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## STANDARDIZATION AND CERTIFICATION SYSTEM OF GOODS IN THE EUROPEAN UNION: PROGRESSIVE EXPERIENCE

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*Чукурна О.П. Система стандартизації й сертифікації товарів в Європейському Союзі: прогресивний досвід.*

В статті розглянуто систему стандартизації й сертифікації в Європейському Союзі. Акцентовано увагу на новітньому та глобальному підході в системі стандартизації ЄС. Визначені концептуальні відмінності між новітнім та глобальним підходом системи стандартизації ЄС. Розглянуто принципи побудови гармонізованої системи європейських стандартів. Проаналізовані правила та умови нанесення маркування CE в країнах Європейського Союзу. Зроблений акцент на правилах і процедурах оцінки відповідності й сертифікації в ЄС на прикладі продукції машинобудування. Зроблений висновок, що жоден з українських виробників продукції вагобудування не має маркування (CE Mark) та не проходить процедуру сертифікації на відповідність діючої нормативно-технічної документації на території ЄС. Запропоновано впровадити інтегровану систему менеджменту якості, яка повинна включати три системи: екологічного менеджменту ISO 14000, систем промислової безпеки та охорони праці OHSAS 18000 та міжнародних стандартів якості ISO 9000.

*Ключові слова:* стандартизація, сертифікація, маркування CE, європейські стандарти, директиви ЄС, декларація відповідності, стандарти якості ISO 9000, екологічні стандарти ISO 14000

*Чукурна Е.П. Система стандартизации и сертификации товаров в Европейском Союзе: прогрессивный опыт.*

В статье рассмотрена система стандартизации и сертификации в Европейском Союзе. Акцентировано внимание на новейшем и глобальном подходе в системе стандартизации ЕС. Определены концептуальные различия между новейшим и глобальным подходом в системе стандартизации ЕС. Рассмотрены принципы построения гармонизированной системы европейских стандартов. Проанализированы правила и условия нанесения маркировки CE в странах Европейского Союза. Сделан акцент на правилах и процедурах оценки соответствия и сертификации в ЕС на примере продукции машиностроения. Сделан вывод, что ни один из украинских производителей продукции вагоностроения не имеет маркировки (CE Mark) и не проходит процедуру сертификации на соответствие действующей нормативно-технической документации на территории ЕС. Предложено внедрить интегрированную систему менеджмента качества, которая должна включать три системы: экологического менеджмента ISO 14000, систем промышленной безопасности и охраны труда OHSAS 18000 и международным стандартам качества ISO 9000.

*Ключевые слова:* стандартизация, сертификация, маркировка CE, европейские стандарты, директивы ЕС, декларация соответствия, стандарты качества ISO 9000, экологические стандарты ISO 14000

*Chukurna O.P. Standardization and certification system of goods in the European Union: progressive experience.*

The article describes the standardization and certification system in the European Union. The attention is focused on the latest and global approach to the EU standardization system. Determined the conceptual differences between the latest and global approach to the EU standardization system. The principles of the construction of a harmonized system of European standards. Analyzed the rules and conditions of application of the CE marking in the European Union. Emphasis is placed on the rules and procedures of conformity assessment and certification of the EU as an example of engineering products. It was concluded that none of the Ukrainian railcar producers of products is not marked (CE Mark) and does not pass the certification procedure for compliance with current regulatory and technical documentation within the EU. Proposed to implement an integrated quality management system, which should include three systems: Environmental Management ISO 14000, industrial safety systems and safety OHSAS 18000 and ISO 9000. international standards of quality.

*Keywords:* standardization, certification, CE marking, European standards, EC directive, declaration of conformity, quality standards ISO 9000, environmental standards ISO 14000

In integration conditions of Ukraine to the European Union a first-priority question which acquires special relevance is products compliance of the Ukrainian producers to the European standards. This question becomes key in the conditions of new realities as depends on it product competitiveness of the Ukrainian producers in EU market. Of course, transition of standardization system to EU requirements demands a lot of time for a significant amount of the Ukrainian producers. At the same time, the procedure of products certification in the European Union provides actions for assessment of goods to mandatory requirements of EU standards. Standardization and certification system of goods in the European Union is created in such a way that those enterprises which are guided by EU markets shall undergo control of the goods on safety requirements in special EU bodies. In this context there is a need to study of progressive experience of standardization and certification system in the European Union.

### Analysis of recent researches and publications

Many scientific publications of local scientists were devoted to problems of a quality evaluation and goods competitiveness in system of a marketing activity, such as: L.V. Balabanova, A.A. Mazaraki, M.A. Oklander, E.F. Osnach and others. Despite an essential contribution of these scientists to theory development of a quality evaluation and goods competitiveness, there comes need of system researches for the sphere of goods quality evaluation and their compliance to European Union standards requirements.

*The aim of the article is* assessment of progressive experience of standardization and certification system of goods in the European Union.

### The main part

Standardization systems in the European Union it is subdivided on new and global approaches. However, the general requirement for any producer which makes and sells the products in the market of the European Union is compliance determination of goods or service to the existing requirements of the specifications and technical documentation and EU Directives. In the present producers of all member countries of the European Union adhere to requirements for products standardization and certification.

Historically it developed so that European Single Market arose in 1957. The Roman agreement was the basis for this process, it determined the following main four principles: free movement of goods, persons, services and equities. Within the Roman agreement was determined the prohibition in restriction of trade between European Union countries. Since 1985 European Single Market completely turns into space without internal borders where is performed free movement of goods, persons, services and the equity. Removal of technical barriers in trade was the major task during creation of the Single market of the European Union. To solve a problem of technical barriers the European Community accepted new packet of reforms, in 1992 signed the agreement with state members of the European Free Trade Association of European Economic Area (EEA) on creation of European economic space. Products, goods and services which meet the requirements of the European Union can freely be on sale in the territory of European Economic Area. This requirement concerns all member countries to which in the present treat: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, Great Britain, Latvia, Lithuania, Estonia, Poland, Slovakia, Slovenia, Czech Republic, Hungary, Bulgaria, Romania, Malta, Cyprus, Croatia [1].

Creation of single European economic space promoted creation of the harmonized system of the European standards which basis the following principles were:

- Mutual standards recognition for all producers of all EU countries. It means, the product which is made in one of EU countries can be realized in all European Union territory;
- National legislation heterogeneity of each participating country of the EU is replaced with the corresponding EU Directive. Thus is performed technical standards coordination and are determined single approaches to quality requirements of products which are issued and implemented in European Union territory.

The normative and technical legislation of EU Member States had own technical safety regulations with various requirements, but enforcement of mutual recognition principle promoted trade barriers liquidation and taking measures of technical coordination between the countries. At the same time, each member-state of the European Union has the own normative-technical legislation and a product which meets the requirements in one state member can be placed in any EU country, on condition of lack of essential requirements in the national legal system for safety for the person and the environment and compliance to EU legislation.

The main lack of the European legislation is the fact that EU Directives don't determine technical requirements to goods and services, at the same time regulating procedures of their accomplishment.

According to the normative-technical documentation of EU countries, it is supposed that the goods and services made in EU territory conform to the harmonized standards and requirements which are determined in them (European Standards EN). If the goods are made without use of the harmonized standards, the producer is obliged to show that products conform to the main requirements of these standards. In this approach concerning a regulation of compliance procedure to the harmonized standards is enounce Global approach to standardization of goods and services in the European Union. Unlike New approach which contains only requirements to safety of goods and services and environmental protection, Global approach determines assessment procedure of goods compliance to the existing requirements of the specifications and technical EU documentation.

Global approach was put into operation on the basis of EU Council resolution of 21.12.1989 in which is established assessment procedure of products compliance which are sold in EU market, the existing specifications and technical documentation. By means of these rules producers have an opportunity to show products compliance to technical directives requirements of New approach.

The procedural mechanism of Global approach is implemented by means of Declaration of Conformity about goods compliance to main Directives requirements to which it corresponds. At the same time, Global approach assumes complete liability of the producer for the goods and the independent methods choice of compliance determination of goods to the main requirements. In this mechanism along with complete responsibility, also all types of the risks connected with goods, are transferred to the producer.

The goods and services, realized in EU territory, shall have marking (CE Mark). CE Mark is applied on goods packaging which underwent certification procedure and received the Certificate of EU conformity. This document is issued after the procedure of goods check on compliance to the acting requirements of EU Directives on the basis of the testing which are carried out in independent accredited laboratories. Certificates are issued by notified EU bodies on which is put its number and in certain cases, the term of its action. A positive side of certification and CE Mark receipt is lifting of restrictions on goods sales in all territory of the EU. Besides, after receipt of CE Mark, have no business to require at the producer corroborating evidences of goods compliance to the existing requirements.

The CE Mark system is used also at a stage of market testing of new products. So, the Chinese producers which deliver own products on the local market in the European Union already at a stage of trial consignment carry out without fail procedures for determination of compliance to the harmonized EU standards and are entitled of drawing the sign CE Mark to products. Such strategy of the Chinese industrialists brings the positive results, they quite often the first come to the European Union market with new products, occupying a certain market niche.

One of features of CE Mark use in the EU territory is the fact that in recent years the Chinese producers also to use own sign of goods marking China Export (CE), images which is completely identical to the European sign. Thus, the Chinese producers demonstrate aggressive strategy for capture of the European market which is performed by false representation of the European consumers. China Export marking has no legal registration, testing confirmation and is put randomly by the Chinese producers of products [8]. This sign isn't confirmation of conformity to regulating European Union documents, but is visually very similar to it. In the Chinese option of the letter C and E in this sign stand more closely to each other, than on a conformity mark of the EU. Marking emergence of China Export (CE) requires careful supervision from monitoring EU bodies for the purpose of counterfeit non-admission on the markets of EU countries. In general, National supervising Council of EU countries control the implementation of the corresponding Directives and goods certification and drawings marking. The direct responsibility for goods quality and its safety is brought by the producer or his Authorized Representative to the EU. It is unconditional that the main requirement which is imposed to goods in EU countries is safety for the person and the environment. For this reason, almost all the EU Directives are aimed to regulate safety indicators.

In the context of European integration the Ukrainian producers foremost are faced with release reorganization of own products according to requirements of the specifications and technical the European Union documentation. These requirements

acquire special relevance for the Ukrainian producers of mechanical engineering products. In this sphere the biggest differences are observed in quality requirements of products in the European and Ukrainian producers.

In the European Union the main normative and technical document, which regulates production of mechanical engineering, is the Directive 2006/42/EU "Machines and mechanisms" (Machinery directive). Assemblies these or those components, which connected among themselves, details, mechanisms fall under this Directive provided that at least one of components moves, rotates. Potentially any machines and mechanisms can be carried to direction of distribution of the Machinery directive. The purpose of this Directive is different decrease in loss, costs as a result of accidents which can be caused by use of the low-quality or dangerous equipment. It occurs thanks to preliminary safe designing and a construction of machines, mechanisms and the equipment, and also proper establishment, use and servicing.

In the course of studying of the European experiment on goods and services certification, was carried out assessment of products conformity of the Ukrainian mechanical engineering according to the existing requirements to systems of international standards: ISO 9000 (quality), ISO 14001 (environmental protection), SA 8000 (social responsibility and personnel management), OHSAS 18000 (labor protection and industrial safety). These systems of standards reflect the international managerial experience, are a guide on system enhancement of goods standardization (tab. 1).

Table 1. Products compliance of the Ukrainian mechanical engineering to systems of international standards

Enterprise	Economic sector	Compliance to standards of a series ISO 9000-9001 (quality)	Compliance to standards of a series ISO 14000 (environmental protection)	Compliance to standards of a series SA 8000 (social responsibility and personnel management)	Compliance to standards of a series OHSAS 18000 (labor protection and industrial safety)	Compliance to standards Ukrainian Certification of Products
Public company "Azovobshchemash"	Railway coach manufacturing	+	-	+	+	+
Public company "Dniprovgonmash"	Railway coach manufacturing	+	-	Information is absent	+	+
Public company "Kryukovsky Carbuilding Plant"	Railway coach manufacturing	+	-	+	+	+
Public company "Stakhanov plant Carbuilding Plant"	Railway coach manufacturing	+	-	Information is absent	+	+
Public company "Umanfermmash"	Agricultural mechanical engineering	+	-	+	+	+

Source: Own elaboration

It was found out that none of the Ukrainian producers of mechanical engineering products which was analyzed has no marking (CE Mark) and didn't

undergo the certification procedure on compliance to the existing specifications and technical documentation in the EU territory. Lack of EU

Certificates at the Ukrainian enterprises of car building is proved by technological production features which is oriented to the markets of those countries which have the size of a railway track of 1520 mm. Almost all Ukrainian car-building enterprises have certificates appropriate to the technical regulation of the Russian Federation "About machines and equipment safety" as the main part of their products was oriented to the Russian market. In the integration conditions into the EU, producers of a car building industry shall completely technologically reformat own production on the European Union market, but it isn't possible owing to specific features of this industry in the Ukrainian mechanical engineering.

The car-building industry has certain specifics which are determined by technological features of its products. Products of the Ukrainian mechanical engineering are oriented only to the market of the countries which create so-called "Space of 1520", which includes the countries of the former USSR, the Baltic countries, Finland and Mongolia. In the present, 49 enterprises of a car-building industry work at the market of the countries "Space of 1520". On production amounts, the leader of an industry is "Ural Carriage-Building Plant" which within the last five years issues the greatest number of cars. The second place in an industry is taken by public company Azovobshchemash production volumes which from 2010 for 2012 slightly fluctuated, but during 2013-2015 have considerable reducing. The third place is taken by public company Kryukovsky Car-building Plant which during the analyzed period has stable amounts of release at the level of 10568 units [3].

Since 2011 the market of wagon began to enter an overproduction phase. For large Ukrainian producers of wagon the situation considerably worsened with entering in 2012 of protectionist measures from the authorities of the Russian Federation, namely entering of import quotas of wagon products. Besides, the Russian Federation has a monopoly position in certification questions of wagon products which are oriented to the size of a track of 1520 mm. All Ukrainian producers of wagon shall receive certificates of the Russian certified register of a federal rail transport without which delivery of cars to the Russian Federation, and also to the majority of the countries of the Customs union is impossible. The mechanical engineering is key industry of the Ukrainian industry and enters into top three of products export together with metallurgy and the chemical industry. Car-building is the integral mechanical engineering component. For a car-building industry of 2013-2015 were characterized by considerable fall of production. Deliveries of goods rail car to this period to the main markets it was reduced by 40%. The key markets were closed owing to agreement signature about association with the EU and in connection with surplus of goods wagons which was formed on "Space of 1520". Demand in the markets of the Central Asia countries (Uzbekistan, Tajikistan, Turkmenistan) and Transcaucasia

(Azerbaijan) is a little volume and is quickly saturated that doesn't provide sufficient load of capacities of the Ukrainian car-building enterprises. Access to the markets of Kazakhstan and Belarus is complicated because of their membership in the Customs union in which protectionist measures are taken. All this was followed by considerable reducing a railway cargo transportation and decrease of the activity of large buyers-operators of the market of a cargo transportation because of sharp decrease in amount of transportations of raw materials and finished goods [3].

Considering technical characteristics of the rail cars issued by machine-building enterprises of the countries "Space of 1520" it is possible to state that they are oriented only to the markets of the CIS countries, the Baltics and Mongolia having track width 1520 mm. All large Ukrainian car-building enterprises to which treat Azovobshchemash, Dneprovagonmash, Stakhanov Car-building Plant and Kryukovsky Car-building Plant, 95% of products sell on the foreign markets and are dependent on export. The main country of rail cars export of the Ukrainian production is Russia to which are exported about 89.7% of car building products, to Kazakhstan – 9.3%, Latvia – 0.25%, to other countries – 0.75%.

However, since October, 2013 Russia limited import of Ukraine car-building products. General losses of the Ukrainian plants from this policy constituted about 50 million dollars a month, that is 600 million dollars a year that constitutes 0.5% of the Ukrainian GDP. For today Russia began to realize import substitution programs of the Ukrainian products and in other spheres of mechanical engineering. In these conditions the Ukrainian producers of rail cars shall reduce production or look for the new markets of the products that is connected with implementation of innovative and investment policy. Other standards concerning the track length (1435 mm) which exceeds the standard of the CIS countries (1520 mm) work in the countries of the European Union. For this purpose serious investments on samples development and production of innovative rail cars will be required. But also innovative technologies which assume increase in load of an axis from 23.5 tons to 25 tons and increase in a between-repairs run. Besides, it is important to enter new methods of after-sale service of products, including provision of guarantees and separation of responsibility with carrier in case of defects. To keep production, the Ukrainian railroad car builders need to adjust export out of borders of the CIS. For this purpose, the plants need to invest annually at least \$90000 of the USA [3].

All and above the designated problems of a car-building industry are followed by deepening of financial crisis at the enterprises. In these conditions the problem of products certification according to EU requirements shall be followed by technical retrofitting and innovations implementation at the enterprises.

If to consider products compliance of the Ukrainian car building to systems of international standards in the direction of railway mechanical

engineering, only products of Azovobshchemash conform to international standards of the European association of the railway industry of UNIFE (tab. 2).

Table 2. Products compliance of the Ukrainian car building to system of international standards in the direction of railway mechanical engineering

Enterprise	Economic sector	Certificates of conformity to the technical regulation of the Russian Federation "About safety of machines and the equipment" (State standard Russian Federation)	Compliance to the international standard of the railway industry of IRIS.	Compliance of system certification of business management in the certification body accredited by the European association of the railway industry UNIFE	OHSAS 18000 (labor protection and industrial safety)	Certificates of conformity to the Technical regulation "About safety of machines and the equipment".
Public company "Azovobshchemash"	Railway coach manufacturing	+	+	+	+	+
Public company "Dniprovagonmash"	Railway coach manufacturing	+	Information is absent	Information is absent	Information is absent	Information is absent
Public company "Kryukovsky Car-building Plant"	Railway coach manufacturing	+	+	-	+	+
Public company "Stakhanov plant Car-building Plant"	Railway coach manufacturing	+	+	Undergoes the certification procedure	+	+

Source: Own elaboration

In the present Azovobshchemash has a large number of the certificates certifying compliance of their products quality to requirements of the different countries including Germany. In the sphere of regulations observance of machines safety and their qualities, Azovobshchemash has the following Permissions and certificates of conformity:

- Certificates of conformity to the technical regulation of Russian Federation "About safety of machines and the equipment";
- Conformity certificates of certification System on a federal rail transport (Russia);
- Conformity certificates of national system of UKRSEPRO certification (Ukraine);
- The permissions to application issued by Federal Service for Environmental, Technological and Nuclear Supervision of the Russian Federation;
- The permissions to production and application issued by Department on supervision of safe operation in the industry of Belarus Republic;
- The permissions to application issued by The State Service of Mining Supervision and Industrial Safety of Ukraine;
- Conformity certificates to the Technical regulation "About Safety of Machines and the Equipment".

— Besides, quality stability and products safety is confirmed by results of numerous supervising audits.

— Systems compliance of quality management of Azovobshchemash to requirements of ISO 9001: 2008 (DSTU ISO 9001 - 2009) it is confirmed with authorized bodies on certification: TÜF SÜD, Germany (conformity certificates № 12 100 38857 TMS of 04.08.2013 No. 12 100 40043 TMS of 22.07.2011).

— Systems compliance of quality management of Azovobshchemash to requirements of GP "Dortranstelekom" Ukraine (conformity certificate № UA2.147.06053-11 of 02.06.2011).

— Systems compliance of quality management of Azovobshchemash to requirements of GP "Dneprstandartmetrologiya" Ukraine (conformity certificate № RU.2.037.07075-12 of 30.07.2012).

— The international standard is introduced in Azovobshchemash.

Car building products of Kryukovsky Car-building Plant and Stakhanov Car-building Plant have conformity certificates of national system of UKRSEPRO certification and conform to the international standards ISO 9001 and state standard of DSTU ISO 9001. Common feature of both enterprises also is availability of conformity certificates of certification System on a federal rail transport

(Russia) and patents for the products in patent authorities of Ukraine and the Russian Federation. Besides, Kryukovsky Car-building Plant implemented the quality system according to requirements to the international standard of the railway industry of IRIS. One of strengths in providing the quality system of products of Kryukovsky Car-building Plant is system implementation of enterprise management (SME).

The management system covers all types of activity of Kryukovsky Car-building Plant which influence quality and products safety that is issued. Requirements of SMP extend to stages of product lifecycle from initial determination to a final requirements satisfaction of the consumer in case of guarantee and support service [5].

Concerning Stakhanov Car-building Plant, it entered the quality management system conforming to requirements of the international standard ISO 9001: 2008. Besides, the Stakhanov car-building plant has quality certificates - Bureau Veritas, RS FZhT (Russia) and UKRSEPRO (Ukraine) on the right of designing, development and production of a model range of heavy engineering products that conforms to safety requirements NB ZhT. Now is carried out work on enhancement of quality management at the enterprise, by implementation of the international industry standard of the railway industry of IRIS [6]. Implementation of international railway industry standards of IRIS allows all enterprises of a car-building industry to be reoriented on the European standards of quality management and to provide high product competitiveness not only in the markets of Ukraine and the CIS, but also will open additional benefits in the world market.

Thus, it is possible to draw a conclusion that the enterprises of the Ukrainian car building have the potential for implementation of the European quality standards on the products. However, this process requires a lot of time and financial investments.

The conducted research of products compliance of the Ukrainian mechanical engineering to international standards requirements, taking into account progressive experience of the European Union, allows developing general for all the recommendation about implementation of the integrated management system. The Integrated System of Management (ISM) assumes system approach to enterprise management, allowing to connect various spheres of its activities in single system. The central place in this system belongs to the quality management system (QMS). The quality management system is based on use of the international standards ISO 9000 which use for its creation at any enterprise. The ISO standards 9000 are universal and adapted to complex use with system standards of ecological management of ISO 14000 and systems standards of industrial safety and labour protection of OHSAS 18000. The carried-out analysis of the Ukrainian mechanical engineering enterprises showed that almost all of them have a quality management system, the constructed based on the

international standards ISO 9000 and their activities conforms to systems standards of industrial safety and labour protection of OHSAS 18000, but don't have system of ecological management of ISO 14000 at the enterprise. For this reason, it is urgent for them implementation of the integrated management system which shall include in addition to the first two, also system of ecological management of ISO 14000. These measures will increase product competitiveness of the Ukrainian mechanical engineering in the world markets and will provide passing of the procedure of marking (CE Mark) for the EU markets.

Besides, experience analysis of the European, American and Japanese enterprises allowed to come to a conclusion that system availability of ecological management at the enterprises provides them certain competitive advantages. At the same time, the creation procedure of ecological management system in many aspects matches the creation procedure of a quality management system. For this reason, in case of standards development of the ISO 14000 series this aspect was considered and is made orientation to their joint implementation with standards of the ISO 9000 series.

Thus separate parts of a quality management system are integrated into single system of enterprise management that creates base for planning of the purposes and the enterprise strategy, the analysis and overall assessment of efficiency of enterprise activities.

### **Conclusions**

As a result of system research of certification and quality management at the enterprises of the Ukrainian mechanical engineering and its comparison to progressive European experience, the following conclusions were drawn. The carried-out analysis showed that almost all Ukrainian enterprises of mechanical engineering have a quality management system which is constructed based on the international standards ISO 9000 and systems standards of industrial safety and labour protection of OHSAS 18000, but don't have ecological management system of ISO 14000 at the enterprise. Besides, it was found out that any Ukrainian producers of mechanical engineering products which was analyzed, doesn't have marking (CE Mark) and didn't undergo the certification procedure on compliance to the existing specifications and technical documentation in the EU territory. The revealed shortcomings allowed developing recommendations about implementation of the integrated management system which shall include systems: quality management system, ecological management of ISO 14000, systems of industrial safety and labour protection of OHSAS 18000 and international standards of quality of ISO 9000. These measures will increase product competitiveness of the Ukrainian mechanical engineering in the world markets and will provide passing of the marking procedure for the EU markets.

### Abstract

The article deals with standardization and certification system in the European Union. The attention is focused on the latest and global approach to the EU standardization system. Determined the conceptual differences between the newest and the global approach of the EU standardization system. Considered principles of the construction of a harmonized system of European standards. Analyzed the rules and conditions of application of the CE marking in the European Union. Emphasis is placed on the rules and procedures of conformity assessment and certification of the EU as an example of engineering products. It was concluded that none of the Ukrainian manufacturers of engineering products, which were analyzed, are not marked (CE Mark) and does not pass the certification procedure for compliance with current regulatory and technical documentation within the EU.

A result of research system of certification and quality management at the enterprises of Ukrainian machine-building, and its comparison with progressive European experience, the following conclusions were made. The analysis showed that almost Ukrainian enterprises of mechanical engineering have a quality management system that is based on international standards ISO 9000 and standards of industrial safety systems and safety OHSAS 18000, but do not have the environmental management system ISO 14000 in the enterprise. In addition, it was found that none of the Ukrainian manufacturers of engineering products, which were analyzed, are not marked (CE Mark) and did not pass the certification procedure for compliance with current regulatory and technical documentation within the EU.

The detected disadvantages allowed to develop recommendations for the implementation of the integrated management system, which should include three systems of quality management system: ISO 14000 environmental management, safety systems OHSAS 18000, international standards of quality ISO 9000. These measures will increase the competitiveness of Ukrainian products in the world of mechanical engineering markets and ensure the passage of the marking procedure (CE Mark) for the EU market.

*JEL Classification: O14.*

### Список літератури:

1. International center for quality Certification – [Електронний ресурс] – Режим доступу: <http://icqc.eu/ru/standards.php>.
2. Center for testing and European Certification – [Електронний ресурс] – Режим доступу: <http://ctec.lv/ru/index/>.
3. Чукурна О. Ситуаційний аналіз факторів ціноутворення машинобудівних підприємств // Вісник Київського національного університету ім. Т.Шевченка, № 5 (182), 2016. – С. 39-46.
4. Офіційний сайт ПАТ «Азовмаш» – [Електронний ресурс] – Режим доступу: <http://azovmash.com/>.
5. Офіційний сайт ПАТ «Крюківський вагонобудівельний завод» – [Електронний ресурс] – Режим доступу: <http://www.kvsz.com/>.
6. Офіційний сайт ПАТ «Стаханівський вагонобудівельний завод» – [Електронний ресурс] – Режим доступу: <http://stakhanovvz.com/>.
7. Офіційний сайт ПАТ «Дніпровагонмаш» – [Електронний ресурс] – Режим доступу: <http://dvmash.biz/>.
8. Маркування Євросоюзу – [Електронний ресурс] – Режим доступу: <http://glasnaroda.com.ua/torgovlya/drugoe/markirovka-evrosoyuza-ce-na-tovarakh-ne-putayte-s-kitayskoy-markirovkoy.html>.

### References

1. International center for quality Certification (2016). Retrieved from <http://icqc.eu/ru/standards.php> [in Ukrainian].
2. Center for testing and European Certification (2016). Retrieved from <http://ctec.lv/ru/index/> [in Ukrainian].
3. Chukurna, O. (2016). Sytuatsiyni analiz faktoriv czinoutvorenia mashinobudivnych pidpnyemstv [Situation analysis of pricing factors engineering enterprises]. Bulletin of Kyiv National University im. T. Shevchenko, 5 (182), 39-46 [in Ukrainian].
4. Ofiytsiynyi sait PAT "Azovmash" (2016). [The official site of PJSC "Azovmash"]. Retrieved from <http://azovmash.com> [in Ukrainian].

5. Ofiytsiynyi sait PAT "Krukovsrii vahonobudivelnyi zavod" (2016). [The official site of PJSC "Kryukov Railway Car Building Plant"]. Retrieved from <http://www.kvsz.com> [in Ukrainian].
6. Ofiytsiynyi sait PAT "Stachanovskiy vahonobudivelnyi zavod" (2016). [The official site of PJSC "Stakhanov Railway Car Building Plant"]. Retrieved from <http://stakhanovvz.com> [in Ukrainian].
7. Ofiytsiynyi sait PAT "Dniprovgonmash" (2016). [The official site of PJSC "Dniprovgonmash"]. Retrieved from <http://dvmash.biz> [in Ukrainian].
8. Markuvannia Evrosouzu [EU Labeling] (2016). Retrieved from <http://glasnaroda.com.ua/torgovlya/dru-goe/markirovka-evrosoyuza-ce-na-tovarakh-ne-putayte-s-kitayskoy-markirovkoy.html> [in Ukrainian].

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