«ELECTRIC CONDUCTIVITY. DEPENDENCE ON CURRENT STRENGTH» TEACHING THE SUBJECT. ACCORDING TO 10th FORM

Abstract. This article explains how to prevent electricity from fire by explaining the electrical conductivity of substances in the high school and academic lyceum, preventing wastage of electricity as well as energy efficient use and production.

Introduction. The requirement of the current period is to give students in-depth knowledge from the school course of physics and apply the knowledge gained to life and technology and prepare them for the creation of innovative ideas. Class 10 on the physics course “electrical conductivity”. The value opposite the electrical resistance is called electrical conductivity.

\[ \gamma = \frac{1}{R} \]

The electrical conductivity unit is named after the German scientist E.R. Simens.

Collision resistance is the resistance of a conductor with a length of 1 m. and a cross-sectional area of 1 m\(^2\) [1].

The advantage over a given theme. Since conductivity is the inverse of resistance, the value inverse of resistivity is the specific conductivity and is calculated as \( \sigma = \frac{1}{\rho} \) and measured in units of "Cm/m" [3]. Conductive materials with high electrical conductivity include metals with a resistivity of \( \rho \leq 0.05 \text{ mk}0\text{m.m under normal temperature conditions. Alloys with a resistivity of at least 0. mk}0\text{m.m at normal temperature are called high-strength alloys. [4]}

The obtained results on the specific electrical conductivity of substances are important in the production of electrical products used in industry and the national economy. For current-conducting cable, metal cores are selected by their electrical conductivity [1].

\[ \gamma = \frac{\sigma S}{l} \]

Using the interactive method, the teacher explains to the students using the
formula (2) that conductivity is directly proportional to the cross-sectional area of the conductor and inversely proportional to the length of the conductor. In electrical and radio engineering, conductors are welded with tin, and the surface is welded, which leads to increased conductivity, since conductivity is directly proportional to the cross-sectional area of the conductor. When the conductors are connected to the network, the metal ring is fixed after the bolted connection, that is, the surface area increases, which reduces power consumption. When transmitting electricity over long distances through electrical wires, the conductivity of the conductor decreases with increasing length of the conductor, but in order to increase conductivity, it is necessary to increase the cross-sectional area of the conductor, i.e., increase the square of the diameter of the conductor by a quarter. It is necessary to inspire students to the fact that a large amount of conductive material is consumed, and the installation of pillars is 10-15 times more. Such a report will have a negative impact on the country's economy, and future energy savings should be the first challenge for students.

When solving this problem, electrical energy is transmitted taking into account the Joule-Lenz law $Q = I^2 Rt$ [2]. According to the above formula, if the current decreases to reduce the amount of heat generated by the conductor, the amount of heat decreases squared times. Through the amplifier transformer, the current value increases, and the voltage value increases, and then electricity is transmitted. [3] Current value increases due to the reduction of the voltage value of energy consumption. Voltage is supplied to single-phase electric power consumer through step-down transformer for 220 V, and to three-phase electric power consumption for production - for 380 V. When one phase of the 380 V three-phase network is used, a voltage of $380 \sqrt{3} \approx 220$ V is created because the phase difference of the voltages in the three-phase network is $\phi = 1200$.

**Conclusion.** To use electricity in our apartment, you need to pay attention to the specific conductivity of conductive wires. It is desirable to select its diameter after calculating the length from the power consumption. For example, if you choose a core section taking into account the length of the core, the voltage of 220 V and power consumption from $R = \frac{U^2}{P}$ taking into account the power of future consumers $P = \frac{U^2}{R}$, we do not allow energy losses, the insulation of the electrical conductor does not melt, and ignition is prevented.

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