

THE CONTEMPORARY CONCEPT OF ENVIRONMENTAL ASPECTS RELATIONSHIP IN THE INTEGRATED PRODUCTION MANAGEMENT SYSTEM

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Summary: In improving their management systems, business entities more and more often compete for various awards and certificates, thus seeking to distinguish their market identity. Contemporary trends in environmental protection and the European Union's requirements cause organizations to give more consideration to pro-ecological activities. An increasing number of enterprises, wishing to create their image, will be interested in using not only quality standards, but also environmental management systems or industrial Health & Safety management systems. The present study makes an attempt to look comprehensively at the Integrated Management System, define the elements common to various management areas, and to propose new areas of integration that have not always been considered so far.

Keywords: integrated system, production management

1. INTRODUCTION

The changes going on in Poland over the last two decades, resulting from the performed system transformation and the process of integration with European communities, have covered all areas of the national economy, to a various extent and with a varying dynamics. Adjusting to the market economy rules and the requirements imposed by the European Union in the case of many enterprises proceeded in parallel and compelled those organizations to implement far-reaching changes of an organizational, technological, ownership, economic, and other nature. Processes that in many other countries evolved over a longer period as a result of the mutual inspiration of the world of science and industry, in post-communist countries proceeded very dynamically and rapidly.

The ecological aspect was initially the result of decommissioning of technologically obsolete industrial installations or implementing new technical-technological solutions and, on the other hand, the necessity of meeting the criteria laid down by the European Union. With time, however, contemporary market realities urged many business entities to undertake pro-ecological activities. The environmental awareness of entrepreneurs was focused both on the finished product and on the process of its manufacture.

For many branches in which strong competition occurs, ecology, similarly as quality, is one of the ways of distinguishing an organization's identity, but also it more and more often becomes a necessary but insufficient condition for achieving a success. The quality orientation initiated in Japan in the 1980s, being reflected also in marketing (Mantura, 2000 r.), expressed striving for perfection in all aspects of human activity. By its principles, it referred to the best characteristics of an economy, such as productivity, economy, effectiveness, innovativeness or environmental friendliness – features that in today's world build the competitive potential of an enterprise.

2. INTEGRATED MANAGEMENT SYSTEM

The Integrated Management System constitutes a combination of processes, procedures and practices used in an organization to implement its policy. This practice is usually more

effective in achieving policy goals that the approach based on separate systems (www.iso.org.pl, 2012 r.). Depending on the specificity of the branch, an organization implements an Integrated Management System consisting of different subsystems. The basis for the majority of such solutions is the Quality Management System conforming to the requirements of standard ISO 9001, which is most often combined with the ISO 14001 Environmental Management System, the PN-N-18001 Health & Safety Management System, the ISO 27001 Information Security Management System, or branch-specific systems (such as ISO 22000 Food Safety Management System, the Hazard Analysis and Critical Control Point (HACCP) System, Feed Safety Assurance System (GMP+), Good Manufacturing Practice (GMP), Good Hygiene Practice (GHP)), or requirements, such as the AQAP (quality systems required for the army). Integration may not only concern systems implemented in accordance with the requirements of ISO standards, but it can also be carried out in areas, such as the logistics system, the accreditation of laboratories, the financial system, etc.

The benefits of the implemented Integrated Management System include, but are not limited to the following (www.iso.org.pl, 2012 r.) (Łańcucki, 2001 r.) (Urbaniak, 2004 r.):

- positive shaping of the image of a company in the opinion of not only its customers, but also employees, suppliers, competitors, society, local government authorities or State supervisory bodies;
- optimization of financial expenditures related to the implementation and maintenance of the system;
- harmonization of documentation (procedures, instructions, records) and reduction of its volume;
- streamlining of management;
- reinforcing the company's position, especially in the European Union market;
- effective management of possessed resources;
- increasing the flexibility in introducing changes;
- facilitation in meeting regulations and assuring the timely adaptation of internal regulations to changes occurring in the applicable legal system.

The need for integrating management with various systems arose with the publication of subsequent standards and subjecting successive system management areas to certification. The literature on the subject (Łańcucki, 2001 r.) distinguishes three modes of integration:

- building an integrated system from scratch;
- building a system for managing one aspect and then the gradual integration of subsequent systems with the existing system;
- building separate systems for managing individual aspects and then their gradual integration.

As has already been mentioned earlier, the most commonly found system is the one in which an enterprise has an already implemented Quality Management System based on standard ISO 9001, and then it wishes also to function in conformance to standard ISO 14001 or PN-N-18001. A situation where quality management is, as if, extended by the environmental aspect or the Health & Safety aspect is theoretically justified in some ways. Indeed, considering these areas in a comprehensive manner is not a new idea, as already Gemichi Taguchi perceived the complementary nature of these aspects.

He defined the product quality as a loss transferred by a product to society, counting from the time of shipping that product. He assumed, therefore, that each product delivered to the user causes a loss, which is the lower, the higher the quality of that product is. The notion of losses to society is understood as, for example, the contamination of the natural environment and the associated civilization diseases, but also the consumer's dissatisfaction or the manufacturer's

losses caused by the disadvantageous image of the organization, which result in a loss of selling markets in the long term (Łańcucki, Kowalska, Łuczak, 1995 r.).

Thus, Taguchi's definition quoted above makes the quality level of a product dependent on the degree of safety of its manufacturing to the natural environment and the employee's health. Such an approach should be the basic goal of Integrated Management Systems, integrating the often overlapping and complementary partial goals of individual areas.

3. LEGAL FRAMEWORK FOR ENVIRONMENTAL PROTECTION

The Polish environmental protection legislation is based on several basic acts and related implementing regulations. These include, among others (Ulewicz M., Siwka, 2010 r.):

- The Act on the Environmental Law (of 27 April 2001, as amended on 20 November 2009).
- The Act on the Water Law (of 18 July 2001).
- The Act on Waste (of 27 April 2001).
- The Act on Packages and Waste Packages (of 11 May 2001).
- The Act on Used Electrical and Electronic Equipment (of 29 July 2005, amended on 21 November 2008).
- The Act on the Recycling of End-of-Life Vehicles (of 20 January 2005).
- The Act on Batteries and Accumulators (of 24 April 2009).
- The Act on Mining Waste (of 10 July 2008).

Business entities who use installations in their production process, whose functioning, considering the type and scale of the conducted activity, might cause considerable contamination of particular natural elements or the environment, as a whole, are required to obtain the so called integrated permit. This is a special type of permit (IPPC - Integrated Pollution Prevention and Control – Directive of the European Union No. 96/61/EC of 24 September 1996; the Act on the Environmental Protection Law) for introducing substances or energy to any components of the environment, while complying with the environmental protection requirements, following the rules of so called Best Available Techniques (BAT). This permit is granted for a period no longer than 10 years, and once every 5 years its review should also be made by the issuing authority. The Permit specifies the following, among other things: the conditions and quantities of emissions of gases or dust; the conditions of water intake under provisions laid down in the Act on the Water Law; the permissible noise level; the conditions to be met by discharged waste water; the conditions of generation and the methods of handling the waste.

Recently, the European Commission has concluded that the IPPC Directive in question does not bring about the effects expected at the time of its drawing up, leaving EU Member Countries too much freedom in establishing requirements to be included in integrated permits. This situation distorted the competitiveness rule of the Community market by creating disproportions in the adjustment of enterprises to the environmental protection requirements. Therefore, a new Directive of the European Parliament and the Council 2010/75/EU of 24 November 2010 on industrial emissions ((IED - Integrated Pollution Prevention and Control) has been drawn up, whose purpose is to:

- improve of the existing system,
- simplify the administration procedures in force, and
- harmonize the permit issuance requirements in all European Union countries.

In accordance with the provisions of the new IED Directive, each enterprise subject to the obligation of obtaining an integrated permit shall adjust itself to the changes occurred in the legislation (these shall be implemented to national legislation by 7 January 2013, at the latest) (<http://srodowisko.wip.pl>, 2012 r.).

The Integrated Permit applicable both currently and in the future, being a peculiar administrative decision, constitutes actually a kind of a licence for conducting a particular activity, because the Act demands that the functioning of any installations operated without the required permit be withheld. Such peculiar State intervention is also consistent with the idea of sustainable development, meaning a social and economic development or growth complying with the environmental requirements. This concept is generally viewed on a macroeconomic scale (e.g. a different approach to the problems under discussion is dependent on the level of economic development of a particular country); however, its implementation will require, above all, a pro-ecologic orientation in the management of the enterprise, which, in practice, refers to the ISO 14000 standards. So, individual Environmental Management System elements reflect, on the one hand, the top-down imposed restrictions and, on the other hand, the level of the Steel Mill's pro-ecological policy.

The above-mentioned legal measures are already an element of the national legislation setting the directions of the ecological policy, where the utilization of waste plays an important role.

The Act on Waste provides for the implementation of a new system for handling any types of waste. This procedure should be followed in several successive steps: the prevention of waste formation, the selection of waste and its economic utilization as substitutes for raw-materials; waste disposal; storage, as an element of waste disposal; landfilling. The Act under discussion has also obliged relevant bodies to create a National Waste Management Plan for the years 2002 – 2014 (to be updated not less frequently than every four years; currently, the update on 2010 will be the year 2014), in which the waste handling rules will provide a basis for setting long-term tasks. Such tasks are necessary for carrying out the objectives set out in the State's ecological policy geared towards achieving EU standards.

4. SUSTAINABLE DEVELOPMENT

The economic growth has not only increased production, by also contributed to environmental pollution. The wrong management of the national economy's resources and space has resulted in the degradation of many natural environment components, as well as to the inhibition of the economic growth potential. The economic growth led to increased interference in the natural environment, which, in turn, upset the balance in the functioning of humans in their environment. The idea of sustainable development is a concept that proposes a new definition of the man - environment relation in which humans not only use environmental resources, but, above all, protect and rationally manage them (Gajdzik, Wyciślik, 2010 r.). The definition of this new role of man in the natural environment entails the need for defining the boundaries of his interference in the environment in the contexts of the existence and development of civilization (Adamczyk, Nitkiewicz, 2007).

Of key importance to sustainable development are the issues of:

- interrelations of economic, social and environmental aspects,
- the increase in societies' awareness of the fact that the economic growth alone is not sufficient for resolving the world's problems in the waste management process.

All activities within sustainable development are conducted in the society-economy-environment system. According to Poskrobko (2009) the following deserve special attention:

- maintaining the natural bases of economic development in the near or further future in the global, regional and local setting;
- protection of natural processes at all levels of nature organization: the genetic, ecosystem, landscape and the biospherical levels;
- assuring the sustainability of the development of the economy and societies through the skilled management of resources.

Regardless of the plane of action, the basic idea remains the same: the people, the environment and the economic systems are interrelated. The sustainable development is a continuous process. It is not possible to define the boundary conditions, the detailed mode of execution or the closed targets for it (with new conditions, new targets arise).

5. THE WASTE MANAGEMENT PROCESS IN THE INTEGRATED MANAGEMENT SYSTEM

The proper management of waste resources in the Integrated Management System constitutes an essential element both for the environment and for the functioning of man. There exist various available methods for using the waste stream in the management of individual product types. In each of these cases, we encounter a potential, as well as the need for utilizing one or more waste groups.

Managing a growing amount and variety of waste materials needs systemic solutions. Recycling in waste management is a common way of using the potential of waste materials. However, this notion is very often used for marketing purposes only. By analyzing available information, the hierarchy of the advantages of waste management methods can be set up as: prevention, limitation, reuse, recycling, recovery and disposal.

As can be seen from the above priority list, recycling is ranked rather low in the hierarchy of benefits in the system of management of waste stream utilization processes. In the Integrated Management System, two aspects can be distinguished: the utilization of physical waste and the allocation of material and energy expenditures on the reuse of generated waste.

The first of the above aspects involves the need for the proper classification of waste formed, also within the same group. The unit of a selected waste type, e.g. aluminium, may constitute a separate value in each branch of the national economy. It may contain different types of admixtures or contaminants that will make the waste suitable for a specific way of utilization. It therefore seems justifiable to make a summary that will contain the following information: the amount of waste generated, the classification of waste types (along with the code and subgroup symbols), the source of generation, the form in which the material occurs (along with its composition), and the information about the environmental impact of the waste. A preliminary provides a qualitative-quantitative basis for defining the method of preventing the generation of waste and/or its utilization.

The second of the above-mentioned aspects should consider activities including planning, organizing and controlling the resources in such a manner as to ultimately minimize the amount of non-utilized wastes. The process approach is an approach that is clear and intelligible and covers all management functions. Such a approach makes it possible to promptly respond to new conditions in the functioning of enterprises, and also allows for all management levels, i.e.: strategic, tactical and operational (Gajdzik, 2008 r.). The developed iron-bearing waste utilization process management system should constitute one of the components of the Integrated Enterprise Management System.

Modern Integrated Production Management System should take into account environmental, Health & Safety, as well as quality management aspects. The contemporary quality means not only the reduction of nonconformities occurred in finished products, but also inclusion of energy factors and the manufacturer's responsibility for waste management. Waste management should start already at the stage of the production system planning process. Being aware of the fact that the problems associated with the utilization of not only production but also operational wastes will ultimately be also his responsibility to some extent, the manufacturer will adopt the proper attitude towards the waste management method.

6. CONCLUSION

Integration of management systems is not and should not be just an administrative decision to simplify the organizational structure of the organization. Preventive or process approach based on a philosophy of continuous improvement (Deming cycle) provides the connection seemingly different areas of the business. Among the various aspects special role, in recent years, plays environmental management system largely shaped by the cases of legal regulations. In this situation, it seems obvious the fact that any forward-looking environmental initiatives, beyond the required actions, reflect the essence of integration. One of the most promising and preferred in directions of EU legislation is the problem of waste management.

As has been demonstrated by the discussion provided herein, iron-bearing wastes arise in any sector. To develop the appropriate procedures for the effective utilization of iron-bearing material sources, a number of factors need to be considered, such as: the amount of waste generated, waste classification, the source of generation, the form in which a material occurs, the forms of contamination, and the information about the environmental impact of the waste. The creation of an iron-bearing waste resource management system for a selected branch of the economy would enable uniform rules of handling a specific waste group to be implemented. Moreover, the collected information in the form of appropriate databases to be used by relevant information systems would improve the level of conformance of the formal and legal status of waste generation. Together with respective procedures, the management system will allow the correct storage of already generated wastes in the human-environment system.

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