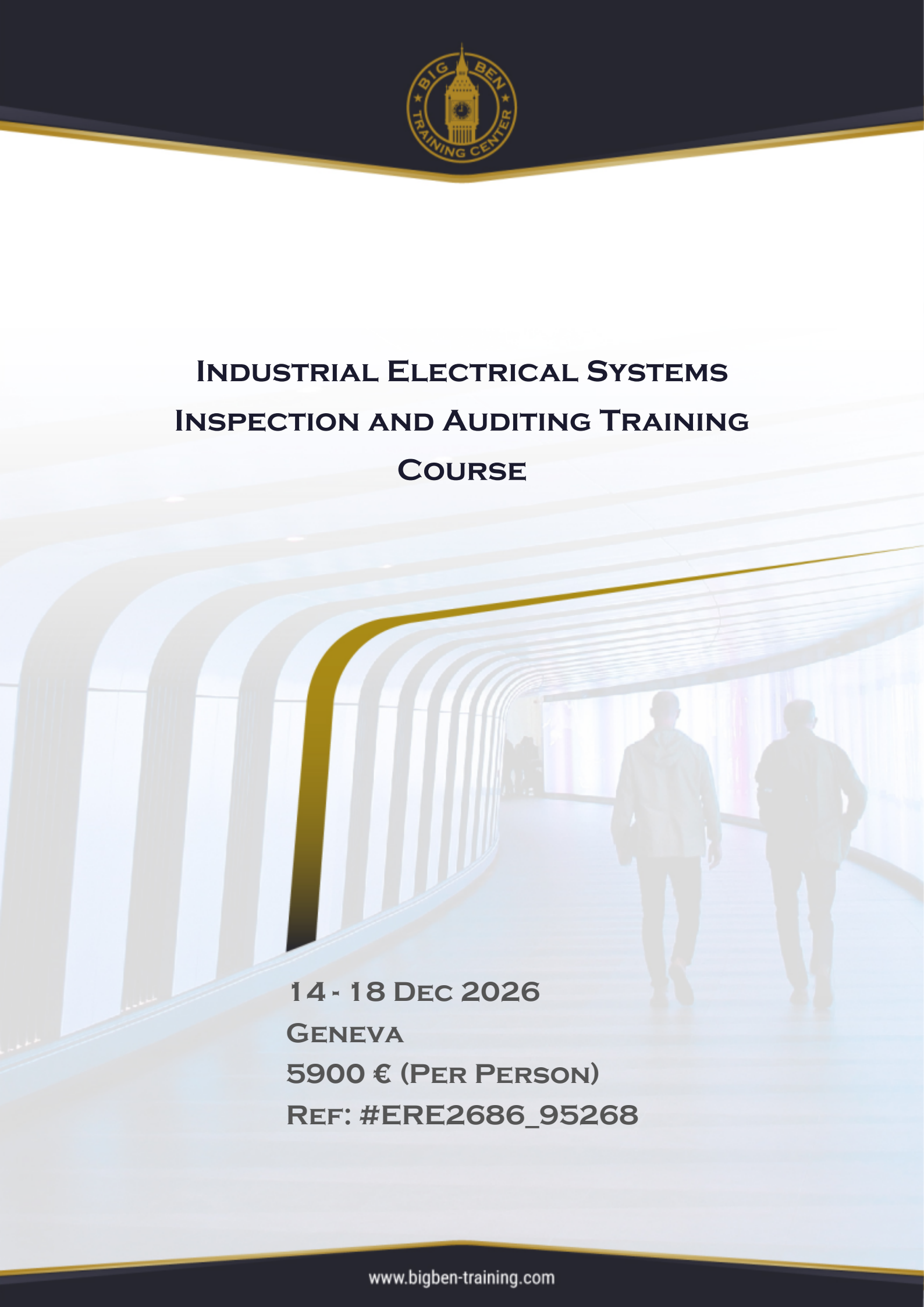
Industrial Electrical Systems Inspection and Auditing Training Course



14 - 18 Dec 2026

Geneva

5900 € (Per Person)

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Course Introduction / Overview:

This comprehensive training course provides an in-depth exploration of the principles and practices for inspecting and auditing industrial electrical systems. In today's technologically advanced industrial landscape, ensuring the safety, reliability, and efficiency of electrical infrastructure is paramount to preventing catastrophic failures, minimizing downtime, and maintaining regulatory compliance. This program moves beyond basic checks to instill a systematic auditing mindset, empowering participants to identify potential hazards, assess system health, and recommend corrective actions based on established international standards. As discussed by H. Wayne Beaty in the renowned "Standard Handbook for Electrical Engineers", a proactive approach to electrical maintenance is critical for operational excellence. BIG BEN Training Center has designed this course to bridge the gap between theoretical knowledge and practical application, focusing on real-world scenarios and diagnostic techniques. Participants will learn to navigate complex electrical schematics, utilize modern testing equipment, and develop robust preventative maintenance strategies that safeguard assets and personnel, ensuring a culture of electrical safety and system integrity within their organizations.

Target Audience / This training course is suitable for:

- Electrical Engineers and Technicians.
- Maintenance and Reliability Professionals.
- Facility Managers and Supervisors.
- Health, Safety, and Environment (HSE) Officers.
- Compliance and Quality Assurance Auditors.
- Project Engineers involved in electrical installations.
- Industrial Plant Managers.
- Consultants specializing in electrical systems.

Target Sectors and Industries:

- Manufacturing and Industrial Production.
- Oil, Gas, and Petrochemical sectors.
- Power Generation, Transmission, and Distribution Utilities.
- Heavy Construction and Engineering.
- Mining and Mineral Processing.
- Pharmaceutical and Chemical Manufacturing.
- Data Centers and Telecommunications.
- Governmental bodies and public sector facility management agencies.

Target Organizations Departments:

- Engineering and Technical Services.
- Maintenance and Reliability.
- Health, Safety, and Environment (HSE).
- Operations and Production.
- Facilities Management.
- Quality Assurance and Control.
- Project Management and Commissioning.
- Internal Audit and Compliance.

Course Offerings:

By the end of this course, the participants will have able to:

- Develop a systematic framework for conducting thorough electrical system audits.
- Interpret and apply key requirements from standards like NFPA 70E and NFPA 70B.
- Identify common electrical hazards, including arc flash and shock risks.
- Perform comprehensive visual and intrusive inspections of electrical equipment.
- Utilize advanced diagnostic tools for predictive maintenance, such as thermal imaging.
- Analyze power quality issues and their impact on industrial operations.
- Evaluate the integrity of grounding and bonding systems.
- Create detailed audit reports with clear, actionable recommendations for improvement.
- Formulate effective electrical preventative maintenance (EPM) programs.
- Ensure electrical systems comply with both local and international safety regulations.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to foster a dynamic and engaging learning environment that prioritizes practical application and skill mastery. This course rejects a purely lecture-based format in favor of an interactive, participant-centered approach. Sessions will combine expert-led presentations on core concepts with in-depth case study analyses of real-world electrical incidents and audit findings. Participants will engage in collaborative group workshops to develop inspection checklists and risk assessment matrices tailored to specific industrial scenarios. The curriculum incorporates hands-on demonstrations with various testing and diagnostic equipment, allowing for a tactile understanding of their application and data interpretation. Interactive problem-solving sessions will challenge participants to diagnose system faults and propose solutions. Continuous feedback is a cornerstone of our approach, with structured Q&A segments and peer-review activities ensuring that concepts are not just learned but thoroughly understood. This blended learning strategy ensures that participants leave with not only theoretical knowledge but also the confidence and competence to apply it directly in their professional roles.

Course Agenda (Course Units):

Unit One: Foundations of Electrical Safety and Auditing Standards

- Introduction to industrial electrical systems and components.
- Understanding the role and importance of electrical inspection and auditing.
- Key principles of electrical safety and hazard identification.
- Deep dive into NFPA 70E: Standard for Electrical Safety in the Workplace.
- Overview of NFPA 70B: Recommended Practice for Electrical Equipment Maintenance.
- Introduction to IEC standards relevant to electrical installations.
- Defining the scope and objectives of an electrical audit.

Unit Two: Planning and Conducting the Electrical Inspection

- The systematic process of an electrical system inspection.
- Reviewing essential documentation: single-line diagrams, schematics, and layouts.
- Developing comprehensive inspection checklists for different equipment types.
- Techniques for effective visual and sensory inspections.
- Safety protocols for conducting inspections on energized and de-energized systems.
- Assessing the condition of enclosures, conductors, and connections.
- Documenting observations and non-conformities accurately.

Unit Three: Advanced Diagnostic and Testing Techniques

- Introduction to predictive maintenance technologies in electrical systems.
- Principles and application of infrared thermography for detecting thermal anomalies.
- Techniques for insulation resistance testing on cables and motors.
- Understanding and performing circuit breaker testing procedures.
- Introduction to power quality analysis and common power quality issues.
- Methods for testing grounding and bonding system integrity.
- Safe and effective use of multimeters, clamp meters, and other testing tools.

Unit Four: Auditing Major Electrical Equipment and Systems

- Inspection and auditing of low and medium-voltage switchgear.
- Assessing the condition of transformers, including oil and winding tests.
- Auditing motor control centers (MCCs) and variable frequency drives (VFDs).
- Inspection protocols for panelboards, switchboards, and disconnect switches.
- Evaluating the safety and compliance of lighting and power distribution systems.
- Assessing emergency power systems, including generators and UPS.
- Reviewing protective device coordination and settings.

Unit Five: Audit Reporting, Compliance, and Corrective Actions

- Compiling and structuring a professional electrical audit report.
- Techniques for prioritizing findings based on risk and severity.
- Formulating clear, concise, and actionable recommendations.
- Presenting audit findings to management and stakeholders.
- Developing an effective electrical preventative maintenance (EPM) program.
- Principles of root cause analysis for recurring electrical failures.
- Closing the audit loop: tracking and verifying corrective actions.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

Beyond regulatory compliance, how can a proactive electrical auditing culture fundamentally transform an organization's operational efficiency and risk management profile?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by adopting a holistic, strategic perspective on electrical system management, moving far beyond a simple component-level checklist approach. While other programs may focus narrowly on technical testing procedures, this curriculum integrates the technical "how" with the strategic "why". It emphasizes the development of an auditor's mindset, teaching participants to analyze electrical systems as interconnected entities that are critical to an organization's overall operational health and safety culture. The content is structured to build a deep understanding of risk assessment and prioritization, enabling participants to provide recommendations that are not only technically sound but also commercially viable and aligned with business objectives. Furthermore, the course places a significant emphasis on the practical application of international standards like NFPA 70E and 70B, using real-world case studies to illustrate the consequences of non-compliance and the benefits of best practices. It is this unique blend of in-depth technical knowledge, strategic auditing methodology, and a strong focus on safety culture that provides a more comprehensive and impactful learning experience, preparing professionals to be leaders in electrical system reliability and safety.