



Body of Knowledge

The purpose of the ISO 50001 Lead Auditor credential is to support the creation of an international workforce focused on maximizing the energy savings impact of ISO 50001 implementation in industrial, commercial, and public sector organizations. This consensus-based, internationally relevant certification scheme for ISO 50001 Lead Auditors builds greater consistency and higher value in ISO 50001 implementations. This credential ensures the qualified candidate is competent in the following ISO 50003 technical areas: buildings, building complexes, and industry – light to medium. Within the context of the audit plan, the ISO 50001 Lead Auditor will be able to:

- Plan, lead and manage an ISO 50001 audit team effectively to ensure the audit objectives are met
- Conduct the ISO 50001 audit in conformance with ISO 50003 requirements
- Assess conformance to ISO 50001- Energy management systems standard, which includes confirming continual improvement of energy performance and any additional organizational requirements
- Document and report audit findings based upon objective evidence
- Effectively manage the relationship with the client and the auditee
- Communicate, justify, and take responsibility for the audit results both verbally and in a written report to the client.

The ISO 50001 Lead Auditor Certification requires passing a single 4-hour certification exam. The exam consists of the following mandatory subjects:

Body of Knowledge	Percent on Exam
Energy Performance Auditing	14%
EnMS Auditing	10%
Management Systems Auditing (general)	10%
Auditing (general)	7%
Pre-audit Team Leader Duties	3%
Stage 1 Auditing Team Leader Duties	11%
Stage 2, Surveillance, and Recertification Auditing Team Leader Duties	9%
Communication for Team Leader Duties	11%
Energy Fundamentals and Technical Area Knowledge for Light to Medium Industry, Buildings, and Building Complexes	13%
General ISO 50001 Audit Knowledge	6%
Leading Audit Team Knowledge	6%
Total:	100%

The following section includes the detailed body of knowledge covered on the 50001 LA exam:

Energy Performance Auditing

Performance Topics

- Evaluate energy performance considerations in long-term planning
- Confirm energy sources are consistent with the boundaries
- Confirm that energy baseline is consistent with energy consumption
- Determine if present and historical energy consumption data has been identified and analyzed
- Determine whether energy sources have been identified
- Confirm relevant variables and appropriate static factors have been defined
- Evaluate EnPIs for appropriateness for measuring energy performance
- Assure SEUs have been identified based on energy consumption / opportunities
- Verify valid baseline has been established and recorded
- Confirm that energy performance improvement opportunities have been identified, prioritized and recorded
- Confirm energy performance evaluation has been integrated into the design process
- Confirm that specifications for purchasing of energy have been defined
- Confirm lifetime energy performance criteria are used for purchasing equipment, products and services
- Verify competence of personnel associated with significant energy uses
- Confirm that a measurement plan has been established
- Ensure that measurement plan addresses all key characteristics
- Determine that the internal audit evaluates energy performance improvement

Knowledge Topics

- Common strategic planning process in business
- Common energy opportunities associated with energy systems.
- Criteria used to determine significant energy uses
- Common energy efficiency failures in design and common design solutions
- Common procurement process in business
- Energy opportunities and energy efficiency in new equipment purchases
- Basic lifecycle analysis
- Common criteria used for purchase of energy where applicable
- Local energy purchasing options
- Internal audit process and associated documentation
- Common skill-based qualifications, e.g. boiler operators, electricians, etc.

EnMS Auditing

Performance Topics

- Verify scope and boundaries are documented
- Confirm the energy planning process has been conducted effectively
- Verify appropriate energy objectives and targets have been established

- Verify that criteria for effective operation and maintenance of SEUs have been set
- Confirm energy performance has been considered in procurement selection criteria
- Verify evidence of operational control and maintenance are effective
- Verify the energy policy as been implemented at all levels
- Check evidence for regular energy team meetings
- Examine suggestion process for contractors and employees
- Confirm internal communication about energy performance
- Confirm employees'/contractors' awareness of the EnMS
- Confirm that the energy planning documentation meets ISO 50001 requirements
- Confirm the energy planning process is documented in accordance with ISO 50001
- Verify that criteria for response to significant deviations have been documented and implemented
- Verify appointment and authorization for energy team
- Determine whether energy management action plans have been established
- Determine whether action plans have been implemented
- Assure appropriate communication of operational controls to contractors
- Verify evidence of energy performance improvements

Knowledge Topics

- How to define scope and boundaries
- Energy planning and energy review
- Operational control and maintenance
- Energy policy requirements
- Contractor requirements related to energy
- Energy-related purchasing
- EnMS documentation requirements
- Significant deviation and requirements
- Competence needed for energy team leadership and participation
- Energy project and EnMS implementation steps
- Communication methods w/ contractors

Management System Auditing (General)

Performance Topics

- Check evidence of roles and responsibilities have been identified
- Verify that input and output from management review meet EnMS requirements
- Obtain evidence of management commitment and responsibility
- Verify appointment and authorization of qualified management representative
- Verify communication of energy management system within the organization
- Verify energy policy meets ISO 50001 requirements
- Determine whether legal and other requirements have been considered in the EnMS
- Implement audit plan
- Confirm training needs have been identified and addressed
- Verify decision has been made on external communication
- Verify records meet ISO 50001 requirements

- Verify that management review and actions taken are recorded
- Verify documentation controls
- Verify that results from monitoring and measurement have been recorded
- Determine if compliance with legal and other requirements has been evaluated
- Confirm that an internal audit process has been documented and implemented
- Verify that monitoring and measurement provides accurate and repeatable data
- Verify that internal audit frequency is defined
- Confirm that actual and potential nonconformities are addressed

Knowledge Topics

- Interpretation of behavior
- Interpretation of data
- Verification techniques and strategies
- Comparative analysis
- Communication skills
- Applicable energy legal requirements
- Interpretation of legal requirements
- Assessment of internal organizational learning needs
- Following Audit Trails

Auditing (General)

Performance Topics

- Collect evidence relevant to audit objectives, scope and criteria
- Verify evidence relevant to audit objectives, scope and criteria
- Audit preparation
- Identify audit findings
- Record audit findings
- Perform surveillance audit
- Perform recertification audit
- Implement audit plan
- Application of major and minor to nonconformities to certification decisions
- Use of electronic means to conduct audits

Knowledge Topics

- Determine and record a non-conformity
- Identify and evaluate objective evidence
- Note-taking
- Report writing
- Basic presentation skills
- Interviewing skills
- Language skills appropriate to all levels within the client organization
- Audit management skills
- Certification body's processes

Pre-Audit Team Leader Duties

Performance Topics

- Develop the audit program
- Confirm audit time based on effective personnel, energy sources, SEUs, and annual energy consumption
- Confirm sampling of sites

Knowledge Topics

- Client business sector
- Competence required for management representative
- Client products processes and organizations
- ISO 50003 duration of EnMS audit calculation
- ISO 50003 requirements to determine if organization is eligible for multi-site sampling
- Sampling / statistics

Stage 1 Auditing Team Leader Duties

Performance Topics

- Review documentation
- Evaluate site conditions
- Collect information on legal requirements
- Confirm scope and boundaries
- Review descriptive details of organization's scope and boundaries
- Review documented results of the energy planning process
- Review list of energy performance improvement opportunities
- Evaluate internal audits and management review to determine readiness for stage 2
- Obtain sufficient information on EnMS and site operations to plan stage 2 audit
- Determine if stage 1 needs to be repeated
- Determine interval between stage 1 and stage 2
- Determining stage 2 audit objectives, scope and criteria

Knowledge Topics

- Common structures for management system documentation
- Security conditions / basic safety requirements
- Basic business / finance / markets for sectors
- Energy fundamentals in technical areas
- Interviewing and communication skills – verbal and written

Stage 2 Surveillance and Recertification Auditing Team Leader Duties

Performance Topics

- Confirm audit team selection and assignments
- Manage the audit team
- Develop audit plan appropriate to the objectives and scope of the audit
- Validate audit findings
- Prepare audit conclusions
- Review effectiveness of corrections and corrective actions
- Confirm energy performance improvement
- Determine if greater frequency of surveillance audits is needed
- Recommend certification decision

Knowledge Topics

- Audit principals, audit leadership, audit management, audit practice, and audit techniques
- Corrective action processes
- Writing findings
- Management systems standards and principles
- Report writing

Communication for Team Leader Duties

Performance Topics

- Review client's understanding of ISO 50001 EnMS requirements
- Resolve conflicts
- Documents stage 1 conclusions and communicate them to client
- Review and reach agreement with client on stage 2 allocation of resources
- Communicate audit plan including roles and responsibilities, to client and audit team
- Conduct the opening meeting
- Communicate audit progress to client and team
- Communicate audit findings to client representative
- Conduct the closing meeting
- Prepare written audit report

Knowledge Topics

- Ability to communicate effectively verbally appropriate at all levels of the organization
- Listening skills
- Draft technical reports and taking notes
- Ask the right questions — interviewing
- Word processing software
- Conflict resolution
- Facilitation
- Mediation
- Negotiation
- Time management

- Multi-cultural communications
- Presentation skills

Energy Fundamentals and Technical Area Knowledge for Light to Medium Industry, Buildings, and Building Complexes

Knowledge Topics

- Energy vs power
- Energy unit conversions
- Energy units of measure
- Energy balance
- Energy performance: basic statistics and regression analysis
- General measurement & verification
- Common energy systems
- Energy bill concepts and purchasing
- Energy management principles
- Energy baseline
- Instrumentation and controls
- Energy codes and standards and regulations
- Energy sources, uses and relevant and static variables
- Technical knowledge as defined in ISO 50003 for light to medium industry, buildings and building complexes
- Alternative energy sources
- Measurement, monitoring and analysis of energy data
- Common energy performance improvement actions
- Common energy performance improvement technologies
- Client's products, business processes and organization

General ISO 50001 Audit Knowledge

Knowledge Topics

- Audit planning
- Communication: verbal and written
- 50001/17021 definitions and requirements for Stage 1 and 2, surveillance, recertification, and audit reports
- Certification cycle
- Back office processes of the certification body
- Knowledge of general business management practices
- Normative documents
- General audit principles, practices and techniques

Leading Audit Team Knowledge

Knowledge Topics

- Project management
- Team leadership
- Audit planning