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BESS

Benchmarking and Energy management Schemes in SMEs

Intelligent Energy – Europe (EIE)

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Deliverable number D 2.2

Final interactive checklist tool for inclusion in the web based e-learning final package

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0 Summary

0.1 Introduction to the BESS project

The BESS project (Benchmarking and Energy Management Schemes in SMEs) is implemented as a grant agreement within the EU's Intelligent Energy – Europe (EIE) Programme.

The primary objective of the project is to promote widespread use of best practice energy management and benchmarking tools and to improve energy efficiency in industrial small and medium-sized enterprises (SMEs), with particular focus on the food and drinks industry.

The main tasks of the project are:

- Development of an interactive tool (jointly with the industrial associations) for the promotion of a systematic approach to energy management and benchmarking. The tool will contain the following elements: selection of appropriate measures, implementation and day-to-day management, an e-learning scheme, and a monitoring and benchmarking system for the food and drinks industry.
- Pilots in 55 industrial SMEs.
- Comparative analysis of energy monitoring and benchmarking in 11 pilot countries.
- Targeted dissemination of the interactive tool in co-operation with the food and drinks industry associations.
- Seminars, internet and other information dissemination.

The project started in January 2005 and the kick-off meeting was held in Utrecht, the Netherlands on 7-8 February 2005. The project is scheduled to be finalised by 30 April 2007.

The project's internet address is www.bess-project.info.

More information on the project can be obtained from the project partners and the project co-ordinator:

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0.2 WORK PACKAGE 2 – ENERGY MANAGEMENT IMPLEMENTATION MODEL AND STANDARD

The objective of Workpackage 2 of project BESS - Energy Management Implementation Model and Standards - was to provide an overview and inventory of useful existing schemes on energy management systems (implementation) and energy management standards. Based on the survey energy management implementation model BESS EMIM was prepared targeted to energy management for SMEs. Besides the model and standards a set of practical supporting tools for the (pilot) companies have been developed like an interactive energy management checklist tool for inclusion in the web based e-learning scheme which is part of the supportfor the companies taking part in the BESS project.

The energy management implementation model was tested during pilot phase (Workpackage 5), where selected companies implemented energy management according to BESS EMIM proposed. Through evaluation of the approaches a proposal for BESS energy management implementation model (BESS EMIM) is made, reflecting the potential accordance to energy management standards.Based on evaluation of the companies the model revision and adjustements are to be made according to end-user experience.

The work programme of work package 2 consisted of 4 tasks: 2.1 prepatory work, 2.2 developing an energy management implementation model and standard, 2.3 evaluation of the pilot and adjusting the energy management implementation model and standards and 2.4 informing and reporting.

BESS Energy Management Checklist Tool

The BESS Energy Management Checklist is a tool for determining the extent to which an organisation has a properly functioning energy management system. If all of the questions in the checklist can be answered with YES, the system functions as it should regarding the BESS Specification. If the most important questions can be answered with YES, the system satisfies the minimum requirements.

During the Energy Management system audit, the BESS Energy Management Checklist is used as an instrument to determine whether a companies energy management system functions as it should if the company strives towards full compliance with the BESS Specification. Any non-conformance is identified, and possible improvements are noted and subsequently presented to management.

A proper Energy Management system audit results in clear reports and unambiguous targets about what will be done with the results. Thus the organisation can adequately respond to areas needing improvement.

The implementation of an energy management system ensures that a company continually passes through the cycle of making energy policy, planning energy efficiency actions, implementing those ands checking the results, on the basis of which new policy is made.

The ambition to check and improve the quality level of the energy management system at regular intervals is an essential part of the system itself.

A company can use the BESS Energy Management Checklist to evaluate the quality level of its own Energy Management system at any time. The checklist is based on an existing energy management checklist which was specially made for and is used by more than 1000 Small and Medium sized Enterprises in the Netherlands. It contains 40 questions for self assessment. By answering these questions a company can find out to which extend it complies with the requirements laid down in the BESS Energy Management Specification. This specification is based on the ISO 14001 standard and follows the Plan Do Check Act management cycle.

The excel based tool has 3 types of questions which can be answered by yes or no:

- Confirmation of all priority 1 questions (19) indicates a minimum level of compliance needed to benefit from the energy management system.
- Confirmation of all priority 1 and 2 questions (19 + 7) indicates that the company has succeeded to implement a mature energy management system in its organisation.
- Additional confirmation of the other optional questions (14) indicates that the company fully complies with all the requirements which are part of a good energy management system implemented according to the BESS energy management Specification.

For companies which are not familiar with the requirements from the Specification or which are doing this self assessment test for the first time can benefit from the explanatory notes provided with every question. In this way the BESS Energy Management Checklist also helps to identify the relevance of the different energy management aspects and to find the weaknesses and possible solutions within your energy management system.

To facilitate the user of the Checklist the excel file contains:

- A practical guidance for use.
- The Checklist itself with a summary result feature and a print button.
- A checklist print template: a blank template with the explanatory notes can be printed.

The final interactive checklist tool for inclusion in the web based e-learning final package is presented at the end of the document, in e-learning defined as Tool 17 – Energy Management Checklist.

Adaptation of Energy Management Implementation Model

The pilot companies valued the support by the national pilot coordinators as very helpful. Despite the fact that all information is available on the Internet via the E-learning system and the Benchmark tool, personal contacts between the experts and companies were essential in order to clarify navigation and to assist and overcome reluctance in the use of certain tools. Personal contacts also help in maintaining progress at the companies and giving the assurance of having backup.

Generally the EMIM was found average with a number of very helpful aspects. There is no consensus between the countries on the appraisal of the aspects like clearness, steps and sequence of steps and the results in the companies. Where companies find it very helpful, others find the same aspect average or in a single case insufficient.

Based on feedback from pilot companies following two major opinions were observed:

- generally the EMIM was found average with a number of very helpful aspects
- no consensus between the countries on the appraisal of the aspects like clearness, steps and sequence of steps and the results in the companies

Since companiesdiffer on size and energy management personell or level, EMIM was regarded in different ways:

- “EMIM not very well fitted to small enterprises because it is too complicated “
- “The BESS EMIM is made on a high professional level” – it might be too polished

EMIM was not seen as perfectly suitable to act as a self running scheme for companies that want to implement energy management. The reasons for this are:

- an external drive, like a consultant, is needed to act as a catalyser;
- it only works if there is commitment from top level management;
- the company has to provide the necessary resources:
  - ➔ time for the employees to do their job;
  - ➔ budget to execute energy efficiency improvement projects;
- the company has to give priority to energy efficiency;
- people must be trained.

Companies valued severfal tools prepared in teh scope of supporting materials to implement energy management. The tools that are valued most are:

- measure lists
- format for the energy action plan
- linking lists
- energy audits and
- benchmarking

Tools related to the organisation of energy management are not so highly valued despite the fact, that the way energy management is organised within a company should secure sustainability of the energy management process: it is the backbone of continual attention for energy matters and the drive for constant energy efficiency improvement. Based on these findings potential changes to EMIM were discussed, as follows:

1. possible need for simplification for SME's, but taking into account a need to include sustainability of the system -
2. to reduce number of activities by grouping them together and reduce the content of activities description
3. based on well developed tools, is it possible to reduce need for external consultant
4. the requirements of the EM Checklist seem demanding – but well structured

From a communication point of view The EMIM in the BESS package of tools has been changed slightly compared to the original version mentioned in the report D 2.1 (see next page). Also a simplified version of the EMIM was made which includes an example of a sequential implementation order (9 steps: dispayed after tyhe EMIM). Both models are integrated in the current e-learning scheme.

Also possible changes of tools for SMEs were discussed, with following decisions:

- Tool 0 – description of EMIM – grouping the activities could be mentioned
- Tool 1 – business case – the question is wheather it is really necessary. The tools is needed for first implementation but not for advanced energy management.
- Tool 2 – preselfassesment – the tool seems quite demanding, but needed in first stage of implementation.
- Tool 3 – company commitment – the tool is regarded similar to Tool 13 (Energy Policy Declaration) and can be therefore omitted for advanced energy management
- Tool 4 – energy audit description – the tool is needed and well developed
- Tool 5 – energy audit data collection - the tool is needed and well developed
- Tool 6 – horizontal measure list - the tool is needed and well developed
- Tool 7 – sectoral measure lists - the tool is needed and well developed
- Tool 9 – legislation – the tool is quite country specific and can be used to develop own legislation/demands specification
- Tool 10 – energy action plan - the tool is needed and well developed
- Tool 11 – TRA matrix - the tool is needed and well developed
- Tool 12 – energy coordinator / energy team - the tool is needed and well developed
- Tool 13 – energy policy – the tool seems not very popular, but needed in any case as being one of prerequisites for successfull energy management
- Tool 15 – Good housekeeping - the tool is needed and well developed
- Tool 16 – EM Project plan – the tool is needed and well developed
- Tool 17 – EM Checklist – Checklist was fount quite demanding to fullfill, but extremely needed. For SMEs the toll could be used in simplified way, for simple evaluation purposes only (also Tool 2 – Preselfassesment could be used for simple evaluation)
- Tool 18 – M&T - the tool is needed and well developed
- Tool 19 – Benchmark inputs - the tool is needed and well developed
- Tool 29 – Definitions – the tool is needed and well developed, maybe not necessary for advanced energy management specialists in companies
- Tool 30 – EM Specification and linking list – linking list proved to be very helpful since different crossreferences to company daily management (quality, energy, envionment etc.) operations are tackeled. The tool is needed and well developed.
- Tool 32 – Review and Corrections - the tool is needed and well developed, needed to guarantee sustainability

Energy management implementation model BESS

PDCA		PLAN	PLAN	DO	DO	CHECK	ACT
ACTION	**START**	**A. UNDERSTAND**	**B. PLAN**	**C. COMMIT**	**D. IMPLEMENT**	**E. EVALUATE**	**F. REVIEW**
ACTIVITIES	**BUSINESS CASE** **- Initial data** **- Energy profile** **- Outer influence** *Make a business case, recognize need for EM, check basic data and indicators and identify other influences defining the company decisions.* **PRE SELF-ASSESSMENT** **- Key questions** **- Decision on energy management** **- Commitment** *Preparation of key questions based on results the level of company commitment and implementation of EM is defined.* **ENERGY MANAGEMENT IMPLEMENTATION PROJECT PLAN** **- Level** **- Organization, personnel and budget** **- Implementation monitoring** **DEFINITIONS** **- Dictionary** *Definition of basic terms of EM for common understanding.* **SPECIFICATION** **- Requirements** **- Linking lists** *List of requirements of an EM system which is in accordance with the existing ISO standards with a prioritization for SMEs and compatibility lists between the EM requirements and relevant ISO and HACCP standards*	**ENERGY AUDIT** **- Different types** **- Energy audit description** **- Data collection** **- Energy consumption and trends** **- Investigate large users** **- Tracking energy use, costs, emissions** **- Investigate benchmarks** *Detailed description and procedures for3 types of energy auditing, including data collection, trends and benchmark..* **TOOLS** **- Energy bookkeeping software** **- Horizontal measure list** **- Sectoral measure list** **- Links to existing national measure list** *Detailed description and attached tools on energy bookkeeping for data collection, measure list for horizontal and sectoral activities..* **LEGISLATIVE & REGULATIVE FRAMEWORK** **- Regulations** **- Other influence** **a) Green procurement** **b) Voluntary programmes** **c) Outsourcing** **d) Etc.** *Include legislative and regulative framework into company's knowledge about energy and environment. Check different instruments for achieving goals.*	**ENERGY ACTION PLAN** **- Energy saving activities: separate for no cost, low cost and high cost activities** *Action plan describes reasons and plans activities for energy saving activities and procedures. It divides them into different cost categories. It includes detailed measure list.* **ROLES AND RESPONSIBILITIES** **- People** **- Resources** **- Timescale** *Describe roles of people in the company structure, define resources for planned activities and detail the timeframe for execution of the action plan.*	**ENERGY POLICY** *It includes objectives, goals, roles and responsibilities* **ENERGY COORDINATOR** **- Job description** **- Qualifications** *Describes appointment, role, job description and key qualifications for energy manager.* **ENERGY TEAM** **- Job description** **- Qualifications** *Describes selection, structure, role, job description and key qualifications for energy team.*	**IMPLEMENT ACTION PLAN** **- Energy Savings Register** **- Awareness /Communication** **- Training /Education** **a) needs** **b) people** **c) learning tools** *Implementation describes simple execution with supporting materials like energy saving register (similar to measure list from action plan), describes ways to raise awareness and how to communicate on the topic both internal as external. Training and education needs must be prepared taken into account people and learning tools (including E-learning)..* **OPERATION AND MAINTENANCE** **- Internal energy organization and procedures** **- Good housekeeping** *Description of different levels in company dealing with energy use, describe procedures for operation and maintenance etc. Propose good housekeeping measures.*	**ENERGY MANAGEMENT CHECKLIST** *Questions to allow companies self asses their implementation level of energy management..* **INDICATORS** **- Company level** **- Energy users level** **- Compare over time** *Define indicators for energy performance on company (e.g. energy vs. production) and end-user level (e.g. compressed air system). Allow comparison of indicators over time for evaluation.* **BENCHMARKING** **- Compare against others** *Describe method of benchmarking – comparison against performance of other companies.* **MONITORING AND TARGETING** **- Analysis of the indicators** *Describe M&T technique for indicators' analysis for internal evaluation of energy performance over time with monitoring and targeting function for better planning of energy saving activities.*	**REVISION** *After implement-tation the process should be reviewed and evaluated.* **IMPROVE** *Improve procedure, improve policy, improve execution, improve targets, improve goals, and start again.*

Notes: - This EMIM is amongst others based on the Energy MAP approach developed by SEI, Ireland

- During the pilot phase of the BESS project several tools and examples which are connected to the EMIM are available to selected pilot companies for testing.
- The sole responsibility for the content of this publication lies with the authors. It does not represent the opinion of the Community. The European Commission is not responsible for any use that may be made of the information contained therein.

Simplified version of the EMIM with time sequence

	PLAN	PLAN	DO	DO	CHECK	ACT
START	A. UNDERSTAND	B. PLAN	C. COMMIT	D. IMPLEMENT	E. EVALUATE	F. REVIEW
Business Case 1	Energy Audit 4	Energy Action Plan 5	Energy Coordinator 2	Implement Energy Action Plan 6	Indicators 7	Revision 9
Pre-Self assessment 1	Analysis Tools 4	Roles and Responsibilities 1 + 5	Energy Team 2	Operation and Maintenance 6	Monitoring and Targeting 7	Improve 9
Energy Management Implementation Project Plan 1	Legislative & Regulative Framework 4		Energy Policy 3		Benchmarking 8	
Definitions Specifications					Full Energy Management Checklist 8	

A – F represent the (yearly) cycle of continuous improvement after implementation.

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Energy Management Checklist

Number of "Priority 1" questions: 19
Number of "Priority 2" questions: 7
Number of "Optional": 14

If you want to enter another line in the Comments field, type "Alt Return".

Results:

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This is a blank Energy Management Checklist.

Energy aspect= everything that results in the consumption of energy. Anything that has a positive or negative effect on the energy consumed by the operational activities is an energy aspect. Think in this respect of technology (e.g. equipment and starting up), organization (such as work processes and maintenance) and behaviour (e.g. compliance with job instructions).

	A Basic information				Comments	Explanation of the question	Explanation of when to check off.
1	Are the energy consumption figures known and available (e.g. in the ECP or from your monitoring information)?	☐	Yes	**Priority 1**		You are expected to have access to a summary (Energy Consumption Analysis) of the processes, buildings and utilities with energy consumption data, for example per product line or per sub-process.	Yes if you have a summary of processes covering at least three-quarters of the organization's energy consumption.

2	Has the organization identified the primary energy aspects based on the energy consumption figures (see definition above), and are they kept up to date?	☐	Yes	**Priority 1**		The energy aspects that determine consumption within the processes are expected to be mapped. Both the primary and the secondary (e.g. compressed air equipment (primary energy consumption) and the use of compressed air, which also affects the consumption (secondary energy consumption)). This overview needs to be kept up-to-date when changes of e.g. processes occur.	Yes if a summary of the primary energy aspects is available that collectively represents three-quarters of the organization's total energy consumption.
B	**Implementation and Operation**						
B.1	***Structure and responsibilities***						
3	Have tasks, responsibilities and authority been determined for all staff involved in energy management (e.g. energy aspects, energy consumption, objectives, corrective measures, etc.)?	☐	Yes	**Priority 1**		It is expected here that you have a list of employees with tasks, responsibilities and authority in the area of energy. For example: the employees, the coordinator, the heads of department and/or management, in so far as applicable.	Yes if this is visibly documented, e.g. in a Task-Responsibility-Authority matrix.
4	Are sufficient financial resources made available for managing and improving the energy aspects (consumption and efficiency)?	☐	Yes	**Priority 1**		This pertains to the financial resources for measures for reducing energy consumption, for example, or training employees in order to improve awareness/know-how, or for measurement systems, etc.	Yes if this is evident in the budgets (or objectives) and based on registered expenses.
B0.2	***Management of the activities***						
5	Has the manner in which the energy consumed by the operating activities will be managed been agreed?	☐	Yes	**Priority 1**		The working method for managing energy consumption is expected to be defined for the major operational activities (energy aspects). For example: instructions about operating equipment, manuals with start values, automated process control, maintenance system for relevant equipment and the responsibilities and authorization of employees.	Yes if agreements have been made for three-quarters of the major energy consumers.

6	Is it true that in operations:	☐	The energy policy is known and adhered to by all relevant employees?			Employees are expected to understand the organization's energy policy and to apply it in performing the day-to-day activities.	Yes if this is documented, e.g. during employee interviews and audits.
		☐	Monitoring information is used to manage and improve the energy consumed by processes?			Measurement data are expected to be used and discussed in managing the energy consumption of processes and in reducing energy consumption.	Yes if the monitoring information is available and is evidently used.
		☐	When purchasing goods and services, consequences on the energy consumption is taken into consideration (if relevant, suppliers, contractors and third parties are given instructions pertaining to energy consumption)?			In purchasing, the energy consumption of goods and services and requirements in this area are expected to be taken into consideration. When process and equipment are modified, a reduction can be achieved if energy consumption is taken into account in the design.	Yes if energy consumption is considered during purchasing, maintenance and new construction and requirements are defined, and this is documented in files or can otherwise be shown to be probable.
7	The primary energy consumers (energy aspects) are regularly measured, registered, analyzed and reported?	☐	Yes	**Priority 1**		Measurement data of the major energy aspects (largest users) is expected to be available in sufficient detail. Sub-measurements are not always necessary, but are usually recommended, as is comparison of the data with key figures for the sector. Analysis provides insight into the progress being made and possible non-conformance.	Yes if measurement data are sufficiently specific to evidently contributed to management and improvement of the energy consumption, for example measures taken when non-conformance is identified.

8	The monitoring referred to above includes:	☐	Energy consumption per department or process.			It is expected here that the measurement data of the primary energy aspects (largest consumers) are available to a sufficient degree.	Yes if registered data are available.
		☐	Key financial or consumption figures			Think in this respect of (trends in) energy consumption per unit product/employee/shift/machine.	Yes if registered data are available.
		☐	Target consumption figures			Data for department targets and processes are expected to be available.	Yes if registered data are available.
		☐	Energy consumption projects (remodelling, major maintenance, etc.)</cf>			Data are expected to be available with which deviations in the normal consumption resulting from special projects can be identified.	Yes if registered data are available or if not applicable to the period under review.
		☐	(Graphic) trend analyses			Graphic trend analyses are expected to be available with which insight into the performance is enhanced.	Yes if registered data are available.
9	Relevant measuring instruments are properly maintained and calibrated where necessary.	☐	Yes			The meters are expected to measure accurate values, based on a maintenance and/or calibration schedule. The meters are expected to provide accurate measured values, based on a maintenance and/or calibration schedule.	Yes if the meters are included in a maintenance and/or calibration schedule.
B0.3	***Training and awareness***						
10	Is the necessary knowledge and information in the area of efficient energy consumption known, and have the employees that can influence the energy consumption been instructed and/or trained?	☐	Yes	**Priority 2**		The individuals and groups within the organization are expected to have been trained or instructed with reference to energy consumption. The necessary know-how varies, depending on the part played by the employees, from highly specific to general.	Yes if the information to be given is known and it can be demonstrated as probable that the employees have the right know-how.
B0.4	***Communication***						

11	Are energy performance and energy management regularly discussed internally on the operations and management levels?	☐	Yes	**Priority 2**		Energy (consumption, non-conformance, progress in achieving objectives) is expected to be regularly included on the agenda for internal consultation with the relevant employees.	Yes if energy management is documented to have been discussed in terms of content during consultation.
12	Has it been agreed how energy performance will be announced and who will make the announcement?	☐	Yes			What is to be communicated externally by whom is expected to be defined. Examples include monitoring information for LTA parties, or information for the municipality or province. (External interested parties are individuals and organizations outside of your organization who have an interest in the organization's energy policy.)	Yes this has been documented.
13	Is this energy policy available to external interested parties?	☐	Yes			External interested parties are individuals and organizations outside of your own organization who are interested in the organization's energy policy.	Yes if the policy is available for external parties.
C	**Energy policy, planning and improvement**						
C0.1	***Energy policy statement***						
14	Has the energy policy statement been finalized by the highest management (operational) level?	☐	Yes	**Priority 1**		A policy statement is expected to be documented as authorized (e.g. by means of a signature) by the management or the relevant manager on the MT level; can be part of the ECP.	Yes this authorization has been documented.
15	Does the policy statement indicate that the organization:	☐	Satisfies the relevant laws, regulations and agreed rules?	**Priority 1**		The policy statement is expected to indicate that relevant laws, regulations and other agreed rules are satisfied. Previous text can used verbatim.	Yes if the policy statement contains this text or a similar one.
		☐	Strives to continually improve the energy performance and prevent energy	**Priority 1**		The policy statement is expected to indicate that the organization strives to continuously improve the energy performance and to prevent the consumption of energy.	Yes if the policy statement contains this text or a similar one.

			consumption?				
C0.2	***Objectives and targets and Energy management programme***						
16	Has a plan of approach been compiled for improving the energy performance, in accordance with the policy?	☐	Yes	**Priority 1**		A document (e.g. an ECP and/or detailed ECP results) is expected to be available. General requirements on the plan of approach are that it be Specific, Measurable, Achievable, Realistic and Timed (SMART).	Yes if this document is available.
17	In determining and evaluating the objectives, are the following matters considered:	☐	Legal and other requirements?	**Priority 1**		Any permit requirements, construction regulations and requirements, e.g. on the parent company, are expected to be taken into account.	Yes if this is documented as being the case, e.g. in the ECP.
		☐	The primary energy aspects?	**Priority 1**		Energy objectives and tasks are expected to primarily focus on the (large) consumers, where the most improvement can be expected to be achieved.	Yes if this is documented as being the case, e.g. in the ECP.
		☐	The best techniques available (according to BESS list of measures, for example)?	**Priority 1**		An organization is expected to be aware of the best techniques available and to use these if possible. The organization can keep up to date, for example, by actively participating in sector consultation with reference to energy.	Yes if the organization can demonstrate that it structurally follows developments and determines whether new techniques can be implemented.
		☐	Improvement of the indirect energy effects as caused by choice of materials, for example, or transporters and/or suppliers?			Insight into energy consumption and conservation possibilities in the chain in which the organization participates are expected to be known, and relevant objectives and tasks are expected to be formulated.	Yes if the fact that attention has been devoted to this in formulating objectives can be demonstrated.

			☐	The time schedule within which these are to be achieved?	**Priority 1**		The points in time when implementation of objectives and tasks start and are to be concluded is expected to be clear. General requirements on the objectives are that they be Specific, Measurable, Achievable, Realistic and Timed (SMART).	Yes if this is documented as being the case, and a time schedule is present.
D	**Documentation**							
D.1	***Documentation (registration) management system***							
18	Has how energy management works been documented (in writing or electronically) and is a link made to the relevant instructions and procedures?		☐	Yes	**Priority 1**		The energy management system is expected to be defined in a set of formal documents that is accessible to users. These documents indicate who bears responsibility for the documents and how energy measurement data in particular is registered. The energy management documents may comprise a separate system or can be part of another management system (e.g. ISO 9001 or 14001, or HACCP).	Yes if a documented system of coherent documents exists for achieving the energy policy and objectives.
E	**Audits, measures and evaluation**							
E.1	***Energy management audits***							
19	Is the energy management system audited internally at least once each year, and is its functioning reported to the management?		☐	Yes	**Priority 2**		The entire process of energy management is expected to be evaluated (audited). Preferably by employees who are not directly involved in performing the relevant activities. Companies with a limited number of employees can suffice by completing this Energy Management Checklist. The findings and results are reported to the management (e.g. explanation of the completed Energy Checklist).	Yes if an internal audit has been performed and the results have been reported.

20	The energy management audits are used to determine whether employees adhere to the approved working methods and agreements with reference to energy consumption.	☐	Yes	**Priority 2**		The organization is expected to determine whether the relevant employees adhere to the agreements made so that good energy consumption performance can be achieved.	Yes if the employee working methods are discussed during the audit.
21	The energy management audits determine whether the activities for managing energy consumption satisfy the organization's energy management programme.	☐	Yes	**Priority 2**		The organization is expected to determine whether the working method and objectives as defined contribute to achieving the objectives and the policy; prevention of energy consumption.	Yes if the working methods and objectives as defined are discussed during the audit.
E.2	***Non-conformance, corrective and preventative measures***						
22	In the event of non-conformance, is the cause investigated and are corrective or preventative measures taken to prevent reoccurrence?	☐	Yes	**Priority 1**		How non-conformance occurs is expected to be analyzed (monitoring registered data). Based on these occurrences, corrective and structural measures are taken to prevent them from reoccurring. Matters that will go wrong in the future if preventative measures are not taken are anticipated.	Yes this shown to be probable.
E.3	***Evaluation***						
23	Is the evaluation of the energy management system performed at least once each year by the management?	☐	Yes	**Priority 1**		The entire package of energy management measures is expected to be discussed at least once each year in order to determine whether agreements are being satisfied and the desired results (policy) are being achieved.	Yes this shown to be probable.
24	In preparing for the evaluation, at least the following information is collected:	☐	Newly-defined energy aspects.			When equipment, processes, buildings, etc. are changed, the organization is expected to check the list of major energy consumers and to update it where necessary.	Yes if this is documented and lists of energy aspects are up to date.
		☐	Energy performance based on monitoring information.	**Priority 1**		The energy consumption is expected to be analyzed as a trend.	Yes if this has been documented.

		☐	An evaluation of measurement registration figures based on key figures and/or ratios for the sector/process (if relevant).	**Priority 2**		The energy consumption figures are expected to be compared to similar processes/organizations in order to properly evaluate the performance.	Yes if this has been documented or is not relevant.
		☐	The evaluation of conformance with legal and other requirements pertaining to energy.	**Priority 1**		The organization is expected to determine whether agreements and regulations have been satisfied in accordance with the policy statement.	Yes if this has been documented.
25	During the evaluation, the effectiveness of the system for achieving the policy and the objectives is assessed.	☐	Yes	**Priority 2**		The organization is expected to determine whether the whole of energy management measures ("the system") results in better management of the processes and a reduction in the energy consumption.	Yes if this is evident in the management's evaluation of how the energy management system functions.
26	During the evaluation, discussions are held to determine whether the policy and the objectives need modification based on changing conditions and the obligation to continuously improve performance.	☐	Yes			The management or the relevant manager on the MT level is expected to determine whether the results of the measures taken within the framework of energy management are satisfactory or whether additional measures are needed in order to improve the results.	Yes if policy and objectives have been evaluated.

Results:	**This is a blank Energy Management Checklist.**	**This is a blank Energy Management Checklist.**

Note 1 The sole responsibility for the content of this publication lies with the authors; it does not represent the opinion of the Communiy; The European Commission is not responsible for any use that may be made of the information contained therein
Note 2 The Checklist has been compiled on behalf of Senter Novem by LLOYD'S REGISTER MANAGEMENT SERVICES, Rotterdam
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