STATE SECURITY IN THE CONTEMPORARY WORLD

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Ocena zgodności ze względu na czynniki bezpieczeństwa energetycznego

Streszczenie: Uwzględnienie zagrożeń bezpieczeństwa przy wdrażaniu oceny zgodności wymagań technicznych dla przepisów technicznych UE jest problemem na Ukrainie. Obecnie istnieje problem zinstytucjonalizowania terminów, w których traktuje się pojęcia bezpieczeństwa, zagrożenia i ryzyka. Bezpieczeństwo przy wdrażaniu oceny zgodności wymagań technicznych to system pozostający pod względem akceptowalnego ryzyka, podczas gdy ryzyko jest stanem systemu podatnym na szkody. Jednocześnie wyrażenie strat i ryzyka ich wystąpienia jest zdeterminowane przez prawdopodobieństwo uszkodzenia i jego konsekwencje. Biorąc pod uwagę złożoność koncepcji bezpieczeństwa jako systemu wielocharacterystycznego, analizujemy zestaw elementów, czyli niektóre części systemu, spośród których niektóre są ze sobą powiązane, co pozwala nam je traktować jako całość w stosunku do innych systemów. Zasadniczo ryzyko jest określane poprzez pomnożenie prawdopodobieństwa wystąpienia negatywnego scenariusza (zderzenia) ze szkodliwym wpływem (stratą). Jeśli ustalić wymiar wartości ryzyka technologicznego, będzie to zależeć od prawdopodobieństwa i znaczenia szkody nieokreślonej, która w ostatecznym przybliżeniu może być wyrażona w jednostkach finansowych. Większość wymagań bezpieczeństwa dotyczy produktów, procesów i usług. W związku z tym wymagane jest łączne wykorzystanie oceny ryzyka i oceny zgodności systemów technicznycvh.
Słowa kluczowe: regulacje bezpieczeństwa technicznego, ocena ryzyka, systemy oceny zgodności.

Assessment of Compliance Due Energy Safety Factors

Abstract: There is a problem of taking into account the safety risks in the implementation of technical requirements conformity assessment for the EU technical regulations in Ukraine. There is a problem in institutionalization of terms, which treats the concept of safety, hazard and risk too. Safety is the system remaining in terms of acceptable risk, while the risk is the state of the system vulnerable to harm as the maximum expression of loss and only risk is determined by the possibility that during / over a period determined by probabilic damage and its consequences. Considering the complexity

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of the concept of safety as a multicharacteristics system, we analyze a set of elements, meaning certain parts of the world, among which some are linked which allow us to consider them as a whole in relation to other systems. In general, the risk is determined by multiplying the likelihood of a negative scenario (crash) with the harmful effects (loss). If it set the value dimension of technological risk, it will depend on the probability and significance of dimentionless damage that in the final approximation can be expressed in financial units. The bulk of the safety requirements concerns products, processes and services. However, the overall safety of human life is also achieved by control life support systems. Thus, the combined use of risk assessment and evaluation of conformity are required.
Key words: technical safety regulation, risk assessment, compliance assessmentsystems.

The progress of civilization and the technological development behind it, as well as the phenomenon of globalization, cause constant changes and the emergence of new threats in the field of safety. The consequence of these threats may be loss of life, health, material values, destabilization of political and economic development or loss of conditions for free existence and development. These threats may occur in various areas with difficult to determine range, intensity, time of occurrence and unpredictable consequences, which causes a change in the conditions of functioning of the systems and societies.

Taking into account the safety risks in the implementation of technical requirements conformity assessment for the EU technical regulations in Ukraine. The conceptual apparatus of safety standards in Ukraine's technical regulation, which is directed to achieve the requirements of the EU and the removal of trade barriers, to ensure the transition from a system of mandatory certification to the conformity assessment system according to the requirements of technical regulations, in this article are examined. The bulk of the safety requirements concerns products, processes and services. However, the overall safety of human life is also achieved by control life support systems. Thus, the combined use of risk assessment and evaluation of conformity are required.

The interpretation of the content and scope of the concepts of „safe, safety, hazard, risk, danger" is extremely important in the perspective of the correctness of their application in practice and achieving normalization in the society of the goals that they, in fact, represent. An urgent task today is presented in the approximation process of Technical Regulation System of Ukraine and the European Union.

Safety is expressed as a state of security from recognized hazards that could cause harm. The impossibility of absolute safety, as well as the complete absence of risk is acknowledged. In turn, there are no products or systems, without some risk.

The use of the word „safe" as a descriptive adjective can be admitted if it is left out of the transfer of useful information.

Today there is a problem in institutionalization of terms, which treats the concept of safety, hazard and risk. Often different authors put different meaning in the same concept. Most often the safety concept in literature is defined as a state of protection. The content of protection is not disclosed. Some authors believe that „the hazard and risk are synonyms, and safety has the opposite meaning"[407]. Sometimes safety is seen as a concept opposite to the concept of hazard[408]. As a result, the complexity of determining one concept is transferred to another.

The article[409] is an attempt to find a logical sequence of concepts needed for the definition of „security" by way of defining „system" and „interaction" concepts.

Considering the complexity of the concept of safety as a multi-characteristics system, we analyze a set of elements, meaning certain parts of the world, among which some are linked. This approach allows us to consider them as a whole in relation to other systems. Interactions with other systems, their internal dynamics of development, leading to system changes (transitions between its states). The breakdown in the system depends on the selection criteria and may be varied. The definition of „safety" is often viewed in situations where the state change of the selected system is analyzed, in relation to other systems which form the „environment."

Fixating appearance and evaluating changes that occur with this system (object safety) occurs based on targets such as positive (gains), negative (loss) or neutral. The process of evaluation can be made both from outside and from the inside of the system. It is possible that part of the system settings changes to the direction of gain, and the other – to the side of loss. Thus, the overall effect is determined as the difference between gains and losses.

Should negative consequences dominate and the overall effect is negative – the system is damaged. Loss is a negative effect of changes that occur in the system. Hazard is the possibility that the system will be damaged as the maximum expression of losses. Hazard is a measure of the most pronounced negative changes.

Given the passage of qualitatively different changes and impacts, biology, fire, chemical, radiation and other hazards can be considered. The causes of hazards can be contained both in the analyzed system and the surrounding systems. The choice of evaluation procedures can influence the situation in which there is a possibility of causing damage. Certain features of assessment and management can be combined. Various management strategies have different effects on the system.

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[407] Ecological safety of Ukraine: A.B. Kaczynski - 2001. // Section 3 Risk Analysis - Methodological basis for solving human and environmental safety problems, http://www.old.niss.gov.ua/book/Kachin/1-3.htm [accessed 15.04. 2018].

[408] V.V. Vitlinsky, *Riskology in Economics and Entrepreneurship*. Kyjiv KNEU, 2004, p. 480.

[409] M.M. Mykyichuk, *Metrological risks of product quality control at the manufacturing stage. Methods and instruments of quality control* / Scientific and Technical Journal of the Ivano-Frankivsk National Technical University of Oil and Gas, 2011,no 26, p. 120-123.

To assess the effectiveness of management the concept of „risk" can be introduced as a measure of hazard for different management strategies, including the absence of risk management[410]. Risk is a measure of hazard, describing the possibility of the injury and its severity. It is assumed that it is possible to estimate the scale of damage - its weight. This definition includes as a special case application in practice methods for risk assessment as expectation of loss.

In general, the concept of „risk" and „hazard" are close. Most often risk acts as a characteristics change (risky action) and hazard - a characteristic of the facility (hazardous factor). Another concept of risk as a state of uncertainty where some of the possibilities involve a loss, catastrophe, or other undesirable outcome, with possibility for measurement of risk due setting of possibilities each with quantified probabilities and quantified losses[411].

The hazards and risks associated with them are everywhere, but when the known measures can be taken they minimize or eliminate the risk. The movement on the stairs might threaten the fall, but the probability of this is scarce. Stairs are hazardous, the likelihood of injury is known as a risk.Everything we do exposes us to hazard. But how do we do it, determines the risk. In addition, some risks have meaning only if we do it in larger amounts or over long periods of time. Drinking too much water can cause the brain to expand and kill you, but it is unlikely that anyone ever drank required number for a short period of time. The first rule of toxicology is that all substances create the effect, but the dose determines whether the effect is negative or positive. For example, the process of classification and labeling of European Union intended to refer to the dangers of chemicals, not the statistical risk they may pose through normal use or the extreme way[412].

Psychologists define risk in behavior as the action, the implementation of which threatens the very important needs. Situations of risk based on the choice of two alternative behaviors - associated with possible failure, on the one hand, and providing at least the minimum conservation already achieved on the other. The choice of risky behavior is not always due to a higher value results, achieved with this. A tendency to take selfless risks is often, and it is perceived as an independent value[413]. Freedom to risk ones life is inseparable from liberty, and coercion to such risk is a flagrant assault on personal freedom and therefore immoral.

For further purposes of the article we will consider one type of risk - technical. The technical risk is proportional to the probability of failure of technical devices

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[410] ISO/IEK Guide 73:2002. Risk management – Vocabulary – Guidelines for use in standards.

[411] Douglas Hubbard, *The Failure of Risk Management: Why It's Broken and How to Fix It*, John Wiley & Sons, 2009.

[412] *Hazard vs Risk*, http://www.dehp-facts.com/CLab/CL_hazard.htm [accessed 15.04. 2018].

[413] *Dictionary on Psycholog*y, http://www.slovarik.kiev.ua/psychology/r/123726.html [accessed 15. 04. 2018].

with consequences of a certain level, which determine its degree: high, medium, low - during a certain period of operation of a hazardous production facility.

Security (in contrast to the broader concept safety) risk management involves protection of assets from harm caused by deliberate acts. A more detailed definition is: „A security risk is any event that could result in the compromise of organizational assets i.e. the unauthorized use, loss, damage, disclosure ..., and includes the risk of harm to people. Consideration of security risk is a vital component of risk management."[414] This analysis of safety measures to reduce technical risks are insufficient due to lack of consideration of equipment failure.

Tolerable level of risk is accepted in a given context based on the current values of society[415]. The risk of the operation of a facility is acceptable if, for the benefit of its exploitation, the society is ready to take this risk. Thus, acceptable risk represents a certain compromise between the level of safety and the possibilities to achieve it. It is now assumed that for the action of man-made hazards in general, individual risk is considered acceptable if its value does not exceed 10^{-6}. Risk is the potential and probable magnitude of the consequences of the negative impact over time[416].

Safety is achieved by reducing risk to a tolerable level, defined in this Guide 51 as tolerable risk. One of the most significant and influential publications on this concept is Of Acceptable Risk: Science and the Determination of Safety by William W. Lowrance: „Nothing can be absolutely free of risk. One can't think of anything that isn't, under some circumstances, able to cause harm. Because nothing can be absolutely free of risk, nothing can be said to be absolutely safe. There are degrees of risk, and consequently there are degrees of safety"[417].

In scenario analysis „risk" is distinguished from „threat." Threat is an unresearched negative event, which some analysts may be unable to estimate when assessing the risk, because the event never took place, and it is no available information on effective preventive measures (to reduce the likelihood or impact of possible future events). At the same time, in the Polish language the term „*zagrozenie*" corresponds to the concept of "*hazard/небезпека*" in English and Ukrainian. Conversely, in the Polish language a term meets the notion of a "*threat/загроза*" in English and Ukrainian.

In general, the risk is determined by multiplying the likelihood of a negative scenario (crash) with the harmful effects (loss). If it set the value dimension of technological risk, it will depend on the probability and significance of dimentionless damage that in the final approximation can be expressed in financial units. The maximum

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[414] Julian Talbot and Miles Jakeman, *Security Risk Management Body of Knowledge*, John Wiley & Sons, 2009.

[415] ISO/IEC Guide 51:2014(en)Safety aspects — Guidelines for their inclusion in standards, https://www.iso.org/obp/ui/#iso:std:iso-iec:guide:51:ed-3:v1:en [accessed 15.04. 2018].

[416] *Law of Ukraine on Technical Regulations and Conformity Assessment* (VVR, 2015, No. 14, p.96).

[417] Fred A. Manuele and Bruce W. Main,*On Acceptable Risk,* http://www.ehstoday.com /news /ehs _imp_35066 [accessed 15.04. 2018].

amount of damage equals to the full cost of material resources facility, staff losses and environmental damage.

The risk associated with a particularly dangerous situation depends on the following elements: S_Z – how serious the damage that may result from the considered hazard can be; P_R - the probability of damage occurrence, which is the function of vulnerability to hazards manifestation of a dangerous event, technical and human possibilities to avoid harm

$$R = P_R \times S_Z \quad (1)$$

Risk management is based on achieving a certain level of safety, the balance of benefits\gains and costs within the individual object, territory and state in general. However, risk management mechanisms which are meant to reduce risk values, are not widely applied practically. So, quantitative risk assessment is used only in specific areas, namely in the safety analysis of nuclear power plants, declaring safety of high hazard facilities. The basic mechanisms of risk management state regulation are state standardization, examination, state supervision and control, licensing, economic regulation, declaration of hazardous facilities safety and insurance.

These mechanisms are based on input of protective measures in the characteristics of products or systems that are more efficient, in addition the experience shows that even well projected provision can fall or be overwhelmed or information for the improvement may not be applicable.

Provision will be used for protection in all cases where project administration safety measure are applied, which will not make it possible for insufficient risk reduction nor eliminating hazards. Supplementary protective measures which involve additional equipment, can provide improved safety.

The expected reliability of the effect is relatively low from the information for improvement, which may consist of organizational measures, appropriate behavior, and attention, application of personal protective equipment (PPE), trainings and training compared to proven technical protective equipment. Information for the improvement is not a substitute for proper use of safety input project activity, ensurement or complementary protective measures[418].

That safety can be expressed as a value inversed to the risk factors as both of its multipliers by equation (1) made a negative contribution to the safety of the state of the facility, but the importance of safety will increase the value invested in safety measures. Precautions consist of technical means of control and monitoring, licensing staff. Precautions consist of the use of means of prevention, control and mitigation so that the overall risk is minimal. However, none of the scenarios of accidents, regardless of its probability must not make up a disproportionate share of the risk.

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[418] *Law of Ukraine The Concept of Risk Management*, http://zakon3.rada.gov.ua/laws/show/37-2014-r#n8 [accessed 15.04. 2018].

Safety is defined separately as a derivative of the achieved state of security - the state of the product is the result of the production and circulation, which is performed in compliance with established sanitary measures and/or technical regulations, and provides assurance that the product is not harmful to health of the person (consumer), if consumed on purpose[419].

Currently, the prevailing understanding is that the risk to any system cannot be reduced to zero. In other words, there is no absolute safety. In this sense, is more logical to treat safety of a system as its condition during which the overall risk does not exceed a certain threshold, as determined in the assessment according to the chosen scale. This allows safety to be defined as the system remaining in incidental risk condition. This principle is known as the principle of ALAPA (As Low As Practically Achievable - as low as is practicable). However, in the conditions of high hazard and environmental pollution, such an approach would be idealized. Therefore, at present the generally accepted definition is the following: safety is when the system stays in terms of acceptable risk. This principle is known as the principle of ALARA. Another definition is ALARP stands for „as low as reasonably practicable", and is a term often used in the regulation and management of safety-criticaland safety-involvedsystems[420].

It should be noted that in both cases the safety scale is an ordinal scale, which only takes into account non-exceeding levels of risk that is limited to the area of safety, in other words, the threshold of safety.

At least five aspects of relativity of safety can be specified. Analyzing safety, it must be understood:

• the composition or the limits of the system of safety which is at stake;

• the position from which changes in the system are viewed (conformity assessment);

• the defined area of safety;

• the threshold of safety;

• the dynamics of the processes influencing the change risk assessments and establishing the safety threshold.

Thus, for example, for an industrial facility it means defined operating conditions that satisfy the conditions of not exceeding the threshold of safety.

Analysis and risk assessment include identification of hazards, assessment of the probability of events and evaluation of results. Controlling risk involves determining acceptable risk and comparative evaluation of options and/or alternatives through monitoring and analysis solutions. Risk Control also includes prevention of failures (accidents) and reduction of their consequences.

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[419] *Law of Ukraine The Safety and Quality of Food Products*, http://zakon3.rada.gov.ua/laws/show/2809-15 [accessed 15.05. 2018].

[420] *ALARP,* https://en.wikipedia.org/wiki/ALARP [accessed 15.05. 2018].

It is necessary to distinguish on one hand the degree of influence of risk on the objectives and on the other - the degree of uncertainty that defines risk itself. For example, the risk of using poor quality materials to achieve the ultimate goal has a significant effect, but we assume that the probability of this risk is low, then their production indicates an insignificant level.

Production risks are impactful factors that may occur unpredictably and uncontrollably as a direct raw material in the preparation and during the production or other post-production stages. Since the extent of their impact on the environment is accidental, then the assessment of their effects will be random. So they are the distributed quantities, to describe which to the laws of probability distribution are to be applied.

In addition, the causes of the risks are different and depend on a large set of random impact factors that cause them. Therefore, assessment of the likelihood of their occurrence is also random. Based on the above reasoning it is assumed that the total assessment of each risk should be sought on the basis of composition of distribution laws of the degree of influence on the production process and the likelihood of their occurrence in a particular area of the technological cycle.

Applying the fundamental theorem of independent random variables it can be assumed that the mathematical expectation of the sum of the above mentioned random variables are to be found as the sum of mathematical expectations terms. Therefore the total assessment of each risk can be defined as the sum of its degree of impact and likelihood of occurrence.

Despite all the security measures taken in Ukraine and the continuous increase in the level of reliability of nuclear technology, the emergency situations at the nuclear power plant with the release of radionuclides into the environment is still a probable event. Therefore, a nuclear-powered state should be prepared to respond to such accidents. This will significantly reduce both the severity of the consequences of the accident and the cost of response, which is much less than the cost of overcoming its consequences. Unfortunately, in Ukraine, so far, most of the elements of the emergency response system are missing[421].

World experience shows that the cost of building a new nuclear power plant is commensurate with the costs of decommissioning it in the absence of accidental pollution. For example, in 2006, the decommissioning of the four-blocks Chornobyl NPP will amount to approximately $ 4 billion, a two-blocks Ignalina NPP (Lithuania) with similar units estimated at $ 3.6 billion.

The NPP design, as a safe source of energy, should set the cost of building a new one and decommission it in the event of no accidental pollution. And it is economically justified even with an approximate calculation. For operating NPPs, the

[421] V. Baryakhtar, *Creation of a reliable system of radiation safety of the population of Ukraine*, http:// ukurier.gov.ua /uk/news/stvorennya-nadijnoyi-sistemi-radiacijnoyi-bezpeki-/ [accessed 15. 05. 2018].

project lifetime was 30 years. It is necessary to consider the need for annual repairs of various degrees, which will leave about 260 days of work per year. The main type of power units is WWER-1000 MW. Having adopted the average selling price for the NPP for the project lifetime equal to $ 0.05, we will receive the total profit from this project C = W * t * p.

$$C = 30 \times 260 \times 24 \text{ [hours]} \times 0.05 \text{ [\$ / kWh]} \times (1000000) \text{ [kW]} \approx \$ \text{ 10 billion} \quad (2)$$

This amount also includes operating costs and revenue. Simply taking an approximate amount of the cost of construction and decommissioning of the one block NPP is equal to $ 1 billion, you can set the value of the deductions for safe decommissioning of the high risk level facility (in the example given 1/10 of the total profit). This value can be used during the evaluation of the conformity of technical systems according to the requirements of the European Union technical regulations. If the service life is prolonged, it is necessary to take into account the relevant values of the time of operation and the amount of equipment replacement costs.

Regarding the fourth block of the Chornobyl NPP, in which the disaster occurred in 1986, the costs of turning it into an environmentally friendly facility are still not exactly estimated in the absence of analogies in the world. The total mass of contaminated equipment and structures is estimated at 1 450 000 tons. In addition, on the territory of Chernobyl NPP there are storage facilities: liquid and solid radwaste; spent nuclear fuel from more than 20,000 fuel assemblies, of which 68 were damaged.

According to the methodology for investigating nuclear events, International Atomic Energy Agency (IAEA) has four components: project, equipment, procedures, and personnel. Regarding ChNPP: the project was very imperfect, due to its appearance in the military sphere, the development of the requirement for the rapid commissioning of several reactors annually, and the case of type WWER produced 1 per year. Therefore, for the purpose of energy expansion into Eastern Europe, in the USSR channel reactors of the type RBMK were introduced. They have a very large active zone with heavy control for the operator, which constantly requires the regulation of uneven activity in geometry, fuel height, radius, etc. In addition, the positive coefficients of reactivity, that is, when the effect on the active zone of casual power growth is an increase in the flow of neutrons, which again increase the power - the property self-scrolling. Such a project can work only in the presence of compensatory measures and their strict observance - and this was not at the Chernobyl NPP[422]. The equipment of the reactor emergency protection system failed to fulfill its functions. The graphite part of the bar had the best slowing properties than the water it displaced. Therefore, at the moment of entering the active zone, he improved its reproductive capacity, what overclocked the reactor.

[422] V. Sklyarov, *Tomorrow was Chernobyl*, http://diasporiana.org.ua/wp-content/uploads/books/14438/file.pdf [accessed:18.05.2018].

Operational procedures were also inadequate. A requirement was set for a minimum supply of reactivity of 16 rods, and after the disaster the regulations were rewritten to 30 rods. For staff who were to refuse to execute an improperly approved experiment program. There were errors in shutting down the reactor with the inclusion of eight main circulating pumps, when allowed 6, and a number of others known from the standpoint of today's knowledge.

For example, the main and decisive cause of the Chernobyl disaster is wrong system design, defined by the concept of nuclear safety based on the design of a maximum accident being wide gap pipe section damage. Stubborn rejection and ignorance of risk assessment beyond design basis, accidents with core damage and release of fuel is the fundamental and serious error in the design and construction of not a military but an energy device. All violations and errors are synthesized by criminally low safety culture at all stages of the nuclear technology[423].

In the 90's reactors of all designs were analyzed, which revealed a lack of security. Also developed tools for the analysis of both project and non-project accidents. Probabilistic safety analysis has been applied, where every other tree has been designed and all probability is calculated. Simultaneously developed symptom-oriented instructions for personnel actions that are implemented on full-scale simulators. Today, the operational staff receives personal licenses for the management of the NPP reactor[424].

To date, in the engineering minds a concept of safety culture is established. Operators should know the fundamental results of any likely safety assessments of the stations that demonstrate the possibilities and importance of safety. The effective methods of training include those which take into account physiological, intellectual and social characteristics of people.

Disaster can be defined as a serious disruption of the functioning of a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected society to cope using its own resources[425]. Disasters could be described as a result of the combination of the exposure to a hazard, the conditions of vulnerability that are present and insufficient measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injury, and disease and other negative effects on human well-being, damage to critical infrastructure, destruction of assets, loss of services, social and economic disruption and environmental degradation.

Ukraine should form a long-term plan for switching from nuclear power to alternative sources of electricity generation, as is customary in many European countries.

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[423] *Chernobyl disaster*, https://en.wikipedia.org/wiki/Chernobyl_disaster [accessed 15.04. 2018].
[424] Y. Nedashkovsky, http://www.atomforum.org.ua/ouractivity4630 [accessed 15.04. 2018].
[425] United Nations Office for Disaster Risk Reduction (UNISDR), "2009 UNISDRTerminology on Disaster Risk Reduction", http://www.unisdr.org/we/inform/terminology [accessed 15.04. 2018].

Constantly prolonging the exploitation period can be a threat both for the environment and for citizens.

One of the measures for development of shunting capacities is the installation of the third hydropower unit at Tashlyk GAEP, financed by the state budget, and today the source is an integral part of the electricity tariff[426]. This will increase the reliability and efficiency of the combined energy system of Ukraine by covering the peak and failing parts of the load schedule.

The analysis of wind power in different regions shows that there are strong winds in the Carpathian region, the average annual wind speed is 6.5 - 7.5 m/s. This potential of wind makes it possible to build cost-effective powerful industrial wind power plants. Because windmills can already spin at a wind force of 3 m/s, working on new wind power projects, Sambir-2, with a capacity of 20.7 MW; Sokalska wind power plant, capacity 33.5 MW and Skoliv wind power station, capacity of 50 MW[427] are continiuned.

In Ukraine there are processes of publication and revision of the Technical Regulations (TR), conformity assessment procedures (CAP); number of manufacturer's laboratories are accredited. The manufacturer can either make their own declaration of conformity, or take part in CAP as 3rd party. The periodicity and monitoring of CAP agents is predicted. Ahead is CAP perspective outside of Ukraine (European Accreditation). For the realization of the declared principle „One lab, one test, one certificate" Ukraine should conclude relevant agreements at the national level with certain countries. Among the conditions under which it will be possible are CAP modules and procedures compliance. It is therefore important to develop Ukrainian TR and Modules CAP harmonized with the rest of the world.

A national accreditation body (NAAU) is appointed, which particularly cares about accredited laboratories. Market surveillance is declared but not appointed yet[428]. This is one of the reasons of today's orgy of inappropriate products, systems and implementors in Ukraine. Supervision of certification centers NAAU is made according to ISO/IEC 17025:2005 General requirements for the competence of research and calibration laboratories.

The inspecting authorities may act in the CAP, as a third party following the ISO/IEC 17020:2012[429]. Today there are six of them in Ukraine. The importer can make a declaration of conformity. For this, he must obtain authorization from the foreign

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[426] *Economics*, http://economics.unian.net/energetics/1356334-dlya-zapuska-tretego-gidroagregata-tashlyikskoy-gaes-neobhodimo-27-milliarda.html [accessed 15.04. 2018].

[427] *Vitrovaelektrostantsiya*, http://zik.ua/news/2016/10/10/vitrova_elektrostantsiya_na_lvivshchyni_v_energetychnu_systemu_935612[accessed 15.04. 2018].

[428] *Law of Ukraine On state market supervision and control of non-food production*, http://zakon3.rada.gov .ua/laws/show/2735-17[accessed 15.04. 2018].

[429] ISO/IEC 17020:2012 Conformity assessment -- Requirements for the operation of various types of bodies performing inspection, http://naau.org.ua//files/151357.pdf [accessed 15.04. 2018].

manufacturer and have documentation, test reports, certificates, and so on. This documentation must be kept for 10 years (and after the discontinuation of the product) - for presentation at the request of market control.

Unlike Europe, where technical regulations are self-sufficient in Ukraine they are put into effect by laws and regulations. Standards are mandatory in the following cases:

- Defined by the Commercial Code (Art. 15);
- If it is specified in the contract;
- If the standard is stated on the packaging of the product.
- Safety standards;
- Standards included in technical regulations lists;
- Standards that are written in the tender conditions.

The following requires improving: the legislative framework for conformity assessment rescue, fire and special vehicles and equipment used for fire prevention and extinguishing them, emergencies accordance with the Agreement on Technical Barriers to Trade of the World Trade Organization, EU directives; the application of the concept of risk assessment products and services in the field of civil protection based on international standards ISO 31000 in determining the assessment modules; implementation of inspection procedures in the field of fire and technological safety requirements for ISO/IEC 17020:2012.

In Ukraine a moratorium on inspections was active, when most supervisory authorities may carry out inspections only with the approval of the Cabinet, at the request of the court, on the application of the Company itself or if such actions are required by the Criminal Procedure Code of Ukraine[430]. In the European Union such thing as a „moratorium on inspections" does not exist. But the problem of Ukrainian legislation is deeper. We have no specific exceptions regarding, for example, inspections special in such sensitive areas as market, sanitary and phytosanitary supervision.

Conformity of product compliance, application or use of which could cause hazard for the consumer, is assigned to legislatively regulated sphere in Ukraine, and is mandatory for the manufacturer or supplier. Conformity of product compliance in the area regulated by law is carried out through its certification. In the event that such a subject can be assigned at the same time to two or more risk levels, it is subject to a higher risk than those to which it may be assigned[431].

The need for oversight in many areas is enshrined in Ukraine's obligations under the Association Agreement. Thus, according to article 56 of the Association Agree-

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[430] *Parliamentary Expert Group*, http://www.eurointegration.com.ua/articles/2015/08/4/7036586/ [accessed 15.04. 2018].

[431] *Resolution of the Cabinet of Ministers of Ukraine No. 1043* dated 27.12.2017 Criteria for assessing the risk of economic activities and determined frequency of scheduled state super-vision (control) of technological and fire safety.

ment, Ukraine shall comply with the principles and practices set out by the decisions and regulations of the EU, which include the European Parliament and of the Council № 765/2008/EU[432] requirements towards market surveillance related to trade in goods.

Market surveillance authorities should have sufficient powers, resources and competence to receive all necessary documentation from manufacturers; to verify that producers take all measures to eliminate risks; in justified cases to have access to the manufacturer's premises and obtaining samples for testing, and in extreme cases destroy products; take measures to retire hazardous products.

The bill draft „On peculiarities of State Supervision (Control) in Economic Activity" № 3153[433] it is confirmed that a radical limitation of inspections had negative consequences for society and the state. A significant increase in the number of appeals on violation of legislation on consumer protection acknowledges that there was a violation of constitutional norms and EU Directives, and caused a negative reaction of the EU and the risk of restricting exports of domestic products to foreign markets.

Summarizing the facts, we see a clear trend: there is no logical strategy for reform of regulatory policy in individual sectors and overall in Ukraine. Sometimes even the logic of decision-making is not present, including on chronology of some changes.

1. The content and scope of the concepts of „safe, safety, hazard, risk, and threat" are extremely important in view of the correctness of their application in normalization practice of achieving goals in the society that they, in fact, represent. Safety is the system remaining in terms of acceptable risk, while the risk is the state of the system vulnerable to harm as the maximum expression of loss and only risk is determined by the possibility that during / over a period determined by probabilic damage and its consequences.

2. Risk as a measure of hazard, which characterizes the possibility of injury and its quantitative depends on the severity (financial expression) damage that can result from a considered risk; and the likelihood of the harm is a function of vulnerability to hazards manifestation of a dangerous event, technical and human possibilities to avoid harm. Security (in contrast to the broader concept safety) risk management involves protection of assets from harm caused by deliberate acts.

3. Risk management is conducted to achieve a certain level of safety, the balance of benefits and costs within the individual object, territory and state in general. A quantitative risk assessment, which is used only in certain areas, such as the safety analysis of nuclear power plants, declaring safety of hazardous plants, supplemented main mechanisms of state regulation in the field of risk management, standardization,

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[432] *Regulation EU N 765/2008*, http://zakon2.rada.gov.ua/laws/show/994_938 [accessed 15.04. 2018].

[433] *Draft Law On state market supervision and control of non-food prduction*, http://w1.c1.rada.gov .ua/pls/zweb2/webproc4_2?id=&pf3516=3153&skl=9 [accessed 15.04. 2018].

examination, state and market surveillance and control, licensing, economic regulation, declaration of hazardous facilities safety and insurance.

4. Evaluation of Products compliance, application or use of which could cause a risk to consumers, the legislation referred to Ukraine legally regulated areas and is binding on the manufacturer or the supplier of such products. Conformity of products in the area regulated by law, carried through its certification.

5. In the project of high risk level facility should be laid economically justified expences on the completely independently prepared rapid reaction forces, capable of effectively solve the problem of life support and rescue people in any conditions on a high professional level.

6. The achievement of EU requirements and eliminating barriers to trade by making the transition from a system of mandatory certification to the conformity assessment system according to the requirements of technical regulations on the safety of products, processes and services for the consumer. However, in general, human safety is also achieved through control of life support systems. Therefore, joining the use of risk evaluation and assessment is proposed.

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