



ABB Ability™ Energy Manager

ISO 50001



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Ability™ Energy Manager ISO 50001

Introduction

Like all ISO management system standards, **ISO 50001 has been designed for implementation by any organization**, whatever its size or activities, whether in public or private sectors, regardless of its geographical location. ISO 50001 does not fix targets for improving energy performance. This is up to the user organization, or to regulatory authorities.

This means that any organization, regardless of its current mastery of energy management, can implement ISO 50001 to establish a baseline and then improve on this at a rhythm appropriate to its context and capacities.

For many organizations, **ISO 50001 has been a path to establish structures to implement strategies that significantly cut energy costs** and greenhouse gas emissions and sustain those savings over time.

The adoption and certification based on the ISO 50001 energy management system is on a voluntary basis. The aim of the EN ISO 50001:2018 is to enable organizations to establish the system and processes necessary to continually improve energy performance, including energy efficiency, energy use and energy consumption.

The document specifies the energy management system (EnMS)³ requirements for an organization. Successful implementation of an EnMS supports a culture of energy performance improvement that depends upon commitment from all levels of the organization, especially top management. In many instances, this involves cultural

changes within the an organization. The application of the process specified in the document can be tailored to fit the specific requirements of the organization, including the complexity of its systems, degree of documented information and available resources.

Development and implementation of an EnMS includes an energy policy, objectives, energy targets and action plans related to its energy efficiency, energy use, and energy consumption while meeting applicable legal requirements and other requirements.

The EnMS utilizes interrelated elements such as energy performance indicators (EnPIs)¹ and energy baselines (EnBs)² as a means to demonstrate measurable improvements in energy efficiency or energy consumption, related to energy use.

An EnMS enables an organization to set and achieve objectives and energy targets, to take actions as needed to improve its energy performance and to demonstrate the conformity of its system to the ISO 50001 requirements.

The EnMS described in the ISO 50001 is based on the Plan-Do-Check-Act (PDCA) continual improvement framework and incorporates energy management into existing organizational practices, as illustrated in the figure below. In the context of energy management, the PDCA approach can be outlined as follows.

Effective implementation of the ISO 50001 standard provides a systematic approach to improvement of energy

performance that can transform the way organizations manage energy. By integrating energy management into business practice, organizations can establish a process for continual improvement of energy performance.

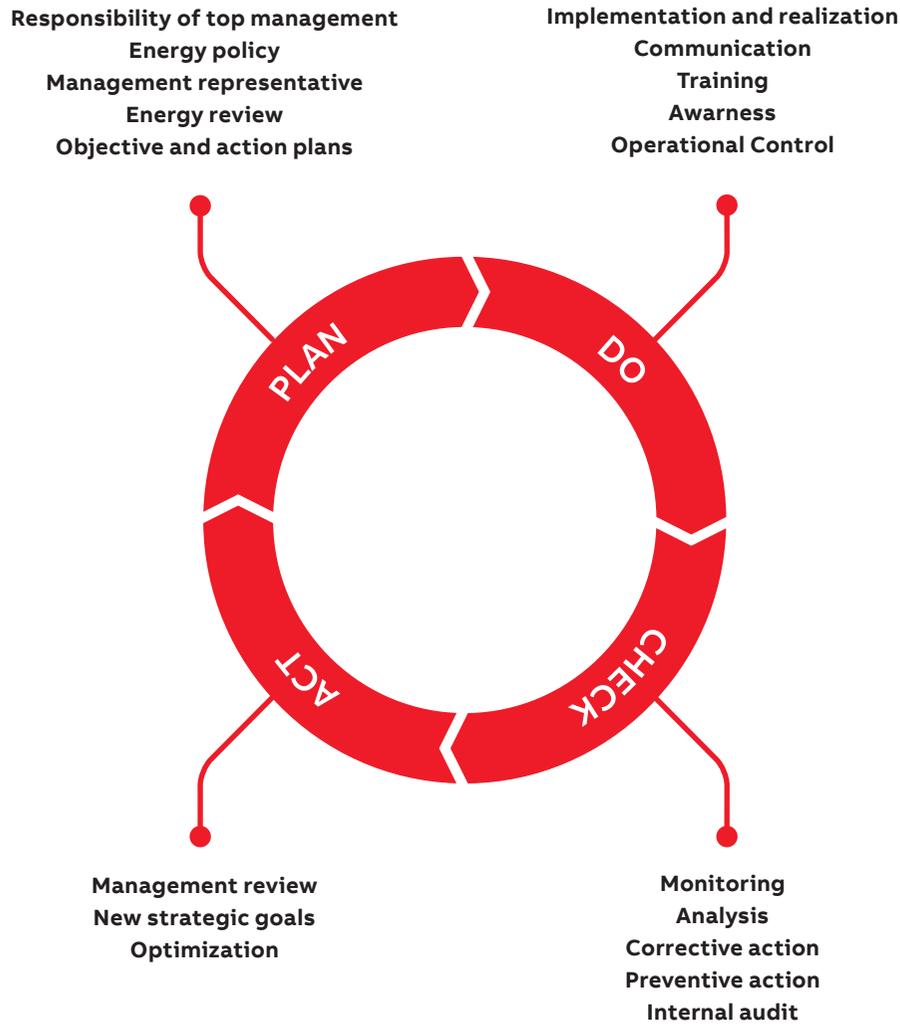
By improving energy performance and associated energy costs, organizations can be more competitive. In addition, implementation can lead organizations to meet overall climate change mitigation goals by reducing their energy-related greenhouse gas emissions.

ISO 50001 is a path to establish structures to implement strategies that significantly cut energy costs and greenhouse gas emissions and sustain those savings over time.

01 EnPI Energy Performance Indicator:
Measure or unit of energy performance, as defined by the organization
EnPI(s) can be expressed by using a simple metric, ratio, or a model, depending on the nature of the activities being measured.

02 EnB energy baseline:
Quantitative reference(s) providing a basis for comparison of energy performance.
An energy baseline is based on data from a specified period of time and/or conditions, as defined by the organization.

03 EnMS energy management system:
Management system to establish an energy policy, objectives, energy targets, action plans, and process(es) to achieve the objectives and energy targets



PLAN

Understand the context of the organization, establish an energy policy and an energy management team, consider actions to address risks and opportunities, conduct an energy review, identify significant energy uses (SEUs) and establish energy performance indicators (EnPIs), energy baseline(s) (EnBs), objectives and energy targets, and action plans necessary to deliver results that will improve energy performance in accordance with the organization's energy policy.



DO

Implement the action plans, operational and maintenance controls, and communication, ensure competence and consider energy performance in design and procurement.



CHECK

Monitor, measure, analyse, evaluate, audit and conduct management review(s) of energy performance and the EnMS.



ACT

Take actions to address nonconformities and continually improve energy performance and the EnMS.

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Benefits



Manage energy usage and operating costs

An ISO 50001 Energy Management System allows organizations to manage their energy consumption, therefore you shall be reducing energy bills and increasing company savings.



Evaluate the organizational goals,
incorporating new energy-efficient technology.

Continually improving the energy-related processes.
Be at the forefront of energy technology development. Continual improvement keeps your organization on schedule and allows you to monitor and ensure that minor nonconformities are mitigated before they become major issues.



Reduce greenhouse gas emission when using energy more efficiently.
Using new energy technology has the potential to reduce greenhouse gases. Greenhouse gases cause global warming – a sudden rise in temperature which has a negative effect on the environment.



Creating structured methods for identifying energy indicators to reduce the overall cost.
Energy usage reporting is deemed more reliable

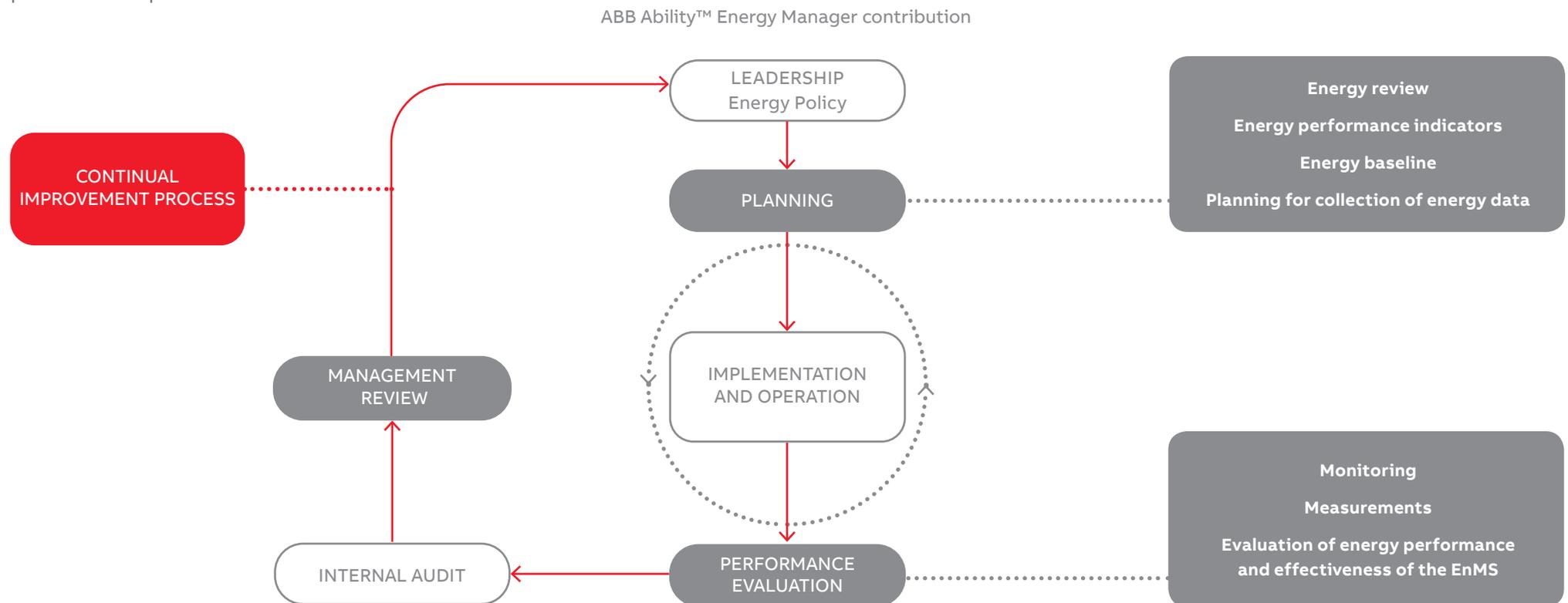


Energy usage reporting is deemed more reliable
by the market through the use of 3rd party auditors.

Ability™ Energy Manager ISO 50001 Contribution

The analysis developed in the ISO 50001 report outputs the contribution scheme of ABB Ability™ Energy Manager to ISO 50001 issues, by highlighting specific contribution toward satisfying intent and requirement of ISO 50001 standard.

Shown below is a schematic of the contributions, analysis and results towards satisfying the ISO 50001 process requirements.



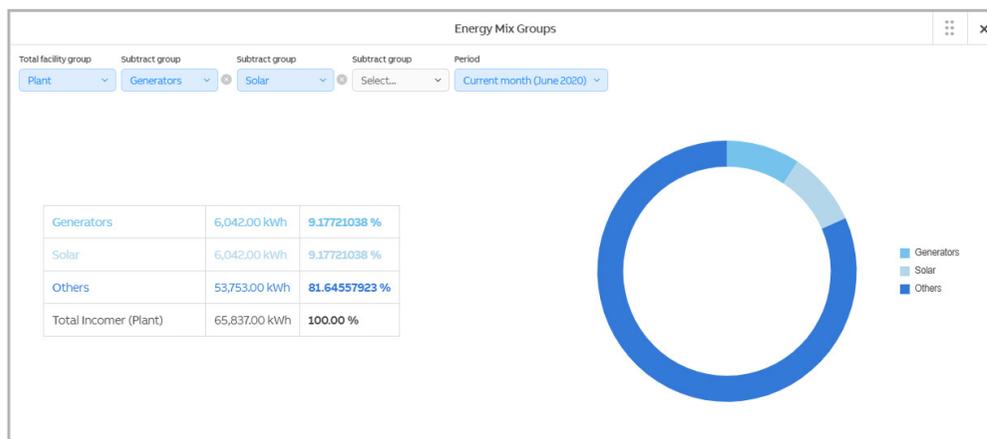
Analytic section

ISO 50001 process and ABB references

In this section the ISO 50001 process phases (of contribution scheme) are detailed with intent, content and related references to document the requirements. Each form refers to a single phase or sub-phase and contains an extract from the ISO standard (selected for the present scope of work) and the manufacturer references to document the requirements.

ENERGY REVIEW

Analyse energy use and consumption based on measurement and other data in order to identify significant energy uses (seus). For each seus determine relevant variables and the current energy performance. Find out opportunities for improving energy performance.



Energy Data Comparison

Period: Current year (2020)

Group	Active energy (kWh)	Previous Active Energy (kWh)
Group of Conditioning	161,697.00	80,674.00
EV Charging TOTAL	97.00	138.00
Condizionamento Servizi Generali	93,818.00	38,326.00
Ascensori	488.00	244.00
Condizionamento Amministrativi	67,879.00	42,348.00
System Test Lab	9,407.00	5,453.00
Totale	853,661.00	1,744,070.00
Chargers B C D E	-	-221.00
Generators	40,232.00	59,069.00
Mains	813,429.00	1,685,001.00

Energy Cost Comparison

Period: Current year (2020)

Group	Current Energy Cost (Euro)	Previous Energy Cost (Euro)
Group of Conditioning	48,509.10	24,202.20
EV Charging TOTAL	29.10	45.67
Condizionamento Servizi Generali	28,145.40	11,497.80
Ascensori	146.40	73.20
Condizionamento Amministrativi	20,363.70	12,704.40
System Test Lab	2,822.10	1,635.90
Totale	256,098.30	528,346.50
Chargers B C D E	-	-

Energy baseline (EnB) is established using information from the energy review and taking into account a suitable period of time.

The purpose is to enable reliable comparison between the EnPI(s) and EnB(s).

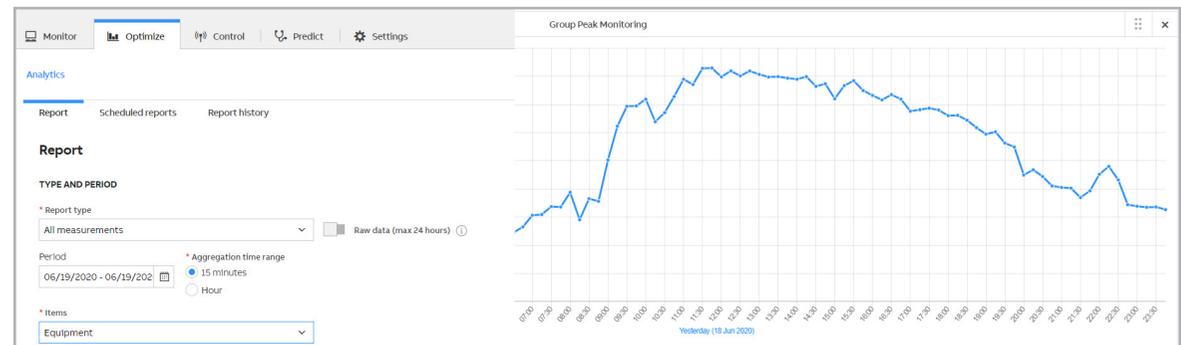
The organization shall establish an EnB(s) using the information from the energy review(s) taking into account suitable period of time.

Where the organization has data indicating that relevant variables significantly affect energy performance, the organization shall carry out normalization of the EnPI value(s) and corresponding EnB(s).

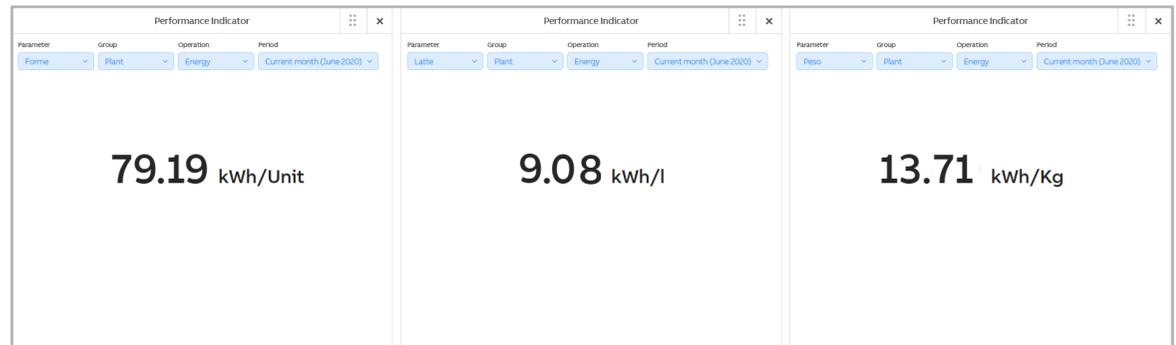
EnB(s) shall be revised in the case of one or more of the following:

- a. EnPI(s) no longer reflect the organization's energy performance
- b. There have been major changes to the static factors
- c. According to a pre-determined method.

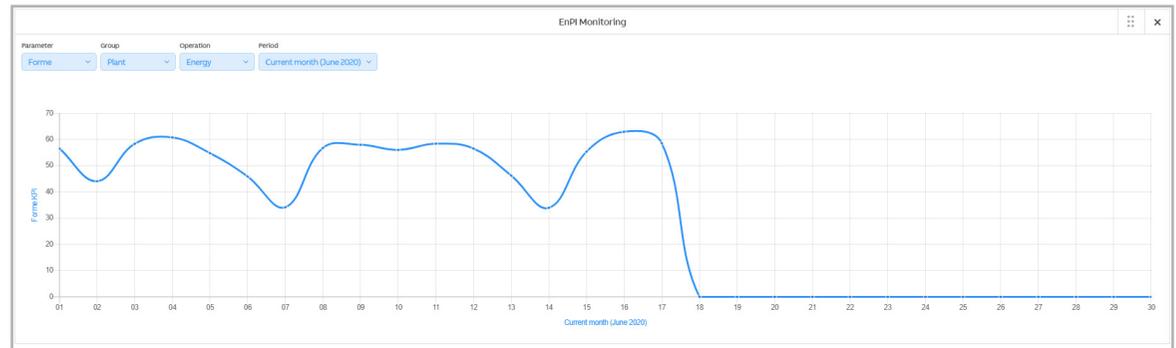
The organization shall retain information of EnB(s), relevant variable data and modifications to EnB(s) as documented information.



Planning for collection of energy data is critically important in monitoring and continually improving energy performance. This includes planning on which data to collect, how to collect it and how to review the monitored and measured data for analysis and evaluation.



Checking - performance evaluation monitoring, measurement, analysis and evaluation for energy performance and the EnMS this phase involves implementation of the data collection plan and evaluation of both energy performance improvement and effectiveness of the EnMS.



MANAGEMENT REVIEW

Top management shall review the organization's EnMS, at planned intervals, to ensure its continuing suitability, adequacy, effectiveness and alignment with the strategic direction of the organization.

Ability™ Energy Manager facilitates such data gathering through pre-configured widgets together with easily downloadable Excel reports and API data transfer

The screenshot displays the 'Report' configuration interface within the ABB Ability Energy Manager. The top navigation bar includes 'Monitor', 'Optimize', 'Control', 'Predict', and 'Settings'. The 'Analytics' section is active, with sub-tabs for 'Report', 'Scheduled reports', and 'Report history'. The 'Report' configuration area includes:

- TYPE AND PERIOD**
- * Report type**: A dropdown menu set to 'All measurements'.
- Raw data (max 24 hours)**: A toggle switch that is currently turned off.
- Period**: A date range selector showing '06/19/2020 - 06/19/2020'.
- * Aggregation time range**: Radio buttons for '15 minutes' (selected) and 'Hour'.
- * Items**: A dropdown menu set to 'Equipment'.
- Include plant summary**: A toggle switch that is currently turned off.



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