Implementation
Energy Management System
(EnMS)
table of content

1 General Process of the Implementation..................................................................................3

2 Services Implementation EnMS..........................................................................................5
  2.1 Diagnostic Audit..................................................................................................................5
  2.2 Design of All Relevant Functions.......................................................................................6
  2.3 Support of the Implementation of Measures......................................................................7
  2.4 Review Audit......................................................................................................................8

3 Additional Services Implementation EnMS............................................................................9
  3.1 Trainings and Workshops for the Energy Management Team...........................................9
  3.2 Internal Audit....................................................................................................................10
  3.3 Energy Efficiency Analyzes...............................................................................................11
  3.4 Development and Implementation of a Monitoring System.............................................11
    3.4.1 Workshops and Training of the Monitoring System..................................................13
  3.5 Implementation of Structures according to the ISO 50006 for Energy Controlling and Reporting..................................................................................................................13
  3.6 Certification......................................................................................................................14
  3.7 Support of on Going Improvement Process....................................................................15
First we start with a diagnostic audit for an assessment of the organization. This will show us the state of the organization and the amount of work for the implementation of an energy management system. Subsequently we plan the necessary measures for the realization. Through out a neutral certification organization the energy management system is certificated. At the end your company is able to run the energy management system.

### Services

**Implementation EnMS**
- Diagnostic Audit
- Planning of all relevant measures
- Support of the implementation of the measures
- Revision audit

**Energy Efficiency Analyzes**
- Calculation of the investment framework for energy reducing procedures
- Calculation of the amortization for energy reducing procedures

**Energy data monitoring**
- Build up of a measurement concept
- Individual system solutions (Soft- and Hardware)

**Miscellaneous Services**
- Trainings and workshops
- Internal audits
- Support of the certification
- Certification ISO 50001
- Implementation of structures for energy controlling and reporting

The basement for an efficient energy management system is to define goals. To specify these goals we need the definitions of the energy policy of the company. The Envidatec GmbH evaluates the current organization with reference of the energy efficiency of the company. The Envidatec GmbH will speak to the project team and the single departments area specific surveys for these basics.
Against the background of the current state the Envidatec GmbH will make an appointment for the energy policy as well as strategical and operative goals who will follow. We have an eye on the goals of the ISO 50001 for later certification.

In scope of the project the Envidatec GmbH will work throughout the whole project to achieve certification.

As a second result of the evaluation of the basics, we get a plan of the resources, which extent the necessary workload of these resources inclusive their field of functions.

Indispensable is a good assembly of the energy management team, besides a responsible energy manager there should be a member of the controlling and marketing.

Vital is the present authority of the energy team members to guaranty the smoothly implementation of the energy management system and to keep it going.

The qualification of the energy manager lies more on the organization then on the technical side. The energy manager has to be able to implement the structures, to pursue the goals and to observe them.

For this it is not necessary to be a technician although it would be helpful, but it is not the most important qualification. ISO 50001:

„successful implementation depends on commitment from all levels and functions of the organization, and especially from top management.“

Usually there are not additional separated management teams in the single departments or areas, because the concrete measures will be adapted easily from the employees to the different structures. With this no extra resources are bound for unnecessary topics.

Just in international companies with inhomogeneous operations it is potential necessary to take a separated look on individual energy management teams.

The employees from the controlling and marketing should be the contact persons for all questions to this project. The time effort is expected to be very low. Thus should minimize communication and measure implementation problems of changing responsible persons. Besides the economy and presentation of the company, the products and services should be the assignment of the energy management team.
The inclusion to existing management systems like DIN EN ISO 9001 or DIN EN ISO 14001 is a defined goal. Moreover an energy data monitoring system should be installed. Important goals of these systems are the best possible documentation and backtracking of energy goals through automated processes, to keep the workload of the employees as small as possible. In contradiction to the management systems 9001 and 14001, an energy management system ISO 50001 not just produces additional costs, but the rising energy efficiency and reduction of energy costs leads to savings that are mostly bigger than the costs.

The development of a suitable documentation structure of the EnMS the responsibilities and the validity of the existing documents of other management system will be considered. The Envidatec GmbH supports this process.

The proposed measures will be presented and decided in the project team. The results have to be attuned with the board of executive.

This step could take some weeks to months, dependent on the size of the company. Within this framework there should be weekly project meetings of the project team.

The following steps describe the implementation of an overall energy management system and all necessary steps which are the indispensable steps for the ISO 50001 certification.

### 2 Services Implementation EnMS

#### 2.1 Diagnostic Audit

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It begins with a diagnostic audit for an assessment of the organization structures. This audit dependent on the size of the company can take some days. The diagnostic audit shows the missing parts in the organization structure for a functional energy management system in the single parts of the company. Overview of the parts of the organization which already have the necessary knowledge and documentation according to requirement of the ISO-standard and which parts additional work is necessary.

One achievement of the diagnostic audit is the estimation of the workload for the following steps. Without this step the workload couldn't be specified, unless the organization knows about the work for the single steps which are coming, for example as the result of an earlier certification. Furthermore the diagnostic audit delivers a first impression of the energy aspects in different areas (e.g. heating, cooling, air-condition, compressed air maintenance unit, steam, fuel, lighting).
Goals:
1. investigation of already successful requirements of the ISO 50001
2. investigation of the functional and energy management system and obtain a certificate.
3. first impression of the energy aspects in different departments (e.g. heating, cooling, air-condition, compressed air maintenance unit, steam, fuel, lighting)

Results:
1. overview of the measures for running an energy management system
2. overview of major consumers

2.2 Design of All Relevant Functions

The Envidatec GmbH shows the important energy streams of the single parts of the company to ensure transparency. The goal is to show up the major consumers in every media (energy aspect) and the interaction of the single consumers. The dependencies of the consumers needs to be determined. Moreover the requirements of the energy management system will be estimated.

In this step the individual Performance Indicators (EnPI: „Energy Performance Indicator“) will be developed together with the employees. This indicators are the current and future factors of the energy efficiency. That is why the development of the Performance Indicator are to be made carefully.
Goals:
1. to issue a timetable for the project
2. develop a plan for the energy management plan relevant documents
3. determination of the responsible energy managers in the company
4. develop strategies and goals
5. defining Performance Indicators (EnPI)
6. develop a standard model to describe the processes
7. definition of the necessary measures for the implementation of the different steps

Results:
1. project plan
2. measure catalog
3. EnPI

2.3 Support of the Implementation of Measures

At this stage we are able to define the measures of the project plan and the measure catalog and necessary steps for a sustainable energy management system. If the energy performance indicators are developed, the transparency of energy aspects is significantly rising.

Goals:
1. implementation of planned arrangements to build a basic for a sustainable energy management system
2. instruction for the issue of energy management system relevant documentation

Results:
1. rise of the energy efficiency because of established measures
2. issue of energy management system relevant documents
2.4 Review Audit

The review audit takes place together with the responsible energy managers on the basis of the developed time table and project plan. The essential goal of the review audit is to control the realized measures and preparations for the certification. The review audit detects deficiencies which could make a certification more complicated. The Envidatec GmbH supports you methodically and practical execution.

The insight of the review audit should show how future results of internal audits should be recorded and communicated and how the arrangements should be dealt with.

The result of the review audit is a pre-certification, to find out whether the organization is ready for the test of an independent certification company. The methodical of a pre-certification represents the ISO 19011 "Guidelines for Auditing Management System".

Goals:
1. check the state in a review audit
2. investigation of obstacle of a certification

Results:
1. pre-certification as a test for the ISO 50001 certification
2. template of reports for future audits
3 Additional Services Implementation EnMS

3.1 Trainings and Workshops for the Energy Management Team

The members of the energy management team and involved employees will be trained to the necessary requirements of the ISO 50001. The trainings consist of a detailed introduction, the implementation and all other aspects of the ISO 50001.

The trainings take place in several units, parallel the progress of the implementation of the EnMS. The depth of the training depends on the complexity of the implemented system.

The goal of the trainings are to theoretical and practical knowledge of the energy management of their company and to prepare them for their own trainings of their employees („train the trainer“).

The participants of the trainings will be given a testimony of their qualification.

Goals:

1. investigation of energy saving potentials
2. energy efficient actions
3. implementation of organizing measures

Results:

1. certificate as testimony for the qualification
3.2 Internal Audit

The goal of the internal audit is the systematic review of the whole energy management system and its efficiency and possible optimization methods. The system is judged by the necessities of the energy management system as well as the ISO 50001.

Internal audits are regularly held (e.g. annual) to continuously improve the process. They are given by the employees of the organization, but it is obvious that external experts could help to the company for independent overviews. The auditors and the audits have to be impartial that is mostly just possible with external consultants.

Moreover the state of the energy management system is proofed and documented by the internal audits which things are left to do and when they are necessary. For the audit a time table is to create who take into account the importance of the department and results of earlier audits. The results have to be reconciled with the board of executive.

The Envidatec GmbH supports your company methodical and practical with the implementation.

Goals:

1. systematical review of the energy management system
2. investigation of necessary or need of improvement parts of the energy management system
3. plan for optimization of the activities with possible changes of the energy policy and energy goals

Results:

1. detailed documentation and catalog of actions
2. reports for future internal audits
3.3 Energy Efficiency Analyzes

The Envidatec GmbH will find with help of the energy efficiency analyzes the energy saving potentials of the single departments. Because of our expertise in the field of energy management and branch specific knowledge we consider a cost optimized work done.

The results are optimized measures for the energy goals of the organization and will be acquired, clustered, in regard of investigative, not investigative, investigative technical and organizational measures. The economical view of every single measure is presented. Public fundings are presented for every single measure.

Goals:

1. description of the energy saving potentials with economic insight of single measures
2. support of the planning and implementation of the measures

Results:

1. list of consumers
2. list of energy saving potentials

3.4 Development and Implementation of a Monitoring System

For the gathering of the necessary data of the assessment, it is inevitable to develop a measuring concept for the organization.

The development of a measuring concept is the basic for the best integration of an individual system solution. In the measuring concept all necessary and useful energy relevant data are considered. This could be e.g. measuring data from power meter, different process data or existing data in the network of the organization. Furthermore in the measurement concept the kind of data which are gathered are ascertained. The focus is a producer independent system which is flexible for future application.
After the measurement concept and the reconciliation with the energy team the data for the monitoring system are prepared. The higher the consumption or the energy cost of a media, department, area or production unit, the more precisely or more often the data should be gathered. The rule is that for minor consumers perhaps weekly data are enough, but for major consumers we need a continuous investigation.

The setup of a monitoring system and it's efficient work delivers the results of the energy data, this are the basics to exploit energy saving potentials of 5-15%.

**Goals:**

1. minimal assembly effort
2. best integration in the current infrastructure
3. demand actuated implementation of the goals through appropriate system solution
4. definition of the data transfer and interface for applied system solution

**Results:**

1. automatic and continuous readout of the energy and process data
2. automatic analyzes, preparation and visualization
3. automatic surveillance of the operational management with alarming for critical values or unusual occasions, the exceed of limits
4. the possibility to compare energy data from different departments
5. automatic issue of expressive reports (e.g. for the board of executive)
6. illustration of individual developed Performance Indicators of the organization
7. long term storage of all data as well as import/ export functions for separate systems
3.4.1 Workshops and Training of the Monitoring System

If the monitoring system solution proposed by the Envidatec GmbH is used, trainings and workshops of the system are made by the Envidatec GmbH. For this are two different types focused. The basic training for users and the training for system administrators.

**Goals:**

1. knowledge of working with the monitoring system
2. training of the usage of software and hardware
3. examples for analyzes of energy data
4. build up calculations (advanced)
5. configuration of the network (advanced)

**Results:**

1. independent usage of the monitoring system
2. independent assessment of energy saving potentials

3.5 Implementation of Structures according to the ISO 50006 for Energy Controlling and Reporting

Individual and energy reports and energy analyzes for the organization are developed. The goal is to show the result in the most significant way of the measured energy values. This helps to report the tasks and results of the energy management process to the board of executive.

For the single departments are specific reports used. The task to do benchmarking plays an important role. Besides the energy management, the Envidatec GmbH will have a tight reconciliation with the controlling.
The analyzes is the basic of the individual reports. The employees will focus on the quality and validity of the analyzes and if necessary adopt or change it.

Important for a working energy controlling according to ISO 50006 is a good documentation of all parts for a sustainable result.

**Goals:**

1. development and implementation of convincing Performance Indicators and energy analyses and creating of individual reports.

2. Guarantee of continuous effective controlling of all energy relevant aspects

**Results:**

1. fast and direct assess of all energy relevant aspects

2. sustainable documentation of the energy controlling structures

### 3.6 Certification

The ISO 50001 certification is made by an independent certification company. The Envidatec GmbH is not bound to a certain company, but it is possible to choose from well known business associated companies. The Envidatec GmbH supports your organization from the preparations until the procedure of the certification.

**Goal:**

1. certificate ISO 50001

**Result:**

1. certificate ISO 50001
3.7 Support of on Going Improvement Process

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There are just sustainable results of an energy management system if the system is persistent supported by the management and for that in a continuous improvement process. This is achieved by a permanent monitoring system of the energy consumption and the controlling of the results, as well as periodic feedback correction loops.

That is why all parts of the system are regularly investigated and improved. In all areas the goal is a continuous improvement process.

Periodical tasks are:

- meetings of the energy team and involved employees
- reviews of the documentation of the procedures
- perform regularly management reviews
- analyzes of all energy relevant data
- proofing and optimization or extension of measures
- investigations of the measures
- Workshops and trainings of the employees
- perform internal audits
- investigations of the energy policy of the organization and the internal/ external presentation

The Envidatec GmbH will advise your organization at all steps and all points continuously. We offer you a basic agreement with a monthly workload for this.

An energy management in a continuous improvement process usually finances itself, the costs will be equal or less than the savings.