ISSN 2181-3187

HIGH VOLTAGE OVERHEAD LINE WASTE ANALYSIS

Raxmatullayev Shamsiddin Hakimboy o'g'li
Andijan machine building institute

Abstract: In the process of transmission of electric energy through high-voltage networks, waste is increasing. In this case, the process of energy loss occurs in conductors and transformer devices during energy transmission. To reduce energy waste, the voltage sent is delivered to consumers through power transformers. The equipment installed in substations allows to control energy, check its current state, reduce wastage, and control the quality indicators of electricity.

Key words: Electric energy transportation, energy adjustment, reliable energy transmission, efficiency, energy waste, monitoring system structure.

Providing electricity consumers with high-quality and reliable electricity is an urgent issue today. More than half of all consumer power outages are caused by power line problems. The reasons for disconnecting power lines can be divided into the following main groups:

• problems of suspension insulation degradation, which develop quite slowly over a long period of time; internal defects of suspended insulation of this network, surface contamination;

• high-voltage impulse overvoltages of various nature,

• problems of electromagnetic and dynamic effects on the line, including all types of short circuits of line wires to each other and to earth.

Taking into account the occurrence of various interruptions and damages in overhead power lines, we can see various short circuits (single-phase, two-phase, three-phase, single-phase to ground) in them.

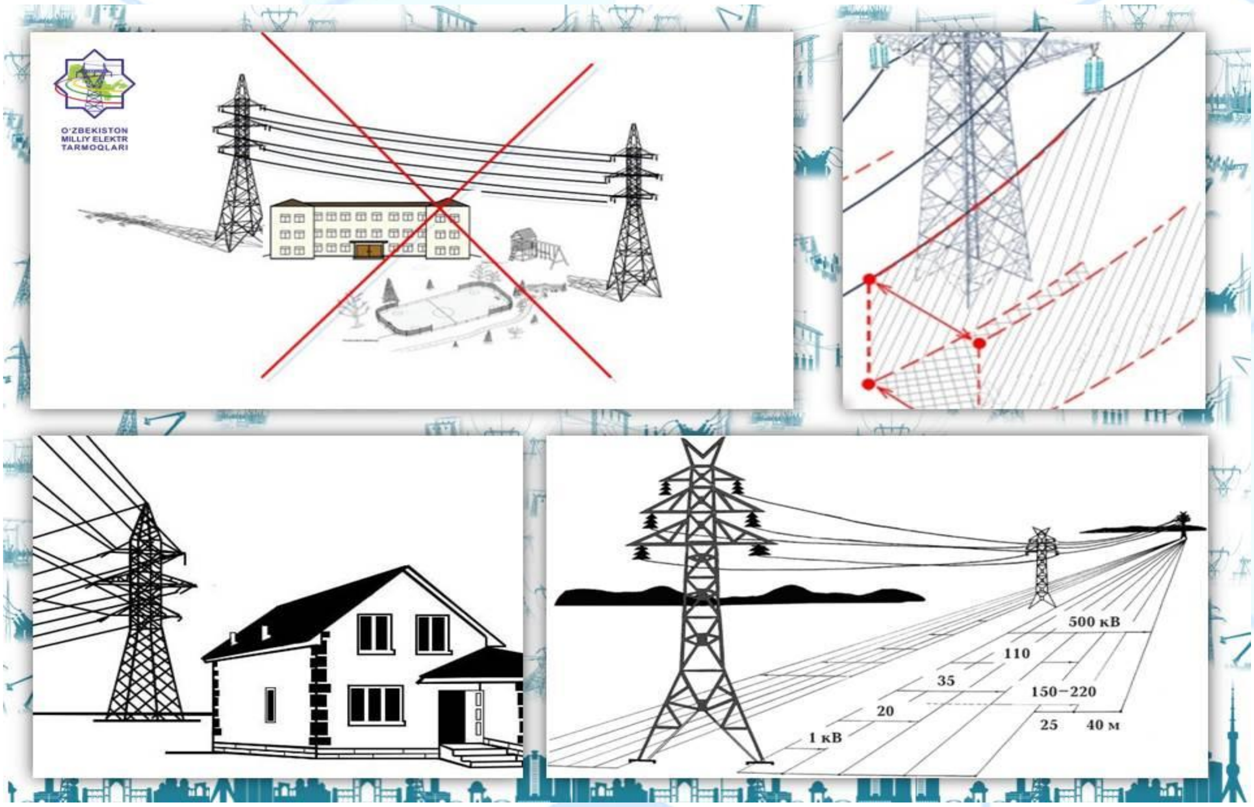
Therefore, it is necessary to monitor all the parameters of the power transmission line. The monitoring system consists of a network in which a measuring system is placed, which transmits information through a communication channel to the equipment of the control rooms located at different points of the electrical system. In electrical installations with a neutral of power transmission lines, the resistance of the connected device to which the neutrals of generators and transformers or the outputs of a single-phase current source are connected should not exceed a voltage of up to 1000 V. 660, 380 and 220 V three-phase current source or single-phase current source at line voltages of 380, 220 and 127 V equal to 4 and 8 ohms, respectively.

Currently, various overhead power line monitoring systems are widely used around the world to provide the system operator with detailed information about the current state of power supply networks. The monitoring system consists of a network

ISSN 2181-3187

of measurement units connected to the equipment in the control room through a communication channel. The measurement system is distributed along the transmission path of the power line and installed on supports or directly on high-voltage conductors. The structure of the transmission power monitoring system of power transmission lines is somewhat complicated. Control rooms are located at different points of energy redistribution networks.

In this regard, the F4103-M1 device is being used for monitoring in the energy system. The F4103-M1 device allows you to measure the resistance of almost all voltage electrical devices. The device has a built-in DC power supply that provides at least 800 measurements, a 280 Hz stabilized AC converter, and high noise protection.



When installing the current meter on the conductor of the power line, the control of the mechanism is carried out with the help of a rotating rod. Before installation, by turning the lever counterclockwise, the meter is installed on the conductor of the electrical network. The position of the current meter is set on the switch by turning the process lever clockwise. In this case, the two halves of the bar join together and form a circuit around the conductor. Built-in couplings ensure that the body of the current meter is firmly fixed to the conductor of the electrical network. The need for increased energy forces power systems to use power cables at the limits of their physical capabilities, safety and efficiency interests are of great importance to operators who need to know what processes occur along the conductor route (local heating, critical planing, freezing of conductors).

Currently, as a rule, control tools use SCADA systems that provide processing and interpretation of data received from measurement units. The measurement process includes the following main components:

• a group of measuring tools for measuring the main parameters of electrical conductors;

• processor module for processing measured data;

• data transmission system The lines of high-voltage electrical networks are distinguished by their considerable length. Processing of results and measurements is carried out after shutdown with line protection. Before the power supply is turned off, the simultaneous setting of the signal by the current and voltage monitoring devices on the conductor of the overhead power line and the processing of the measurement results together with the proposed methods allow us to quickly determine the location of the power supply. and allows easy identification. Overhead power line diagnostics and monitoring must be problem-oriented and reliable.

An overhead power grid is a structure used in the transmission and distribution of electricity to transmit electricity over large distances. It consists of one or more uninsulated electrical cables (usually tripled for three-phase power) suspended from towers or poles.

Because most of the insulation is provided by the surrounding air, overhead power lines are usually the cheapest way to transmit large amounts of electricity.

towers for the construction of networks are made of laminated wood, steel or aluminum (lattice structures or tubular columns), concrete, and occasionally reinforced plastics. uninsulated wire conductors in the network are usually made of aluminum (flat, reinforced with steel or composite materials such as carbon and glass fibers), but copper wires are sometimes used in medium-voltage distribution and low-voltage connections to consumer premises. The main design objective of overhead power lines is to maintain sufficient distance between energized conductors and the ground to prevent hazardous contact with the line and to reliably support the conductors, withstand storms, ice loads, earthquakes, and other potential damage. Today, overhead lines routinely operate at more than 765,000 volts between conductors.

Depending on the operating voltage

Overhead transmission lines are classified by voltage range in the electric power industry:

Low voltage (LV), less than 1000 volts, is used to connect a residential or small commercial customer and a utility.

Medium voltage (MV; distribution), between 1,000 volts (1 kV) and 69 kV, used for urban and rural distribution.

High voltage (HV; sub-transmission less than 100 kV; sub-transmission or transmission at voltages such as 115 kV and 138 kV), used to transmit large amounts of electricity and connect to very large consumers.

Extra high voltage (EHV; transmission) — from 345 kV to about 800 kV[2], used for long-distance, very high power transmission.

Ultra High Voltage (UHV), often associated with ±800 kVDC and ≤1000 kVAC

REFERENCES

1. Yulchiev M.E., & Odilov.S. (2024). DESIGN ISSUES OF AUTOMATION SYSTEMS AND THEIR FUNCTION. Лучшие интеллектуальные исследования, 21(2), 160–164. Retrieved from https://web-journal.ru/index.php/journal/article/view/5372
2. Yulchiev M.E., & Odilov.S. (2024). ANALYSIS OF THE AUTOMATION PROCESS OF TWO-RATE CONSUMERS. Лучшие интеллектуальные исследования, 21(2), 171–174. Retrieved from https://web-journal.ru/index.php/journal/article/view/5374
3. Yulchiev M.E., & Odilov.S. (2024). ANALYSIS OF THE AUTOMATION PROCESS OF TWO-RATE CONSUMERS IN ELECTRICITY SUPPLY. Лучшие интеллектуальные исследования, 21(2), 165–170. Retrieved from https://web-journal.ru/index.php/journal/article/view/5373
4. Yulchiyev Mash'albek Erkinovich, & Yusupov Asadbek G`ulom o`g`li. (2024). LIGHTING IN PRODUCTION AND ITS STANDARDS. NATURAL AND ARTIFICIAL LIGHTING. Лучшие интеллектуальные исследования, 14(2), 110–115. Retrieved from https://web-journal.ru/index.php/journal/article/view/2898
5. Muhtorovich, K. M., & Abdulhamid o'g'li, T. N. DETERMINING THE TIME DEPENDENCE OF THE CURRENT POWER AND STRENGTH OF SOLAR PANELS BASED ON THE EDIBON SCADA DEVICE.
6. Abdulhamid o'g'li, T. N., & Sharipov, M. Z. (2023). ENERGY DEVELOPMENT PROCESSES IN UZBEKISTAN. Science Promotion, 1 (1), 177–179.
7. Abdulhamid o'g'li, T. N. Raxmonov Azizbek Botirjon o'g'li, & Musiddinov Otabek Ulug'bek o'g'li.(2022). STIRLING ENERGY GENERATOR. E Conference Zone, 13–16.
8. Topvoldiyev Nodirbek Abdulhamid o'g'li, & Komilov Murodjon Muhtorovich. (2022). Stirling's Engine. Texas Journal of Multidisciplinary Studies, 9, 95–97. Retrieved from https://zienjournals.com/index.php/tjm/article/view/1932
9. Abdulhamid o'g'li, T. N. Davronov Akmaljon Abdug 'ani o'g'li.(2022). Stirling Engine and Principle of Operation. Global Scientific Review, 4, 9–13.

10. Erkinovich, Y. M. A., & Asadbek Gulom og, Y. (2024). LIGHTING IN PRODUCTION AND ITS STANDARDS. NATURAL AND ARTIFICIAL LIGHTING. Лучшие интеллектуальные исследования, 14(2), 110-115.
11. Erkinovich, Y. M. A. (2024). PROBLEMS OF EFFECTIVE USE OF ELECTRICAL ENERGY IN AGRICULTURE AND WATER MANAGEMENT. Лучшие интеллектуальные исследования, 14(2), 72-78.
12. Erkinovich, Y. M. A., & Sirojiddin, X. (2024). AUTOMATION OF ELECTRICITY CONSUMERS. Лучшие интеллектуальные исследования, 14(2), 86-92.
13. Erkinovich, Y. M. A., & Sirojiddin, X. (2024). WHAT DOES IT DEPEND ON TO ENSURE THE CONTINUITY OF ELECTRICITY CONSUMPTION. Лучшие интеллектуальные исследования, 14(2), 100-104.
14. Erkinovich, Y. M. A., & Umurzoqbek, D. (2024). APPLICATION OF HYBRID SYSTEM IN MULTIFUNCTIONAL DEVICES USING BOTH RENEWABLE AND CONVENTIONAL ENERGY RESOURCES. Лучшие интеллектуальные исследования, 14(2), 226-233.
15. Erkinovich, Y. M. (2024). TYPES OF LIGHTING LAMPS AND THEIR CHARACTERISTICS. Лучшие интеллектуальные исследования, 14(2), 28-34.
16. Topvoldiyev Nodirbek Abdulhamid o‘g‘li, & Soliyev Muzaffar Mominjan’s son. (2024). WASTE OF ELECTRICAL ENERGY IN LINES AND TRANSFORMERS. Лучшие интеллектуальные исследования, 21(2), 153–159. Retrieved from https://web-journal.ru/index.php/journal/article/view/5345
17. Abdulhamid o‘g‘li, T. N., & Husanboy, S. (2024). SMALL FROM HYDROELECTRIC POWER STATIONS IN USE THE WORLD EXPERIENCE. Лучшие интеллектуальные исследования, 21(1), 110-114.
18. Topvoldiyev Nodirbek Abdulhamid o‘g‘li, & Shavkatbekov Husanboy. (2024). VILLAGE HOUSEHOLD FOR SMALL HPPS CURRENT TO DO CONDITION IN UZBEKISTAN. Лучшие интеллектуальные исследования, 21(1), 115–119. Retrieved from https://web-journal.ru/index.php/journal/article/view/5284
19. Topvoldiyev Nodirbek Abdulhamid o`g`li, Utkirbek Akramjonovich Axmadaliyev, & Karimberdiyev Khikmatillo Qahramonjon ugli. (2024). DEVELOPMENT AND APPLICATION OF 3rd GENERATION SOLAR ELEMENTS. Лучшие интеллектуальные исследования, 14(2), 219–225. Retrieved from https://web-journal.ru/index.php/journal/article/view/2916
20. Topvoldiyev Nodirbek Abdulhamid o`g`li, & Shavkatbekov Husanbor Azamjon o`g`li. (2024). IMPLEMENTATION OF SMALL HYDROPOWER PLANTS IN AGRICULTURE. Лучшие интеллектуальные исследования, 14(2), 182–186. Retrieved from https://web-journal.ru/index.php/journal/article/view/2910

ISSN 2181-3187

21. Topvoldiyev Nodirbek Abdulhamid o`g`li, Utkirbek Akramjonovich Axmadaliyev, & Abdullajonov Muhammadqodir Botirjon o`g`li. (2024). A GUIDE TO SELECTING INVERTERS AND CONTROLLERS FOR SOLAR ENERGY DEVICES. Лучшие интеллектуальные исследования, 14(2), 142–148. Retrieved from https://web-journal.ru/index.php/journal/article/view/2903
22. Topvoldiyev Nodirbek Abdulhamid o`g`li, Xolmirzayev Jasurbek Yuldashboyevich, & Xabibulayev Iqboljon Axmadjon ugli. (2024). SOLAR PANEL INSTALLATION REQUIREMENTS AND INSTALLATION PROCESS. Лучшие интеллектуальные исследования, 14(2), 135–141. Retrieved from https://web-journal.ru/index.php/journal/article/view/2902
23. Topvoldiyev Nodirbek Abdulhamid o`g`li, Xolmirzayev Jasurbek Yuldashboyevich, & Tursunov Ro'zimuhammad Muhammadyunus ugli. (2024). ENERGY-EFFICIENT HIGH-RISE RESIDENTIAL BUILDINGS. Лучшие интеллектуальные исследования, 14(2), 93–99. Retrieved from https://web-journal.ru/index.php/journal/article/view/2895
24. Topvoldiyev Nodirbek Abdulhamid o`g`li, Xolmirzayev Jasurbek Yuldashboyevich, & Obidov Shaxzod Ozodjon ugli. (2024). SOLAR PANEL INSTALLATION REQUIREMENTS AND INSTALLATION PROCESS. Лучшие интеллектуальные исследования, 14(2), 48–54. Retrieved from https://web-journal.ru/index.php/journal/article/view/2888
25. Topvoldiyev Nodirbek Abdulhamid o`g`li, Xolmirzayev Jasurbek Yuldashboyevich, & Najimov Abbosbek Mominjon ugli. (2024). SOLAR PANEL INSTALLATION REQUIREMENTS AND INSTALLATION PROCESS. Лучшие интеллектуальные исследования, 14(2), 40–47. Retrieved from https://web-journal.ru/index.php/journal/article/view/2887