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COURSE BROCHURE

Electrical Wire Harness Design and Manufacturing Drawings Training Course

7 – 11 March 2027
Muscat

Electrical Wire Harness Design and Manufacturing Drawings Training Course

Ref: 2722_103979 **Date:** 7 – 11 March 2027 **Location:** Muscat **Fees:** 6500 GBP

Electrical Wire Harness Design and Manufacturing Drawings is a 1-week training course for electrical design engineers in automotive, aerospace and equipment manufacturing who leave with a harness design release pack for a sample assembly. Rising circuit counts, tighter packaging space and shorter build cycles make harness errors costly on the production floor. Jupiter Prime Training sets this course around routing, sizing and drawing decisions engineers make daily.

Why Electrical Wire Harness Design and Manufacturing Drawings Matters Now

Three pressures shape harness work today. Products carry more sensors and data links, so harnesses grow denser while space shrinks. Manufacturing partners expect drawings they can build from without queries. And mechanical, electrical and production engineers now share one three-dimensional model, so routing choices ripple across disciplines. Good harness design cuts weight, chafe failures and field faults; poor design brings late changes and scrap. The course rests on general industry practice for wire, connector and harness workmanship, described in plain terms.

Who Gains Most from Electrical Wire Harness Design and Manufacturing Drawings

- Those who route harnesses through three-dimensional assemblies and negotiate space with mechanical designers
- Those who select wire gauges, insulation types, connectors and terminals for each circuit
- Those who size bundles, coverings and clamps against bend radius and weight limits
- Those who flatten harness models into formboard and manufacturing drawings
- Those who run design checks and approve harness releases for production

Design groups gain most when electrical designers and the manufacturing engineers who build their harnesses attend together and agree drawing conventions.

Electrical Wire Harness Design and Manufacturing Drawings Capabilities

Participants move from drawing wires between pins to releasing harnesses that fit and can be built first time.

- Design harness routes in a three-dimensional model — for mechanical packaging decisions
- Specify wire gauge and insulation from current, voltage drop and temperature — for circuit reliability
- Apply connector, terminal and seal selection rules — for assembly and service technicians

- Calculate bundle diameter, weight and covering allowances — for clamp and grommet choices
- Build flattened manufacturing drawings — for production engineers
- Test a harness design against a structured checklist before release — for the design authority

Key Electrical Wire Harness Design and Manufacturing Drawings Terms

- Wire harness — an assembly of wires, connectors and coverings carrying power and signals between components.
- Routing path — the three-dimensional route a harness follows through an assembly, including clamps and pass-throughs.
- Bundle diameter — the overall size of grouped wires and coverings, used to choose clamps, grommets and conduit.
- Formboard drawing — a full-scale flattened layout of a harness on which manufacturing staff lay and tie wires.
- Wire list — a table defining every wire by circuit, gauge, colour, length and the pins at each end.
- Minimum bend radius — the tightest curve a wire or bundle may take without damaging conductors or insulation.

Electrical Wire Harness Design and Manufacturing Drawings Day by Day

Day 1: Harness Architecture and Requirements

- Harness Role in Vehicles, Aircraft and Machines — Scope of the Design Task
- Electrical Schematics and Circuit Lists — Inputs That Drive Harness Content
- Environmental Zones and Exposure Mapping — Heat, Fluids, Vibration and Abrasion
- Harness Partitioning and Inline Connection Points — Build and Service Choices
- Requirements Capture Sheet — Agreeing Constraints With Mechanical Designers

Day 2: Three-Dimensional Routing

- Routing Paths and Clearance Zones — Avoiding Sharp Edges and Moving Parts
- Clamp, Grommet and Pass-Through Placement — Supporting the Bundle Securely
- Bend Radius and Slack Allowances — Protecting Conductors During Installation
- Separation of Power and Signal Circuits — Reducing Electromagnetic Interference Risk
- Routing Change Control With Mechanical Models — Managing Design Iterations

Day 3: Wire, Connector and Bundle Selection

- Wire Gauge Selection From Current and Voltage Drop — Circuit Sizing Decisions
- Insulation Materials and Temperature Ratings — Matching Wire to Environmental Zone
- Connector, Terminal and Seal Families — Mating, Sealing and Service Needs
- Bundle Diameter and Weight Calculation — Choosing Clamps and Coverings
- Sleeving, Tape and Conduit Options — Abrasion and Fluid Protection Choices

Day 4: Flattening and Manufacturing Drawings

- Flattening a Three-Dimensional Harness — Preserving Lengths and Branch Angles
- Formboard Layout and Drawing Conventions — What the Build Floor Needs
- Wire Lists, Cut Lengths and Connector Tables — Production Data Accuracy
- Labelling, Marking and Bill of Materials — Traceability Through Assembly
- Electrical Continuity and Test Definitions — Acceptance Criteria for Built Harnesses

Day 5: Practising the Harness Design Release Pack

- Sample Assembly Routing Review — Applying Clearance and Protection Rules
- Sample Circuit Wire and Connector Choices — Applying Sizing Methods
- Sample Harness Flattened Drawing — Applying Formboard Conventions
- Structured Design Checklist Run — Catching Errors Before Release
- Harness Design Release Pack Completion — Drawings, Lists and Check Records

Applying Electrical Wire Harness Design and Manufacturing Drawings After the Course

- Run the structured design checklist on one harness currently in development and log every issue found
- Agree formboard drawing conventions with the manufacturing engineers who build the site's harnesses

Electrical Wire Harness Design and Manufacturing Drawings Questions FAQ

What is electrical wire harness design and manufacturing drawings and why does it matter now?

It is the work of routing, sizing and documenting wire bundles so they fit an assembly and can be built reliably. It matters now because circuit counts keep rising.

Which roles gain most from electrical wire harness design and manufacturing drawings?

Electrical design engineers gain most, along with the manufacturing engineers who build harnesses. The methods apply across automotive, aerospace and equipment work.

How does electrical wire harness design and manufacturing drawings differ from a general electrical drawing course?

It focuses on harness-specific decisions such as three-dimensional routing, bundle sizing and flattening. A general drawing course covers building or plant layouts instead.

What do you bring back from electrical wire harness design and manufacturing drawings?

You bring back a release pack for a sample harness with a flattened drawing and a completed checklist. Reuse it for your next release.

Electrical Wire Harness Design and Manufacturing Drawings: The Way Forward

The harness design release pack is the work product participants take home, and the first decision it informs is whether a harness is ready to release to the build floor. Designers, checkers and manufacturing engineers use it together. After its first use, the checklist and drawing conventions deserve another look, because build floor feedback will reveal which checks prevent the most rework.