The traditional approach to solving the problem of responsibility distribution for reducing the quality of electricity involves receiving a response in the form of an amount.Each of the terms can be taken as a factor of proportionality, which characterizes the contribution of one or another accession to the creation of electricity asymmetric quality.

it can be expressed as the following:

$$\underline{U}_{cnom} = \underline{U}_{cnom}^{cucm} + \underline{U}_{cnom}^{C}, \quad (3)$$

where $\underline{U}_{cnom}^{cucm}$and $\underline{U}_{cnom}^{C}$ - contributions to the distortion of voltage in the point of general accession of the electricity system and the electricity consumer accordingly.

$$d_{cnom}^{cucm} + d_{cnom}^{C} = 1, \quad (4)$$

where d_{cnom}^{cucm} and d_{cnom}^{C} are the real factors characterizing the partial contributions of each accession to the voltage distortion in the point of general accession.

The analysis of existing methods, which includes the method of switching on / off the consumer, the method of background asymmetry, the method for symmetric components of equivalent conductivity and the method in the direction of distorted capacities showed that they give different results for the same task, and the identification of symmetric accession is incorrect.

Therefore, the problem of the distribution of responsibility for distortion of voltage symmetry at the point of general accession can not be considered as solved and requires further research.

UDC 681.2

MODERN STATE STANDARDS FOR PHOTOVOLTAIC DEVICES IN UKRAINE

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Abstract. Nowadays energy problems are very urgent globally. For Ukraine, the issue is very important, as our country is currently passing a period of reforming. As the result, electricity prices rise, people start to look for ways to get better economic conditions. At this time in Ukraine large quantities of solar systems are delivered from China, Korea and other countries, but the issues of maintenance and calibration have not been sufficiently developed. The article is dedicated to the metrology of solar energy, in particular, to the research standards used for solar power engineering in Ukraine.

When measuring the performance of solar panels (photovoltaic devices) companies have to follow a number of international standards [2] including regulating initial calibration. As it is known, the main technical characteristics of photovoltaic devices of crystalline silicon is CVC (current voltage characteristic).

CVC measurement is performed by a direct comparison (direct comparison method), the quantity of measured irradiance (power illumination). The measurement process includes placing the sample and the testing equipment to the stand. When setting the same measurement conditions (temperature, humidity, pressure) the testing equipment is exposed to the radiation and parameters of the devices change. This measurement should be done using a standard photovoltaic device or pyrometer spectral and the spectral sensitivity of the testing device meet the spectral sensitivity of the sample, or a correction factor should be introduced.

Later, after the results of the measurement are taken, a comparison of the values obtained from the sample device and the testing device is done and on the basis of this comparison a conclusion on the photovoltaic parameters of the testing model is made.

Currently in Ukraine, a database of DSTU 60904 standards for photovoltaic devices is used. [11] This database consists of only 4 parts (4 standards) and is analogous to a series of international standards, which consist of 10 sections (10 standards). DSTU 60904 -1 describes the measurement methods of CVC photovoltaic devices, DSTU 60904 -2 standard describes the requirements for sample photovoltaic devices, DSTU 60904 -7 determines the error associated with the spectral component of the measurement, DSTU 60904 -8 describes the process of measuring spectral characteristics of photovoltaic equipment.

As the result, Ukraine has a database standard [14], based on the international standards [1]. However, it is incomplete due to the lack of such standards as: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference to spectral irradiance data [3]; Determination of the equivalent cell temperature (ECT) of photovoltaic (PV) devices by the open-circuit voltage method [5]; Solar simulator performance requirements [9]; Methods of linearity measurement [10] and others.

References:

1. IEC 60904-1 Photovoltaic devices - Part 1: Measurement of photovoltaic current-voltage characteristics
2. IEC 60904-2 Photovoltaic devices - Part 2: Requirements for reference solar cells
3. IEC 60904-3 Photovoltaic devices - Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data)
4. IEC 60904-4 Photovoltaic devices - Part 4: Reference solar devices - Procedures for establishing calibration traceability
5. IEC 60904-5 Photovoltaic devices - Part 5: Determination of the equivalent cell temperature (ECT) of photovoltaic (PV) devices by the open-circuit voltage method
6. IEC 60904-6 Photovoltaic devices - Part 6: Requirements for reference solar modules
7. IEC 60904-7 Photovoltaic devices - Part 7: Computation of spectral mismatch connection for measurements of photovoltaic devices

8. IEC 60904-8 Photovoltaic devices - Part 8: Measurement of spectral response of a photovoltaic (PV) device
9. IEC 60904-9 Photovoltaic devices - Part 9: Solar simulator performance requirements
10. IEC 60904-10 Photovoltaic devices - Part 10: Methods of linearity measurement
11. DSTU EN 60904-1: 2009 Photovoltaic devices. Part 1. Photoelectrical current-voltage characteristics. Methods of measurement
12. DSTU EN 60904-2: 2009 Photovoltaic devices. Part 2: Requirements for basic photovoltaic devices
13. DSTU IEC 60904-7: 2008 Photovoltaic devices. Part 7. Determination of errors due to spectral mismatch when measuring characteristics of photoelectric devices (IEC 60904-7: 1998, IDT)
14. DSTU IEC 60904-8: 2008 Photovoltaic devices. Part 8. Measuring the spectral characteristics of photovoltaic devices

UDC 659.13

DESIGN IN OUTDOOR ADVERTISING

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The role of design in outdoor advertising. The raises a question about the importance of design in outdoor advertising today.

Today, outdoor advertising has reached its peak of popularity. It has become an inseparable part of our world. But precisely because of its popularity, advertising has lost its feature.

Outdoor advertising is one of the oldest and most well-known ways for business owners to sell their products and services. Effective outdoor advertising is a great way to influence the audience consistently and on a large scale.

There are many different types of outdoor advertising. These include:

• Advertising on billboards

• Outlets, usually located at the cash register to attract impulse buyers

• Outdoor furniture: advertising found on bus shelters, kiosks, phone booths, and the like.

• Mobile billboards: Located on the side of a truck or bus

Outdoor advertising, as a rule, provides a limited amount of information to customers, which must be embedded in a short period of time.

All advertising begins to be created from the idea that is created in advertising agencies. A good idea carries half the success of an advertising agency. But the idea itself is not enough. A pure idea will not attract the user and will not incline him to purchase. In order for it to manifest itself, it must be realized in life. To embody from an abstract concept in a tangible. Fill with exclusivity.

This is where design comes to the rescue.