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CALCULATION OF ACTIVE POWER LOSSES IN THE GROUNDING WIRE OF OVERHEAD POWER LINES

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Abstract

The new approach to calculating the induced current and power losses that occur in grounding wires with integrated fiber optic cable, which recently used for protection of overhead power lines from direct lightning strikes. For example, the overhead power line 330 kV with grounding wire of this type shows that the losses can be significant and are likely to reduce the efficiency of power transmission to the final consumer. This issue is relevant as the renovation of existing

overhead power lines, and at the stage of development new overhead power lines. References 8, figure 1.

Key words: overhead power lines, grounding wire, magnetic induction, magnetic flux, induced current, power losses.

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References

1. Bessonov L.A. Theoretical Foundations of Electrical Engineering. Electromagnetic field. Moskva: Vysshaia shkola, 1986. 263 p. (Rus)
2. Zeveke G.V., Ionkin P.A., Netushil A.V., Strahov S.V. Fundamentals of circuit theory. Moskva: Energoatomizdat, 1989. 528 p. (Rus)
3. Kudryavtsev E.M. MathCad 2000 Pro. Moskva: DMK Press, 2001. 576 p. (Rus)
4. Makarov E.F. Handbook of electric networks 0,4-35 kV and 110-1150 kV. Moskva: Papirus Pro, 2003. 640 p. (Rus)
5. Neiman L.R., Demyrchian K.S. Theoretical Foundations of Electrical Engineering. Moskva-Leningrad: Energiia, 1967. 407 p. (Rus)
6. Shcherba A.A., Rezinkina M.M. Electromagnetic fields and their effect on the objects. Kyiv: Naukova dumka, 2009. 191 c. (Rus)
7. Rules of Electrical Installation Arrangement. Moskva: Energoatomizdat, 1987. 648 p. (Rus)
8. Rules of Electrical Installation Arrangement. Chapter 2. The transmission of electricity. Path 2.5. The overhead power lines with voltage above 1 kV up to 750 kV. Kyiv: Minenerhovuhillia Ukrainy, 2014. (Ukr)

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