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DNIPRO UNIVERSITY OF TECHNOLOGY**

**INSTITUTE OF POWER ENGINEERING
TRANSLATION DEPARTMENT**

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INNOVATIONS AND DEVELOPMENT**

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THE EUROPEAN DAY OF LANGUAGES**

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**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
НТУ «ДНІПРОВСЬКА ПОЛІТЕХНІКА»
ІНСТИТУТ ЕЛЕКТРОЕНЕРГЕТИКИ
КАФЕДРА ПЕРЕКЛАДУ**

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ІННОВАЦІЇ ТА РОЗВИТОК**

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The collection of students' abstracts is designed for a large circle of readers who are interested in the state of learning foreign languages and translation both in Ukraine and abroad.

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1. Phishing. It is often oriented on credentials, banks account information – in general sensitive information. It is the popular scheme and very often is used in this kind of crime, but unfortunately people still did not learn how to recognize an attack and prevent it. In general the workflow is the following: an attacker pretends to be a credible source and may say that his problem and is an urgent case that depends on the victim decision.
2. Vishing. Similar to phishing, but has its own features. The whole process of an attack is hold via voice communication. Also based on urgent cases which stimulate the victim to act as is planned by an attacker.
3. Baiting. This type of social engineering required the usage of the ‘bait’ for victim and the person has to accept this offer. This serves to exploit the victim’s traits such as curiosity or greed. Such attacks can be carried out by accidentally finding a flash drive in a prominent place, or using online advertising that can redirect to malicious website.
4. Pretexting. In this case an attacker lies about the importance of information for him that has the victim. There is a term ‘impersonification’, that is suitable for this method and means that an attacker is named as the victim’s colleague or any other person that has a right to know some information.
5. Quid Pro Quo. The sensitive data are exchanged in something that the victim wants. It can be some help in different spheres or just a something valuable. Of course the victim does it not in intentionally way. This offer often seems to be so nice that it cannot be a real one.

It is important to understand that these method are related to companies too. People in organizations have to know about the attackers techniques. The following rules are must known in order to prevent the negative effects of social engineering activity:

1. Organization of security trainings for companies.
2. Avoiding of the communication with unknown sender of email and of the opening the unknown attachments from these emails.
3. Cautious attitude to unknown people with their suggesions and requests.
4. Properly maintaining of antivirus and additional software installed for tracking suspicious activity in systems.
5. Keeping any credentials and sensitive information in safe.

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WAYS OF INCREASING THE EFFICIENCY OF PHOTOVOLTAIC TRANSDUCERS

Energy efficiency aims at reducing the amount of energy required to provide products and services and is the quickest and most affordable way to ensure reliable and sustainable energy. The State Agency on Energy Efficiency and Energy Saving of

Ukraine worked out a National Action Plan for Renewable Energy for the period until 2020, according to which defines the following drivers for renewable energy development in Ukraine: high energy potential of renewable energy sources, energy shortage (dependence on traditional energy imports, growth of their prices on the world market), environmental impact of energy production at thermal and nuclear power plants and international obligations of Ukraine.

The **purpose** of our research is to study the factors that reduce the efficiency of the PVT and the prospects for the introduction of innovative technologies to improve their energy efficiency.

According to the NAP for RE, the main goal in this direction is to achieve the share of 11% of energy from RES in final energy consumption in the country by 2020. This is the reason why nowadays power plants operating from renewable energy sources are becoming more and more widespread in the world, among the most promising ones are the systems using solar radiation.

The advantages of this energy source are environmental friendliness, which allows it to be used on almost any scale without causing damage to the environment, as well as its availability in almost every point of our planet.

Despite all their advantages, solar-powered power plants have some disadvantageous features, one of which is nonlinear internal resistance of photovoltaic transducers (PET). This phenomenon demonstrates itself especially negatively in conditions of uneven illumination, shading or contamination of solar cells, reducing their already low efficiency.

Most of the panels used in Ukrainian household power plants are polycrystalline. Their efficiency ranges from 13% to 17%. In comparison, in monocrystalline ones this figure is 18-22%. Such huge losses are caused by the fact that most of the light is either reflected from the silicon wafers or is lost because of heating the structure itself.

A significant increase in the efficiency of solar panels is possible by replacing silicon with more efficient semiconductors so that the optics of the solar panel are maximized. Then it will absorb and convert a larger amount of sunlight into electricity. After a thorough research, scientists settled on a combination of gallium, phosphorus, nitrite and arsenic. The efficiency of such panels will be about 40%, while for silicon solar cells it is 20-25%.

Another problem is that the hotter solar panels get, the more their efficiency decreases due to heating of the elements and dissipation of most of the energy. To get rid of this shortcoming, scientists at Rice University propose to solve the problem of converting heat into light, which can then be used to generate electricity. They propose using a carbon nanotube film to create a “hyperbolic heat radiator” that can operate at temperatures up to 700 degrees Celsius. The device only allows electrons to move in one direction, compressing the photons emitted as heat. As a result, light can then be absorbed by the solar cell, which can increase the efficiency of solar cells by 80%.

New technology of cooling the panels was developed by researchers from the Hong Kong Polytechnic University. They used a water-absorbing gel which is a mixture of carbon nanotubes with calcium chloride and salt which is characterized by high hygroscopicity and absorbs moisture from the atmosphere at night when it is cool

outside, to release it back in the daytime. The use of this technology has reduced the temperature of the solar panel by 10° C and increased its performance by 15-19%. In 2017, Chinese scientists created so-called all-weather solar panels that work not only in any weather, but also at night. The unique feature of the development is that the glass is coated with long afterglow luminophore (LAL), which preserves the infrared and ultraviolet spectrum, invisible to the human eye. At night, LAL releases monochromatic light which is converted into electricity. Due to this technology, the panel works around the clock.

Conclusions. Despite the fact that solar panels have several disadvantages, they cannot be considered insurmountable. The introduction of innovative technologies will significantly increase their efficiency, which in turn will lead to an increase in the energy potential of renewable energy sources. There is no doubt that increasing the energy efficiency of photovoltaic transducers is a promising area that requires further research.

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AUTOMATED HEAT RECOVERY TECHNOLOGY IN VENTILATION SYSTEMS OF BUILDINGS

In the modern world, special attention is paid to ventilation systems in residential and public construction, not to mention various specialized enterprises. This corresponds to the modern requirements of sanitary standards for living conditions in buildings. At the same time, it is known from design practice that in the heat balance of the building heating system, the heat consumption for the ventilation system occupies a significant part, which is not inferior to the heat losses through the enclosing structures. Therefore, there is a real problem of large heat emissions of the ventilation system into the environment during the cold season, which must be constantly replenished in the building heating system. To solve this problem, they are currently trying to use recuperators, in which the outgoing air partially heats the air entering the building. However, this raises the problem of freezing of the formed condensate on the heat exchange surfaces of the recuperator, which requires analysis and determination of rational parameters of the heat exchange process in it.

The technology of using heat energy from the ventilation system for hot water supply of the building, using a heat pump and a heat accumulator, was considered. In the proposed scheme, the heat of the outgoing air is taken by the heat pump and transferred to the liquid heat accumulator of the hot water supply system (Fig. 1).