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Introducing Energy and Environmental Policy in Furniture Industry

Abstract: In this paper the option of introducing a unique practice of energy and environmental management system in the industry is discussed. The term energy and environmental management system involves the integrated management approach to flow of energy and waste in the production process in industry. An important phase of implementation of energy and environmental management system in a company is the creation of energy and environmental policy. In this paper the example of creation of such policy in the selected wood furniture industry was shown.

Keywords: energy and environmental policy, energy and environmental management system

1. INTRODUCTION

Until recently, energy management practice in the world consider the replacement of inefficient equipment and the use of different methods for assessment of the achieved savings. Experience shows that the positive effects of such practice to increase energy efficiency degrade over time. Over the last ten years in the developed world considerable efforts have been made in defining appropriate standards and examples of best practice in order to establish and implement energy management system which should be able to maintain and/or increase the scope of gained energy saving. Knowledge and experience gained from the implementation of thousands of energy efficiency projects caused a shift from traditional practices (tactical level: once implemented and forgotten projects) to the strategic level of energy management which propose and support a number of relevant international organizations, including Energy Star (USA), National Resources Canada (Canada), Action Energy (UK), EPA Victoria (Australia),

etc. Currently there are few countries that have national standards of energy management: U.S. Standard ANSI/MSE2000:2005, Chinese Standard GB/T xxx-2000x ICS 03.120.10, European Union Standard CEN/CLC/TF 189 N. 030 2007-05-016, Swedish Standard SS 62 77 50: 2003, Irish Standard IS 393:2005, Danish Standard DS 2403 E:2001, Netherlands Standard SenterNovem 2004, Korean Standard KSA 400:2007, United Kingdom Standard PAS 99: 2006. Moreover, on February 2008 The Technical Committee of International Organization for Standardization ISO approved the initiation of a new sub-committee (PC 242 – Energy Management) established in order to develop a new ISO energy management standard ISO 50001 [1].

Energy management system is a continuous process that includes monitoring of energy performance and constantly finding a way to maintain and improve it. The typical energy management activities include: supply of energy, measuring and billing, performance measurement, development

of energy policy, making the energy review and audits, awareness raising, training and education, management of investment projects [2].

On the other hand, constant pollution of the environment, the fear of complete exhaustion of natural resources, increased interest in public opinion to preserve the environment, lack of organized and systematic monitoring of pollution and its consequences, led to the need for introducing environmental management systems such as EMAS and ISO 14001:2004. Implementation of environmental management may lead to costs reduction of the company, which leads to increased productivity and income. Increased income comes from significant reduction of generated waste, for its timely and proper disposal, as well as for efficient and rational use of energy in the company.

According to the relevant current research [2-5], individual elements of the energy management system can be compared with elements of environmental management. In an industrial company a unique practice of energy and environmental management system could be introduced.

Continuous improvement of energy and environmental performance of facilities and the entire company could be achieved in this way, with the aim to reduce operating costs (through savings achieved in energy costs and disposal/reduction of waste), quantity of generated waste and the impact of the company to the environment.

The term energy and environmental management system involves the integrated management approach to flow of energy and waste in the production process in industry. In its focus are the employees, how they use machines and how they manage the processes as a key factor for optimization of energy and environmental performance of the company.

2. FURNITURE INDUSTRY

The furniture industry includes the production of furniture parts and their assembly with the appropriate finish. The basic materials in this industry are wood and wood-based materials (plywood, MDF, HDF, OSB, hardboard). In addition to wood and wood-based materials furniture industry has been using the following materials: metal, sponge, cloth, plastic, etc. As a result of the production process and use of different materials in the furniture industry there are various problems associated with environmental pollution (liquid and solid hazardous and other waste, emissions of various gases into the air, etc.). Furniture manufacturers in the developed countries (Canada, USA, EU) face a number of strict environmental regulations and restrictions, because governments of these countries require producers to have greater responsibility towards the environment. That's why companies should pay attention to the reduction of all types of waste generated during production and disposal through re-use of materials and recycling. According to the classifications of DOE (USA Department of Energy) and IEA (International Energy Agency) furniture industry is one of the relatively small energy consumers [5]. Often the energy costs in these companies have been considered as a fixed overhead cost but they are actually one of the costs which are easily administered (managed). Indeed, in many EU countries and especially in the USA [6], experience has shown that many plants in this industry can reduce energy costs (natural gas and electric energy) up to 20% with relatively small investments and short payback period. For companies is often easier to increase profit by reducing energy cost than increasing sale.

The furniture industry in Serbia has a potential and is export-oriented industry. The main energy sources that are

commonly used in this business are electricity, natural gas and water.

The furniture industry in Serbia currently employs more than 15,000 employees in over 2,000 companies and 3,000 workshops [7]. The largest number of private companies is ranked as small-sized enterprises (91.7%). Medium-sized companies make up to 7.1% and large companies covers the remaining 1.3%. Large and medium companies are mostly export oriented.

3. INTRODUCING ENERGY AND ENVIRONMENTAL MANAGEMENT SYSTEM (EEMS)

If someone tries to introduce energy and environmental management as everyday practice in a factory, he/she will face many difficulties caused by:

- lack of motivation and awareness about energy and environmental potential and techniques;
- inadequate organization of the energy and environmental sector;
- lack of information about where, how and why energy is consumed and the environmental impacts generated;
- lack of experienced personnel;
- limited resources (financial, manpower, know-how, equipment).

In factory it is often to encounter to attitude and reasons 'why it can't be done'. This attitude must be changed. Therefore it is a requirement to have a phased approach to the introduction of energy and environmental management. This approach may be summarized as following phases:

- preparation and planning;
- implementation;
- operation;
- learning [5].

Each phase can be viewed as a process that takes time and resources, requires

some inputs, and delivers some results that the next phase builds on. It is important to realize that energy and environmental management is an ongoing process, which deals with both technical and human aspects, requires continued support from top management, the high quality of energy and environmental management staff and adequate funding (figure 1).

For successful implementation of energy and environmental management practice it is important to rely on:

- clear commitment and support from top management;
- responsibility of line managers;
- trained and motivated staff;
- metering and monitoring instrumentation in place;
- established reporting and communication methodology;
- culture of continuous improvement practice and
- integration of EEMS into the organization of the company.

With these firmly in place, energy and environmental cost savings of 10% or more are easily achievable with little or no investment.

Experience shows that successful implementation of EEMS is characterized by various influencing factors and their correlation evolving through the phases of the implementation process. Therefore, special attention should be paid to careful preparation and planning. All ground rules should be placed before starting implementation.

Precocious implementation may only cause subsequent delay, loss of interest or diminished enthusiasm.

It should be emphasized that completion of any phase takes a certain time. Time is a resource that should not be underestimated because a change cannot happen and become sustainable overnight.

Implementation of EEMS requires persistence and patience. For large companies (more than 1500 employees) experience has shown that intense effort is required for at least 24 months for the change to be engaged, for continuity to be assured, and for effective learning to actually begin. This also emphasizes other important aspects of EEMS

implementation: leadership and communication. Leaders are required to encourage determination, and well planned and carried out communication will ensure staying on the course of the employees and managers. Therefore, good preparation and planning at the start of implementation of EEMS is of crucial.

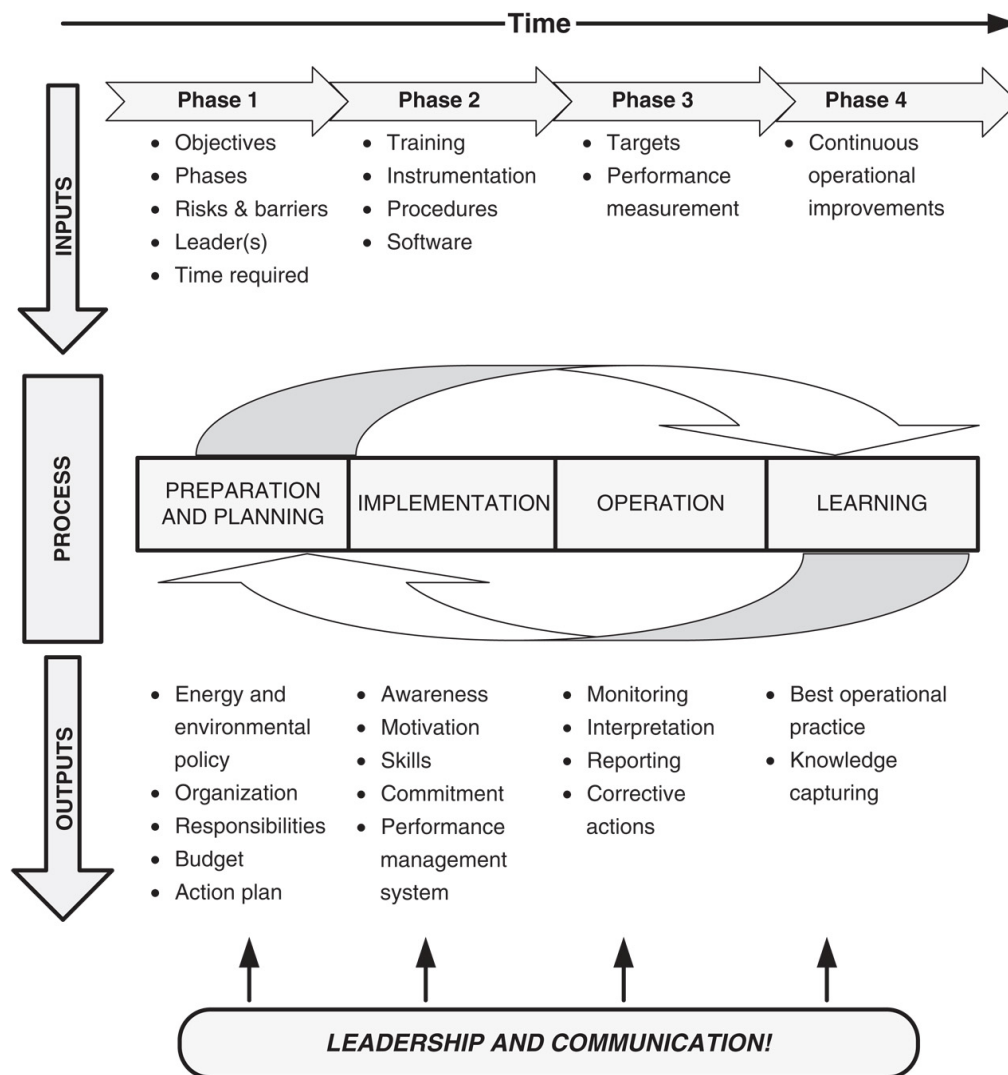


Figure 1- Phased Implementation of Energy and Environmental Management

4. ENERGY AND ENVIRONMENTAL POLICY

Energy and environmental issues involve everybody in company, from top management to operators and caretakers. The successful implementation of energy and environmental improvements in the company must begin with top management's awareness of the potential and its commitment to the program.

A first step of demonstration of management's awareness and commitment should be publishing the organization's energy and environmental policy. Policy statements are very important because they set targets and provide guidance and direction.

Besides establishing the goals of the program, the aim of energy and environmental policy should be to make them known to everybody in the organization by publishing a short and clear policy statement.

A prerequisite for EEMS program implementation are energy and environmental audits out of which the specific performance improvement targets come. The policies are referring to targets defined in this way.

Policy making is task that companies approach in their own way, emphasizing the operational aspects of performance that are the most important to them. It is important that policies are declared, the employees are made aware of them and that the consequent action plans are implemented.

Every company will have a different approach to formulating and declaring its energy and environmental policy, which depends on its priorities, technologies, culture etc.

Since the energy costs in factories of the wood furniture industry are relatively small (approximately 2% of total costs) energy and environmental policy should be focused on efficient use of raw material and productivity improvements through

waste minimization and reuse of waste material as energy source.

The example of energy and environmental policy in wood furniture industry is the one adopted in Novart company (Table 1).

<p>1. Policy <i>The policy of our company is to manage energy and environmental issues in order to:</i></p> <ul style="list-style-type: none"> • <i>avoid unnecessary expenditure</i> • <i>improve cost-effectiveness, productivity and working conditions</i> • <i>protect the environment</i> <p>2. Objectives <i>The long-term objectives are to:</i></p> <ul style="list-style-type: none"> • <i>buy electricity, water and wood material at the most economic costs</i> • <i>use them as efficiently as possible</i> • <i>reduce the amount of pollution, particularly greenhouse gas emissions, caused by our energy consumption</i> • <i>reduce wherever possible our dependence on fossil fuels through the use of our waste biomass</i> <p>3. Immediate aims <i>In the short term, immediate aims are to:</i></p> <ul style="list-style-type: none"> • <i>gain control over energy and environmental aspects of the business by reviewing and improving metering, operation, maintenance, motivation and training practices</i> • <i>improve energy and environmental efficiency continuously by implementing effective energy and environmental management programs that support all operations and customer satisfaction while providing a safe and comfortable work environment</i> <p>4. Action plan <i>During the coming years, the following energy and environmental management activities will be prepared and undertaken:</i></p> <ul style="list-style-type: none"> • <i>program of housekeeping and maintenance work</i>
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- *indication of actions to be undertaken by designated personnel*
- *promotion plan to raise awareness among employees*
- *educate employees about how to save energy at work and at home*
- *review and supplement the promotional campaign*
- *devise a plan to monitor and evaluate achievements*
- *keep employees fully informed as to joint achievements*
- *devise a reward system to recognize efforts of both individuals and groups of employees*

The aim is that over the next three financial years we will reduce energy and environmental compliance expenditure by a minimum of 5% each year. This policy shall apply to all Novart facilities, business units and employees

Signature:

Table 1 - Energy and Environmental Policy in Novart Company (wood furniture producer)

5. CONCLUSION

Once the senior management makes the decision to introduce EEMS which reflects the common goals of the company, it is time to incorporate management of energy and environment in the existing company's policy or to focus on the development of its own energy and environmental policy. Making energy and environmental policy doesn't mean necessarily the formation of a new document on policy, but rather integration and/or review of existing policy for inclusion of EEMS. It can then be

supported with new energy and environmental management strategy, decision making and planning improvements.

There are several reasons why a company gets a benefit from the integration or adoption of official, written energy and environmental policy:

- a clear statement will give a sense of purpose increasing the chances for success,
- senior management can assess the impact of strategy in relation to an agreed set of goals,
- problems of energy consumption are better understood and accepted in the company, if they have the support of senior management,
- activities will be successful, if the EEMS gets sufficient resources,
- it is an opportunity to "put on paper" commitments and responsibilities for the energy consumed in the company.

Energy and environmental policy establishes the general direction of the company in this area of energy management. It sets goals regarding the level of responsibility for energy performance that requires the company and in respect of which will be evaluated all of the following actions. If the company commitment to reducing energy consumption and waste generation is on an unofficial basis, it can lose its direction or its influence can be reduced with changes in executive positions or between employees of the department of EEMS. Written energy and environmental policy will protect the company's decision to manage energy consumption and waste flows within a company.

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