeat Failure Analysis by Board Type — Informing Spares and Modification Requests
- Board Repair Record and Fault History Log — Final Version and Peer Review

## Applying Electronic Circuit Board Fault Finding and Repair After the Course

- Run the half-split sequence on the next three boards returned to the bench, recording each reading.
- Review twelve months of board failures by type and present the top repeat faults.

## Electronic Circuit Board Fault Finding and Repair Questions FAQ

### What is electronic circuit board fault finding and repair, and why does it matter now?

It is the structured diagnosis of failed boards down to component level, followed by a verified repair. It matters now because spares are often obsolete and downtime targets keep tightening.

### Which roles gain most from electronic circuit board fault finding and repair training?

Bench technicians and instrument technicians gain most. Maintenance engineers benefit when deciding whether to repair or replace a card.

## How does electronic circuit board fault finding and repair differ from an electronic design course?

It works on boards that already exist and have failed. Instead of choosing circuits for a new product, you locate the failed part, replace it and prove the repair lasts.

## What do you bring back from electronic circuit board fault finding and repair training?

You bring back a repair record and fault log format tested on real cases. It sets out test sequences, readings and replaced parts for each board type.

## Electronic Circuit Board Fault Finding and Repair: The Way Forward

The board repair record and fault history log first settles which board types are worth repairing in-house and which need redesign or new stock. Bench technicians fill it after every job and engineers read the trends. After a quarter, revisit test sequences and substitute parts against the repeat failures it reveals, in sectors from water treatment to manufacturing.