Implementing ISO 50001:2018

Implementation Guide

Energy comes in many forms including electricity, gas, oil and steam, and is a resource used by organisations worldwide. Reducing your energy consumption and managing energy efficiency will not only reduce your costs, but will also reduce your carbon footprint and help protect the natural environment. It also reduces your reliance on others to provide the energy you need to operate, hence reducing the risk to your organisation.

Energy management is quickly becoming one of the most fundamental areas of focus across all business sectors, and the new version of the ISO 50001 standard was published in August 2018.

LRQA

Implementing an energy management system

With the revision, ISO 50001:2018 now follows the common terminology and structure of Annex SL, which allows easy integration with your existing management systems such as ISO 9001 (quality) and ISO 14001 (environment).

This guide has been developed to support organisations intending to implement an Energy Management System (EnMS) and undergo certification to ISO 50001:2018.

Why is ISO 50001 important?

Implementing an energy management system certified to ISO 50001 aids in the improvement of your energy performance through a structured approach to monitoring your energy use, identifying areas of improved efficiency and consumption and then implementing plans to improve your energy performance. Stakeholder engagement, including employees, is a key part of the system requirements to ensure ongoing effectiveness.

Certification to ISO 50001 enables you to demonstrate your commitment to your stakeholders for improving your energy performance and minimising your impact on the environment to ensure ongoing effectiveness and continual improvements.

Why ISO 50001 when there's ISO 14001?

Although energy is included as an aspect in the majority of organisations' ISO 14001 environmental management systems, no particular emphasis is given to energy and it is often overlooked with organisations concentrating on the more obvious environmental aspects, such as chemical and waste management.

ISO 50001 has been designed solely for the management of energy and includes a number of requirements not covered in ISO 14001.

Implementing an energy management system certified to ISO 50001, includes the need to establish baseline(s) of energy usage and energy performance indicators, as well as the usual objectives and targets which exist within an environmental management system. There are also specific clauses relating to design (covering facilities and production lines, etc.) and procurement, including specifying energy purchasing requirements.

The 2018 version of the standard also requires strategic level insight into energy performance. Organisations need to factor in who and what; both internally and externally, can affect energy performance in a business context.

Although organisations generally recognise that energy is a significant cost and an area where improvements can be made, it is often neglected during the purchasing and design decisions and opportunities for ongoing energy efficiency improvements and financial savings are often missed.

ISO 50001 specifically highlights these areas, so your energy management system will ensure that these opportunities are investigated and improvement potential identified and realised.

Before you start implementing

Before you establish an energy management system, you will need to gather background data on your energy usage and consumption so that you can determine your energy baseline(s).

Without this information, you will be unable to complete the requirements of the energy planning section of ISO 50001.

Some energy baselines can be obtained online from your suppliers, such as electricity for those with half hourly meters. Where installed, automatic meter readings are also available.

For other baselines, the data can be logged using manual readings for electricity and gas usage, usually taking readings weekly or monthly depending on the usage level. Please note that the use of utility bills can cause problems for baseline data due to estimated readings and varying numbers of days covered in each bill period. Baselines can also be established for other forms of energy by using invoices from suppliers or fuel card data if measuring diesel usage.

ESOS compliance

The Energy Savings Opportunity Scheme (ESOS) is the UK Government's approach to implementing the requirements of Article 8 of the EU's Energy Efficiency Directive (2012/27/EU). Organisations and corporate group members in the UK must comply with the ESOS regulation if they have one or more of the following:

- 250 staff or more
- Annual turnover exceeding £44 million
- Annual balance sheet exceeding £38 million.

Organisations can use four different routes to achieve ESOS compliance:

- ESOS energy audit
- ISO 50001 certification
- Display energy certificates
- Green deal assessments.

ISO 50001 certification route

ISO 50001 certification issued by a UKAS accredited certification body such as LRQA and covering the full scope of your organisation's energy consumption, will suffice as ESOS compliance. All you need to do then is notify the Environment Agency and provide proof of compliance via the ISO 50001 certification route.

Benefits of ISO 50001 compliance include:

- Demonstrate continual improvement in energy performance
- Reduce energy costs
- Achieve a tried and tested strategic framework and long-term plan for energy saving
- Minimise risk and increase energy security
- Build competitive edge, through improved performance, productivity, and effective communication.

A new ESOS compliance period starts every four years. If your system is certified to ISO 50001, your organisation will automatically demonstrate ESOS compliance, whilst maintenance and improvement of your ISO 50001 certified system will also allow ongoing compliance with future ESOS Phases.

ISO 50001:2018 clauses

ISO 50001:2018 is based on Annex SL, the High Level Structure (HLS) common text for all ISO standards that have been launched or revised since 2015. New and revised standards now have the same ten section structure.

Clause 4. Context of the organisation

As the starting point of the standard, clause 4.1 requires your organisation to understand the external and internal issues that affect your ability to achieve the intended outcome of your EnMS – namely improved energy performance.

You also need to determine who your 'interested parties' are and their requirements; as well as ensure that you are knowledgeable regarding legal and other requirements related to energy efficiency, energy use and energy consumption.

This gathered knowledge of business context at the strategic level, interested parties and legal and other requirements will help you decide the extent of your system, i.e. its scope and boundaries.

Remember the definitions for these are given in the standard (e.g., '. . . boundary is the physical or organisational limits as defined by the organisation whereas the scope is the set of activities, which an organisation addresses through an EnMS, which can include several boundaries').

By setting clear scope and boundaries, you will enable everyone to understand the coverage of your system.

Understanding the context of your organisation is meant to be a strategic activity so you understand the important issues that can affect your energy performance either positively or negatively.

The final part of understanding context in clause 4.4 requires you to determine how you will meet the requirements of ISO 50001, in other words, planning what you are going to do. Organisations plan in different ways, but typical examples of a system establishment plan include the use of project management systems, simple flow diagrams, actions from a meeting or gap analysis visit.

Once your EnMS is established, you will then work to implement, maintain and continually improve it, to allow demonstration of continued energy performance improvement.

Clause 5. Leadership and commitment

Ongoing top management commitment is a critical factor in the continual improvement of the EnMS to deliver improved energy performance. ISO 50001 clearly states the requirements for top management in clauses 5.1 and 5.3.

An energy team will need to be formed by top management with responsibilities and authorities assigned and communicated to meet the requirements of clause 5.3.

When deciding on your team, you will need to take into account the size and complexity of your organisation. For smaller organisations, the team may consist of only one person.

Energy management and energy performance improvement should align with your organisation's business strategy and long-term planning and resource allocation.

The energy policy required by clause 5.3 demonstrates the commitment of top management to the EnMS so that it can deliver enhanced energy performance.

The policy needs to:

- Provide a framework for setting and reviewing objectives and energy targets
- Support the procurement of energy efficient products and services
- Support design activities.

The policy should also contain commitments in relation to:

- Ensuring availability of information and resource
- Continual improvement of the EnMS and energy performance
- Satisfying legal and other requirements.

Your policy will need to be documented and communicated to all levels within the organisation and available to interested parties should they request it.

The energy policy is the cornerstone of your system and should clearly lay out your commitments, aims and expectations for your EnMS.

Clause 6. Planning

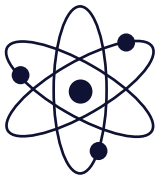
Now that the basis has been established for your system, we move onto the main planning part of the standard.

You now need to conduct and document an energy planning process. This needs to be consistent with your policy requirements and drivecontinual improvement in your energy performance. It also needs to involve a review of your activities that can affect your energy performance (similar to an environmental aspect assessment in ISO 14001).

Step 1

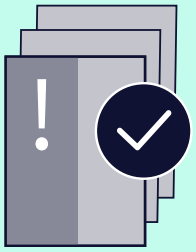
Determine risks and opportunities to ensure EnMS can achieve intended outcomes.

Step 2



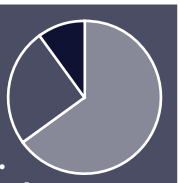
Risks and opportunities are then planned into EnMS to integrate actions into energy performance processes and to evaluate their effectiveness.

Step 3



Document action plans which should address risks and opportunities.
Include what will be undertaken, the resources required, key persons and by when as well as how results will be evaluated and energy performance improvement(s) verified.

Step 4

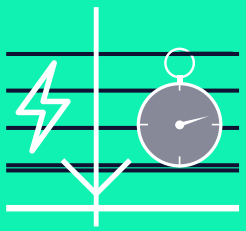


Conduct energy review (clause 6.3.1). Analyse energy use and consumption based on measurement and other data.
The energy review should provide information and data needed to establish Energy Performance Indicators (EnPIs).

Step 5

Identify areas of significant energy use (SEUs). This can be achieved through review of existing records and data followed by determining current energy performance for SEUs and identifying who can influence this.
Any applicable variables for each of these SEUs should also be identified, such as temperature or production levels.

Step 6



An energy baseline(s) needs to be established using the information from the initial energy review.
The baseline is the reference for measuring energy performance over time and these should cover a time period suitable for your organisation.

ISO 50001 is a data driven standard and as such, data is critically important in the demonstration of improved energy performance.

Planning which data to collect, and how and when data will be collected is therefore important. Clause 6.6 details the minimum which should be monitored and requires that an energy data collection plan is defined and implemented.

The level of measurement will vary for each organisation and could range from reading utility meters up to complete software application systems, consolidating data inputs and delivering automatic analysis.

The measurement level should be appropriate to the size and complexity of your organisation. You also need to make sure that the data you use is accurate and repeatable, so will need to calibrate or otherwise verify the monitoring and measurement equipment used.

Clause 7. Support

In order to effectively establish, implement, maintain and demonstrate continual improvement in the EnMS, an organisation needs to determine and provide the resources for energy performance. Resources are not just financial but can include organisational infrastructure, technology, etc.

There will need to be linkages through the EnMS to both top management and the energy team to ensure these resources are defined and provided.

The requirements for competence are detailed in clause 7.2. The first steps of this are to determine the competencies you will need as an organisation. For this, you need to consider not only the direct employees, but also encompass those who work under your control (agency workers, contractors, etc.) that have the potential to affect your energy performance.

Once the competencies are defined, you need to ensure these are met; and if you need to provide training or education, then the effectiveness of any actions taken should be evaluated to determine that the defined competencies are demonstrable.

As well as being competent, persons working under your control are required to be aware of the energy policy, their contribution to the effectiveness of the EnMS and the impact their activities can have on energy performance; including the implications of not confirming to your defined EnMS.

Through the definition and development of competence; and awareness and effective communication processes for those who affect energy performance, the standard is driving to develop an energy conscious culture within your organisation.

Internal communications can be used to make people aware of your energy performance, so that everyone working for, or on your behalf, has the ability to make comments or suggest improvements to the EnMS. An example of this could be improvement suggestion cards and boxes, or a section on an intranet site providing it's available to everyone.

Clause 7.5 details the documentation requirements for ISO 50001 but does not list these out, instead requiring all documented information from within the standard, as well as those you determine as an organisation, is required for the effectiveness of the EnMS to demonstrate energy performance improvement.

The clauses related to document creation, updating and control (7.5.2 & 7.5.3) are similar to other management system standards such as ISO 9001 (quality), ISO 14001 (environment) and ISO 45001 (health and safety). This requires you to have a process in place to ensure that among other requirements, documents are controlled and changes identified.

Clause 8. Operation

Within the planning process, the EnMS will have identified SEUs and related equipment and systems, including those from outsourced processes, which need to be operated and maintained effectively. Once criteria have been established for this, effective communication (linking to clause 7.4) of these ensures that significant deviations in energy performance from that planned can be avoided.

Examples of maintenance activities would be to minimise compressed air leaks, maintain steam traps and the set up and servicing of boilers.

ISO 50001 does not apply to product use by end users outside of the scope and boundaries defined in clause 4.3, nor does it apply to product design. Clause 8.2 is titled 'Design' and this is in relation to energy performance improvement opportunities and operational control in the design of your facilities, equipment systems and energy using processes.

Procurement is also an opportunity to improve energy performance. Your organisation has to inform suppliers that procurement is partly evaluated on the basis of energy performance when procuring energy services, products and equipment that have, or can have, an impact on significant energy use.

You also need to establish and implement criteria for evaluating energy performance over the planned or expected operating lifetime when procuring energy using products, equipment and services which are expected to have a significant impact on your organisation's energy performance.

Energy purchasing specifications need to be defined and documented.

Clause 9. Performance evaluation

Clause 9.1 involves implementation of the data collection plan and evaluation of both energy performance improvement and effectiveness of the EnMS. The key characteristics which need to be monitored as a minimum are listed. Any significant deviations in energy performance (such as unexpected spikes in usage) should be investigated and responded to. There is a need to keep appropriate documented information in these cases.

At planned intervals, there is a need to evaluate compliance with legal and other requirements focusing on energy. As with the requirements of other management system standards, you will need to plan and carry out internal audits to ensure that your system remains effective (clause 9.2). The internal audit will determine if the requirements of the standard are being met, and if energy performance and the EnMS itself are improving.

Management review is a key responsibility of top management and is an essential part of an effective system. It allows top management to step back and take an overall look at your system; not only reviewing if it meets the requirements of the standard, and legal and other requirements, but also whether it is suitable for your organisation and is delivering what you want from your EnMS. Although it is not specified what format management review should take, the majority of organisations use meetings to review their system to allow discussion and any necessary actions to be agreed.

The frequency of management reviews varies from company to company, normally ranging from monthly to annually. When first establishing your system, and while your system remains immature, you should expect to have more frequent management reviews, often monthly or quarterly.

As the system matures the time frames often move out for full reviews, but more frequent reviews remain necessary for some elements, such as energy performance, audit results and results from the evaluation of compliance with legal and other requirements.

Many organisations use some form of existing management meetings for these interim management reviews.

For your EnMS, your energy team could be used, with reports going to top management for review if top management is not part of the energy team.

The areas to be included as inputs to the review are clearly described within the standard, along with the expected outputs in clause 9.3.

Clause 10. Improvement

Correction and corrective action are the means by which deviations from the requirements of the EnMS can be corrected and their causes eliminated to prevent re-occurrence.

When a non-conformance is identified the first step is to take immediate and appropriate correction to resolve the situation.

Corrective action can then be determined and implemented to address the root cause and to prevent re-occurrence.

As an organisation, you will have to define and implement your EnMS and continually improve the suitability, adequacy and effectiveness of it to demonstrate continual energy performance improvement.

'Continual' implies occurrence over a period of time but this can include periods of interruption (unlike continuous which implies there can be no interruptions). It is expected then that the EnMS will deliver improved energy performance over time but the rate, extent and timescale of actions is determined by your organisation.

ISO 50001:2018 Assessment and training services

At LRQA, we take time to understand the needs and unique circumstances of our clients and their businesses, to act with judgement, sensitivity and care. Our range of online and face-to-face assessment services is suitable for organisations of all sizes and locations, and can help you make the most of the standards.

Training

Whether you're just starting out with energy management systems, transitioning to the new version of the standard, or are an experienced practitioner looking for a qualification, our ISO 50001 training courses are designed to match your personal development goal.

The energy management courses with LRQA can support the implementation of your energy management system in line with ISO 50001 requirements, helping your organisation to reduce both energy use and costs at the same time.

We offer a range of courses in different formats, to make sure there's something for everyone, whatever their learning preference or level. From eLearning and virtual classrooms, to in-house and customised solutions - all of our courses are crafted to be engaging so you can get the most from the time you spend learning.

Here are some of our most popular EnMS courses:

- Introduction to ISO 50001
- ISO 50001 Internal Auditor
- Energy Management Principles
- ISO 50001 EnMS Lead Auditor - CQI & IRCA Certified

Gap analysis

This assessor-delivered activity offers the opportunity to focus on critical, high-risk or weak areas of your system in order to create a certifiable system. It can also look at how existing management systems or procedures can be used within your chosen standard. Whether you are in the early stages of implementing your management system or looking to go for a 'dry run' before the assessment visit, the scope of the gap analysis can be decided with your business development manager or assessor and gives you flexibility in choosing the visit scope and duration.

Certification

Certification is typically a two stage process, and transition a single stage process, consisting of a system appraisal and an initial assessment, the duration of which is dependent on the size and nature of your organisation.

Your business development manager will design a solution to meet your specific needs while our assessors will be open, helpful and take a practical approach. This is one of the many ways we add value to the assessment process.

Surveillance

Once we have approved your management system, we carry out regular surveillance visits where we review the ongoing effectiveness of your system in achieving policy commitments to legal compliance, and continual improvements in managing energy aspects and impacts.

Integrated management system assessment

Companies looking to combine their energy management system with an existing management system (such as quality or environment) can benefit from a co-ordinated assessment and surveillance programme.

Remote Audit

Using secure remote technology, we deliver the same high-quality audit services that were previously only available as on-site audit. Our audit services will consist of a blend of remote and on-site audit activities providing you with an unrivalled level of insight and expertise.

Why choose LRQA?

We're here to help negotiate a rapidly changing world, by working with you to manage and mitigate the risks you face. From compliance to data-driven supply chain transformation, it's our job to help you shape the future, rather than letting it shape you. We do this by delivering:

Strategic vision

Our technical know-how, sector expertise and innovative, forward-thinking approach will help you meet the challenges of today – and become a safer, more secure, and sustainable organisation tomorrow.

Technical expertise

Our people are sector experts. They bring with them a clear understanding of your specific challenges, standards and requirements – then deploy deep knowledge of certification, brand assurance, food safety, cybersecurity, inspection and training to help you meet them.

Global capability

Operating in more than 120 countries, recognised by over 30 accreditation bodies worldwide, and covering almost every sector, we can help you manage risk, drive improvement and build credibility with stakeholders around the globe.

Effective partnership

Every business is unique. That's why our experts work with you, to fully understand your needs and goals, and work out how we can best support them.

Fresh perspective

We have led the way in shaping our industry and continue to take every opportunity to collaborate with clients and pioneer new ideas, services and innovation.

YOUR FUTURE. OUR FOCUS.

About LRQA:

By bringing together unrivalled expertise in certification, brand assurance, food safety, cybersecurity, inspection and training, we've become a leading global assurance provider.

We're proud of our heritage, but it's who we are today that really matters, because that's what shapes how we partner with our clients tomorrow. By combining strong values, decades of experience in risk management and mitigation and a keen focus on the future, we're here to support our clients as they build safer, more secure, more sustainable businesses.

From independent auditing, certification and training; to technical advisory services; to real-time assurance technology; to data-driven supply chain transformation, our innovative end-to-end solutions help our clients negotiate a rapidly changing risk landscape – making sure they're shaping their own future, rather than letting it shape them.

Get in touch

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