

HIGH-VOLTAGE EQUIPMENT AND ITS DANGERS

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We cannot imagine our life without electricity today. A refrigerator, a microwave, a lamp, a charger – all these are electrical appliances that require electric current. Therefore, for your homes to have electricity, it is delivered using high-voltage electrical equipment.

High voltage equipment means high voltage electrical circuits (above 1 kV) forming part of a system that may require system protection or to which safety measures may be applied to allow work to be carried out on the circuit. It helps to get electric current from power plants to consumers (High voltage equipment definition, 2022).

There are various devices of high-voltage equipment such as power transformers (without changing the frequency transfer energy from one circuit to another), switchgear (used to de-energize the equipment to allow work to be done and to troubleshoot on the bottom (Switchgear, 2022), overhead power line (it is a structure used for the transmission and distribution of electricity to transmit electricity over long distances) and control devices (input voltage control). These devices are installed in certain places in buildings and residences.

As said earlier, high-voltage equipment helps to transmit electric current to consumers. Unfortunately, high-voltage equipment has also its disadvantages.

One of the first disadvantages is the acoustic noise of electrical devices. Acoustic noise means some sounds or voices which are unfavourable or unpleasant to people. One such is a device of renewable energy sources, namely wind turbines. Usually, wind turbines are installed far from human habitation, as the noise of

continuous operation can prevent people from being in the comfort of their homes. In addition, the hum of transformers is also a type of acoustic noise. For example, the El Colorado transformer station, which works with voltages of 132 kilovolts, has a lot of acoustic noise, so people do not live near it.

The second disadvantage is radio interference (electromagnetic vibrations that distort or jam the radio). In short, electromagnetic radiation with a certain frequency can prevent other devices from working correctly if they are tuned to the same frequency.

The final disadvantage is the danger of high-voltage equipment. It is more appropriate to say precisely about power lines because they carry the greatest danger. Because they carry large amounts of electricity at very high voltages, power lines are not insulated. The air around them provides thermal insulation. It is therefore important that nothing comes close to the lines to cause an electric arc. Arcing can cause fires and serious malfunctions. That is why there are no trees near the power lines. This area is called «right-of-way» (“What is a transmission line and why is it in a cleared corridor?”, 2022). The electromagnetic field of power lines also affects living organisms. For example, bees show increased aggressiveness, the productivity of the apiary decreases; cases of loss of queens become more frequent. In addition, a behaviour change is observed in mosquitoes, beetles, butterflies, and other flying insects. The electromagnetic field also affects people. Weakness, irritability, weakening of memory, sleep disturbance, and muscle pains are the influence of being under a power line for a long time

Summing up, it may be clear that high-voltage equipment can have a negative impact on our lives and the lives around us. Any approach to it can lead to irreversible consequences. However, you also need to remember what life would be like without electricity and electric current in your home and with the help of which equipment this electricity is available.

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