

High Voltage Switching Operations

Master high voltage safety, understand arc flash risks, and gain practical skills in modern HV switching and protection technologies.

D A T E S

11th - 13th
August 2026

V E N U E

Johannesburg -
South Africa

Mr. David Davenport

Chief Consultant Engineer - ESIPAC
Technical Director - Transmag UK

C O U R S E T R A I N E R

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Course Overview

This course has a simple philosophy for a very complex subject, 'Keep it Safe : Keep it Simple'. It provides a comprehensive Introduction and understanding of the Safe Operation of High Voltage Power Systems (HV Authorisation).

This course is aimed for electrical/non-electrical personnel with a basic level of electrical knowledge who are required to carry out restricted HV switching operations with limited safety document issuing responsibilities up to and including 33kV.

Participants will learn how to prepare for and undertake the safe switching of HV electrical equipment

Key Learning Outcomes

By the end of this training, participants will be able to:

- **Understand and compose safely:** processes for Safe Systems of Work. This involves mastering the procedures required to ensure a secure working environment.
- **Acquire the ability to switch:** safely operate switching schedules and safety procedures. This is the core operational skill, ensuring that all high-voltage switching is conducted correctly and without incident.
- **Plan and Recover:** Understand how to plan a recovery action in the event of equipment failure.
- **Hazard Prevention:** Actively participate in the prevention of fatal electric shock and arc flash explosions .
- **Operational Proficiency:** Be able to operate switchgear and isolate equipment safely.
- **Documentation & Compliance:** Effectively apply and verify permits, understand HV earthing lockoffs, approve switching programs, and ensure compliance with HV safety rules.
- **Supervision:** Gain the competence necessary for reviewing or designing isolation procedures and safely overseeing contractors.

Why You Should Attend?

Attending an HV Switching Operation Course is essential for anyone involved in designing, approving, supervising, or performing high voltage work. It provides the critical knowledge and practical skills needed to safely operate HV equipment, prevent arc flash incidents, ensure compliant isolations, and avoid costly or dangerous switching errors.

The course enhances your understanding of HV networks, strengthens your ability to respond to faults and emergencies, and ensures you meet legal and duty-of-care requirements. Ultimately, it protects people, equipment, and operations while significantly boosting your professional competence and credibility why it's important

Course Facilitator

David Davenport

Chief Consultant
Engineer - ESIPAC
Technical Director -
Transmag UK



David Davenport is an experienced electrical engineer with over 50 years' experience in Mining, Heavy Industry, Oil & Gas and Critical Power. Working for companies including Rolls Royce, Bae, Siemens and Barlow Rand in his lengthy career. He is Vice-President and Chief Engineer for the Global Safety Standards organisation www.ESIPAC.online

David has conducted over 150+ training programs, seminars and workshops worldwide, mentoring 1,500+ professionals in electrical safety and excellence in installations, commissioning and testing, safety and monitoring solutions, electrical design, project work and planning engineering. He is also a key-notespeaker at international conferences on electrical safety and excellence

Expertise & Certifications

Chartered Electrical Engineer. Member of Institute and Engineering Technology an IEEE member and a Fellow of the Institute of Leadership and Management. A fully compliant and IOSH certified in electrical safety. David is himself an LVAP, HVSAP and an Authorised Engineer with many years of process documentation and hands on switching experience.

Clientele



nationalgrid



BAE SYSTEMS



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Day 1

Arc Flash, Electrical Safety & Modern Protection Technologies

Session 1: Introduction to HV Systems

- Overview of HV distribution (RMUs, transformers, circuit breakers, protection panels)
- Roles: Competent Person, Authorised Person, Senior Authorised Person
- Regulatory framework overview: UK EAWR, HSG85, NFPA 70E (where relevant), BS EN standards

Session 2: Electrical Hazards & Arc Flash Fundamentals

- Nature of HV electrical hazards
- Shock, burn, blast, pressure wave effects
- What causes arc flash: insulation failure, human error, contamination, mechanical wear
- HV-specific arc behaviour (fault level, clearing time, protection grading)

Session 3: Arc Flash Risk Assessment & Calculations

- Incident energy concepts
- Approach boundaries (shock & arc)
- Arc flash labels and information requirements
- How arc flash boundaries are determined
- Limitations of calculations & common errors

Session 4: Arc Flash Mitigation Technologies

- Modern ACB protection units (ARC function, zone-selective interlocking, reduced-energy mode)
- Optical arc detection systems (point sensors, fibre loop sensors)
- Fast-acting earthing switches
- Arc-resistant switchgear and containment design
- Remote racking / remote switching
- Engineering vs administrative controls

Session 5: PPE, Tools & Safe Use

- Categories of arc flash PPE (cal/cm² levels)
- HV-rated gloves, poles, insulated tools
- Clothing materials & compatibility
- Storage, inspection and replacement cycles

Day 2

Safe Systems of Work & HV Operational Safety

Session 1: High Voltage Safety Legislation & Standards

- Electricity at Work Regulations
- HSG85 "Electricity at Work: Safe Working Practices"
- The concept of prevention: proving dead, isolation, earthing
- Company rules, site instructions, work permits

Session 2: Safe Systems of Work

- The 6 key controls:
 - a. Planning
 - b. Control of documents
 - c. Isolation
 - d. Securing the point of work
 - e. PPE
 - f. Competence
- Who is responsible: SAP/AP/CP delineation
- Permit-to-work structure
- Risk assessment templates and examples
- Lock-out, tag-out (LOTO) for HV equipment
- Working adjacent to live conductors

Session 3: HV Equipment Familiarisation

- Switchgear types: RMUs, vacuum/SF6 switchgear, air-insulated switchboards
- Circuit breakers vs load break switches vs disconnectors
- Earth switches—types and operating interlocks
- Auxiliary systems: protection relays, trip coils, DC supplies

Session 4: HV Earthing & Proving Dead

- Why "dead" must be proved (induced voltages, backfeed, stored energy)
- Correct use of HV test equipment
- Application of portable earths / earth leads
- Fault current rating of earths
- Interlocking and sequencing

Session 5: Incident Response & Emergency Procedures

- Arc flash incident response
- Isolating faulty equipment
- Reporting procedures
- Site emergency plans
- What NOT to do during switching failures

Day 3

HV Switching, Method Statements & Practical Switching Exercises

Session 1: Principles of HV Switching

- Purpose of switching: isolations, load transfers, fault clearance, commissioning
- Live vs dead switching
- Switching hierarchy: breakers → isolators → earth switches
- Maintaining system stability (parallel feeds, synch checks, backfeeds)

Session 2: Method Statements for HV Switching

- Writing switching programmes / schedules
- Required sections of a method statement:
 - Scope and purpose
 - System configuration
 - Step-by-step switching sequence
 - Verification and sign-off
 - Risk assessment embedded in the programme
- Examples of good and bad switching programmes
- Common failure points (incorrect identification, wrong feeder, interlock bypassing)

Session 3: Practical Switching Exercises

- (Classroom/desk-based)
- Creating a live → dead → earthed switching sequence
 - Re-energisation sequence
 - Parallel switching scenario
 - Load transfer and contingency switching
 - Fault scenario analysis: "What would you do if...?"

Session 4: Competence Assessment & Review

- Written assessment (questions on arc flash, safety rules, switching sequences)
- Group analysis of a real switching programme
- Discussion: how to develop experience, authorisation progression
- Course summary, Q&A's

Programme Schedule

08:30 am - 09:00 am	Registration & Coffee Break
09:00 am - 11:00 am	Course
11:00 am - 11:30 am	Networking & Coffee Break
11:30 am - 01:00 pm	Course
01:00 pm - 02:00 pm	Networking & Luncheon
02:00 pm - 03:00 pm	Course
03:00 pm - 03:30 pm	Networking Break
03:30 pm - 05:00 pm	Course

Who Should Attend?

- HV operators
- Authorised persons
- Senior authorised persons
- Engineers
- Maintenance staff

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Registration Form

Please fill & sign below form & send us on
training@indulead.com

Delegate 1

Name : _____
Job title: _____
Email: _____
Mobile: _____

Delegate 2

Name : _____
Job title: _____
Email: _____
Mobile: _____

Delegate 3

Name : _____
Job title: _____
Email: _____
Mobile: _____

Delegate 4

Name : _____
Job title: _____
Email: _____
Mobile: _____

Delegate 5

Name : _____
Job title: _____
Email: _____
Mobile: _____

Note: In case of 6 or more nominations make a duplicate of this form & fill in the details.

ORGANIZATION DETAILS:

Company : _____
Address: (to be used on invoice): _____

Telephone: _____
Country: _____

AUTHORIZED BY:

Signature: _____
Name: _____
JobTitle: _____
Email: _____
Date: _____

PAYMENT DETAILS:

Credit Card Holder's Details - To send Payment Link

First Name: _____
Last Name: _____
Email: _____
Country: _____

Event Code: IL-HVSO-015

Course Fee

Registration Fees:

- Book 1 delegate Pay USD 1,595/delegate
- Book 2 or 4 delegates Pay USD 1,295/delegate
- Book 5 or more Pay USD 995/delegate

(All pricing excludes all taxes)

Payment Mode:

- Payments will be made by **Credit Card** or by **Bank transfer**, an Invoice will be sent soon after we receive the signed & filled registration form.
- Payment is required within **5 working days** after the receipt of the invoice.
- Payment must be received in full prior to the Course Origination.

Terms & Conditions:

- 1) Fee Includes (For Face 2 Face Training): the course fee covers all course material, lunch & refreshments. Please note that hotel accommodation is not included in the course fee.
- 2) Fee Includes (For Virtual Training): the course fee covers the live course session & the course material soft copies along with Certificates of Attendance.
- 3) Payment terms: Payments are required within 5 working days from the date of receipt of an invoice; all payments should be transferred by Credit Card/bank transfer to the Indulead International account. A receipt will be issued as payment is received.
- 4) Cancellation /Substitution Policy: Cancellation is only acceptable if submitted to us by email & will be subject to charges, cancellation received 60 days prior to the event 25% of the training fee will be charged, 30 Days prior to the event 50% of the training fee will be charged, 15 days prior to the event 75% of the training fee will be charged, 7 days prior to the event 100 % of the training fee will be charged. Substitution is the best option to avoid cancellation, as the cancellation is required in writing via email likewise Substitution is also required by email with complete details of the substituted delegates (Name, Position, Email & Mobile).
- 5) In the case of No Show, clients cannot claim any refund, & are not entitled to claim the Credit Voucher.
- 6) Cancellation by a paid client; does not subject to any cancellation charges, Indulead International will either accept the substitution or will provide a Credit Voucher of the Invoice amount which can be utilized in any of our future training, with validity up to 6 months.
- 7) Every possible effort is made to incorporate the event as it campaigns, however, due to any unforeseen circumstances Indulead International reserves the right to change the venue, location, and trainer. Also due to unforeseen circumstances, the event may be canceled or postponed, in this case, the paid delegate(s) Indulead International will process & refund the full amount, less the bank/service charges up to 5 % or less.
- 8) While all topics shown in this brochure will be covered in the course, the facilitator/instructor reserves the right to restructure and delivers them in a different order or sequence.
- 6) The client is considered aware of all the above terms and conditions, as they sign on this registration form & Indulead International will not be responsible for any expectation or monetary loss as indicated above.