

UDC 006.033

*T. Rozbytska, V. Sukhenko*

## NATIONAL STANDARDS OF UKRAINE IN THE FIELD OF ENERGY MANAGEMENT

*The article presents the results of the review of international standards of Ukraine that establishing requirements and guidelines for the use of energy management systems (control systems and energy efficiency (CSEE)).*

**Keywords:** *national standards, management of energy, energy conservation.*

**Introduction.** At the present stage of development of the state is a major impediment to the large-scale implementation of energy efficiency policies is the lack of national standards and incentives for the development and implementation of energy efficient innovative technologies. Of particular relevance and importance, today is a combination of innovative strategy and energy efficiency strategy, the need for innovative renewal as a means of competition and survival in the market conditions on the global level. Management of the company/organization in the context of an innovative model of the economy should be aimed at ensuring its development through the use of appropriate innovative mechanisms, that is, the implementation of the standards.

The **purpose** of this article is to review the national standards of Ukraine in the field of energy conservation.

**The results of the research.** Currently in Ukraine are well-known such national standards:

1) *DSTU 4472:2005 »Energy. The energy management system. General requirements«.*

The standard establishes general requirements for:

- the energy management system as a broadly;
- the functions of the energy management system;
- the training of the staff of the energy management service;
- the components of the energy management system;
- the management activities of the production system during the an implementation and operation of the energy management system;
- a conduct an internal energy audit;
- a monitoring and an implementation of corrective action in the field of energy saving;
- an audit of the energy management system and criteria of its implementation;

The standard applies to activities related to the organization of works on creation and functioning system of energy management in production systems.

This standard is used in the activity legal and physical persons in the field of energy conservation, an organization of works on creation and functioning of energy management systems.

The methodology of building energy management systems presented in this standard is entrusted to the methodology of the quality management system and environmental management system contained in international standards SSU ISO 9001–2001, ISO 14001–97, ISO 14004–97, ISO 19011–2003 and methodology of automated control systems outlined in the standards GOST 24.103–84, GOST 24.104–85.

2) *DSTU 4713:2007 »Energy conservation. An energy audit of industrial enterprises. The procedure and requirements for the organization of work«.*

This standard establishes requirements for the organization of work and procedure of energy audit of industrial enterprises.

This standard defines:

- the purpose and objectives of the energy audit;
- the requirements for the organization of works on an energy audit;
- the requirements for collection and analysis information about the object of an energy audit;
- the requirements for the development of recommendations for the implementation of energy saving measures, their feasibility and their impact on the environment;
- the requirements to write a report on the results of the energy audit.

The standard is designed to be used by legal and natural persons in their activities in the field of energy conservation, the organization of work and energy audits.

3) *DSTU 4715:2007 «Energy conservation. The energy management system of industrial enterprises».*

The composition and content of works are at the stage of implementation of the energy management system. This standard defines the structure and content of the works on the stages of development and implementation of energy management system at the industrial enterprise.

This standard establishes requirements for:

- the sequences of works on the development and implementation of an energy management system;
- designed and operational documentation;
- this standard is recommended for use to legal entities and individuals in their activities in the field of energy conservation, the organization of works on creation and functioning of energy management systems;
- the process of developing and implementing the EMS (energy management systems) is a set of time-ordered, connected, combined into stages and milestones, the implementation of which is necessary and sufficient for creating an EMS that meets the requirements of the TOR (terms of reference) for its creation.

4) *DSTU 5077:2008 «Energy conservation. The energy management system of industrial enterprises. Verification and control of efficiency of functioning».*

This standard specifies general requirements:

- test procedure efficiency of operation of the SEM;
- the control of efficiency of functioning of the EMS;
- the validation criteria of the efficiency of functioning of the EMS;
- the order of definition of the level of efficiency of functioning of the EMS;
- the qualification of auditors;

This standard applies to EMS in industrial enterprises and relates to the organization of inspection and control of efficiency of their functioning.

This standard is recommended for use to legal entities and individuals in their activities related to the organization and conducting monitoring of the efficiency of functioning of the energy management system of industrial enterprises.

The purpose of verification and monitoring of the effectiveness of functioning of the EMS is to develop optimal management decisions and development of recommendations to improve the level of efficiency of functioning of the EMS.

The main tasks that are solved during the verification of the effective functioning of the EMS are:

- ensuring compliance with regulatory requirements in the field of EM;
- development of recommendations to improve the level of efficiency of functioning of the EMS;
- determine the level of EMS provision of human, technical and financial resources;
- development of incentive measures and informing personnel on the rational use of energy resources;
- coordination of activities aimed at preventing the decline of the efficiency of functioning of the EMS;
- preparation of EMS certification;

The basic principles underlying the verification and monitoring of the effectiveness of functioning of the EMS are:

- scientific validity and objectivity of the conclusions on the results of the verification and control of efficiency of functioning of the EMS;
- the complexity of conformity assessment of EMS appropriate to the level of effectiveness;
- the responsibilities of auditors, management, and staff for organization, procedure and quality inspection and control of efficiency of functioning of the EMS;
- competence, objectivity, and independence of auditors in conducting the verification and control of efficiency of functioning of the EMS and so on.

Basic objects that are subject to review and control include:

- the organizational structure of the service EM;
- the system of accounting for and control of PER;
- logistic support for EMS;
- training and methodological support of EMS;
- information support of the energy management system and so on;
- The main stages of the verification of the effective functioning of the EMS are:
  - an organizational and preparatory;
  - a collection of information;
  - processing and analysis of information;
  - developing of corrective actions to improve the level of efficiency of functioning of the EMS;
- preparation of the report on results of the audit;
- publication of the results.

5) *ISO 50001:2014 "Energy. The energy management system. Requirements with guidance for use. (ISO 50001:2011, IDT) (ISO 50001:2011(E) "Energy management systems — Requirements with guidance for use")"*.

This standard is a translation of the ISO 50001:2011(E) "Energy management systems — Requirements with guidance for use" (energy management Systems. Requirements with guidance for use). The technical Committee responsible for this standard — TC "Energy conservation".

The standard contains requirements that correspond to the current legislation of Ukraine.

The standards included such editorial changes:

- the words "this international standard" changed to "this standard";
- the structural elements of a standard "cover sheet", "introduction", "National introduction" the first page, "Terms and definitions" and "Bibliographic information" issued in accordance with the requirements of national standards of Ukraine;
- from "Introduction" to ISO 50001 in the "national membership" is taken that directly relates to this standard;
- identification of physical units corresponds to the series of standards DSTU 3651:1997 Metrology. Units of physical quantities;

The international standard ISO 50001:2011 was developed in accordance with the rules given in the ISO/IEC Directives, Part 2.

This standard establishes requirements for the development, implementation, maintenance and improvement of an energy management system, which is designed to provide an opportunity for the organization to implement a systematic approach to achieving continual improvement of energy performance level, covering the use and consumption of energy (energy resources).

This standard establishes requirements for the use and consumption of energy resources, including measurement, documentation and reporting, design and methodology for procurement related to the provision of the production activities of the organization with the necessary equipment, systems, processes and personnel that determine the performance of the organization in the field of energy efficiency management.

This standard applies to all parameters that affect the level of energy efficiency that the organization can monitor result of monitoring and to which it can influence. This standard does not define specific criteria for energy efficiency.

This standard is designed for independent use, however, it is possible to coordinate or integrate with other management systems. This standard may apply any organization that wishes to ensure that its activities proclaimed energy policy and wishing to demonstrate this to other parties. This conformity is confirmed, or by self-assessment and Declaration of compliance by the organization or certification of the energy management system external (third-party) organization.

**Summary.** So, to sum up, the above, it can be argued that before the enterprises of Ukraine, which are major consumers of energy resources is an acute problem of effective management of their power infrastructure. One of the new innovative approaches to solving these problems is the introduction of energy management systems in enterprises that already long time successfully used in foreign practice.

#### REFERENCE

1. The Handbook for municipal energy management/ Ye. M. Inshekov, Ye. Ye. Nikitin, M. V. Tarnovskyi, A. V. Cherniavskyi. – Polygraph plus, 2014. – 238 с.
2. The objectives of the standard and the prospects of its implementation in Ukraine/ Denysiuk S.P. – YUNIDO, 2015. – 104 с.
3. <http://energy.oblrada.dp.ua/wp-content/uploads/2015/01/8.pdf>

**Розбицька Т. В., Сухенко В. Ю.**

#### НАЦІОНАЛЬНІ СТАНДАРТИ УКРАЇНИ У СФЕРІ ЕНЕРГЕТИЧНОГО МЕНЕДЖМЕНТУ

*У роботі наведено результати огляду міжнародних стандартів України, які визначають вимоги та настанови щодо використання систем енергетичного менеджменту (систем управління енергетичною ефективністю (СУЕЕ)).*

**Ключові слова:** національні стандарти, енергетичний менеджмент, енергозбереження.

**Розбицкая Т. В., Сухенко В. Ю.**

#### НАЦИОНАЛЬНЫЕ СТАНДАРТЫ УКРАИНЫ В СФЕРЕ ЭНЕРГЕТИЧЕСКОГО МЕНЕДЖМЕНТА

*В работе приведены результаты осмотра международных стандартов Украины, которые определяют требования и руководство по использованию систем энергетического менеджмента (систем управления энергетической эффективностью (СУЭЭ)).*

**Ключевые слова:** национальные стандарты, энергетический менеджмент, энергосбережения.

Рецензент: Пашков Д.П., д.т.н., проф.  
Державна екологічна академія післядипломної освіти та управління, м.Київ