



Live-Line Working Course: Hot-Stick, Barehand and Energised Insulator Washing



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Introduction:

Live-Line Working, covering hot-stick, barehand and energised insulator washing, is a 5-day course for staff who supervise, plan and engineer maintenance on energised transmission and distribution lines, ending with a Live-Line Work Plan and Rescue Procedure Set for a case utility. Utilities lose customer minutes and revenue when every insulator change or clamp repair needs an outage, yet poorly controlled energised work exposes crews to flashover and contact. Nominees already lead line crews or approve line maintenance, and learn through case studies built on feeder data, tool records and contamination surveys. CoreConcept Training Center delivers this live-line working course.

Course Objectives:

- Select hot-stick, rubber glove or barehand methods for a line task from voltage, structure type and crew capability
- Calculate minimum approach distances with IEC 61472 and set them on work method statements for each voltage level
- Run inspection and dielectric testing routines for live-line tools, insulating gloves and insulated aerial devices
- Plan energised insulator, clamp and conductor support tasks with tailboard briefings and stop criteria
- Schedule live insulator washing and cleaning from sand and salt contamination severity on each circuit
- Produce a Live-Line Work Plan and Rescue Procedure Set covering methods, equipment, washing and pole-top or bucket rescue

Target Audience:

- Staff responsible for supervising live-line crews on transmission and distribution circuits
 - Staff responsible for planning line maintenance that must proceed without customer outages
 - Engineering staff responsible for approving energised work methods and approach distance tables
 - Staff responsible for tool rooms, insulated equipment testing and aerial device certification records
 - Staff responsible for insulator contamination monitoring and washing crews in sandy or coastal networks
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Course Outline:

Day 1: Live-Line Working Foundations and Energised Network Context

- Live-Line Working Business Case for Avoided Customer Outages
- Hot-Stick, Rubber Glove and Barehand Method Selection Criteria
- Energised Line Hazards From Induction, Flashover and Phase Contact
- Electric Field, Potential Gradient and Bonding-On Principles
- Current-State Review of a Utility Live Work Register

Day 2: Standards, Approach Distances and Insulated Equipment

- IEEE 516 Guide Structure for Energised Line Maintenance
- IEC 61472 Minimum Approach Distance Calculation With Altitude Factors
- IEC 60903 Insulating Glove Classes, Sleeves and Cover-Up
- Fibreglass Hot-Stick Dielectric Withstand Testing and Daily Wipe-Down
- Insulated Aerial Device Boom Leakage Current Test Records

Day 3: Hot-Stick, Rubber Glove and Barehand Work Procedures

- Hot-Stick Suspension Insulator String Replacement Using Wire Tongs
- Rubber Glove Pin Insulator and Cross-Arm Change-Out Sequence
- Barehand Bonding-On With Conducting Wand and Conductive Suit
- Temporary Conductor Support With Lifters, Hoists and Roller Links
- Tailboard Job Briefing Format and Energised Work Method Statement

Day 4: Insulator Washing, Pollution Control and Emergency Rescue

- Desert Sand and Coastal Salt Insulator Contamination Severity Mapping
- Live Insulator Washing Water Resistivity and Nozzle Distance Control
- Dry Abrasive Cleaning and Silicone Coating Versus Washing Cycles
- Pole-Top and Bucket Rescue Drill With Controlled Lowering Line
- Energised Work Incident Patterns From Dropped Conductors and Flashovers

Day 5: Case Study and Live-Line Work Plan for a Case Utility

- Case Utility Feeder and Tower Data Review for Method Choice
 - Approach Distance Table Drafting for Case Voltage Levels
 - Tool Testing Schedule and Insulated Equipment Register for Crews
 - Insulator Washing Calendar From Case Contamination Survey Results
 - Live-Line Work Plan and Rescue Procedure Set Completion
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Skills You Will Gain:

- Live Work Method Selection
- Approach Distance Calculation
- Insulated Tool Dielectric Testing
- Barehand Bonding Practice
- Insulator Contamination Assessment
- Live Washing Supervision
- Aerial and Pole-Top Rescue

Why Attend This Course:

- Deliver a Live-Line Work Plan and Rescue Procedure Set to the network maintenance manager and safety lead for adoption on case circuits
- Decide whether a line defect can be repaired energised, by which method, or must wait for a planned outage
- Avoid unplanned outages, pollution flashovers and crew injuries caused by untested tools or wrong approach distances
- Coach crew leaders and tool room staff on briefing discipline, glove checks and washing controls using the course templates

Conclusion:

Back at the utility, the participant hands the network maintenance manager and safety lead a Live-Line Work Plan and Rescue Procedure Set. Planners use it to decide which defects proceed energised and which wait for an outage, crew leaders use its approach distance tables and briefing format on every job, and tool room staff follow its testing schedule. After the first quarter of use, the unit should review outage minutes avoided, washing-related flashovers, tool test failures and rescue drill times, then adjust methods and calendars that fell short.

Frequently Asked Questions FAQ:

What should participants know before the live-line working course?

Participants should already supervise, plan or engineer overhead line maintenance and read single-line diagrams and structure drawings. No prior barehand experience is needed. Bringing anonymised tool test records, a feeder list or a contamination survey helps apply the case study to their own network.

How does live-line working training differ from an overhead line design or HV switching course?

This course covers maintaining lines while they stay energised: method choice, approach distances, insulated tools, washing and rescue. Line design courses cover conductor sizing and construction, and switching courses cover isolating and earthing equipment before work; both appear here only as context.

Why is live insulator washing needed on hot-stick and barehand networks?

Sand, dust and salt settle on insulators and turn conductive when moist, causing leakage current and flashover. Washing energised insulators with controlled water resistivity and nozzle distance restores surface strength without an outage, especially before humid or foggy seasons.

What do participants take back from the live-line working course?

Participants take back a Live-Line Work Plan and Rescue Procedure Set for a case utility, with a method selection guide, approach distance tables, a tool testing schedule, an insulator washing calendar and pole-top and bucket rescue procedures ready to adapt.