

Letter to Journal: The Three-Phase System Has Advantages or Disadvantages?

In 1978, and the second time in 1984, a book by a famous scientist in the field of information theory, Professor L. Fink, entitled *Signals, Interferences, Errors*. The book examined in detail errors in communication technology. This unusual book has helped a lot and continues to help many undergraduate and graduate students. As an example from this book, one can take a patent received in 1929 by a certain Robinson for the use of narrow-band frequency modulation. The inventor claimed that such a modulation would allow a narrower band than that of a signal with amplitude modulation. Robinson received a patent, although earlier it was proved that frequency modulation cannot give a signal with a band narrower than that of a signal with amplitude modulation.

Mistakes have always been and are today. The Russian scientist Dolivo-Dobrovolsky in 1890 developed and demonstrated a three-phase current system. He was awarded the Gold Medal of the World Exhibition in Paris (1900) for his achievements in the field of electrical engineering.

Today, this is what is many times written on the Internet in the sections on the three-phase system. In https://www.pergam.ru/articles/trehfazny-tok.htm one can read: "What are the advantages of a three-phase generation and power supply system? Savings on the number of wires needed to transfer electricity. Given the considerable distances (hundreds and thousands of kilometers) and the fact that non-ferrous metals with low electrical resistivity are used for wires. the savings are verv significant." And in http://www.electricalbasicprojects.com/three-phase-system-advantages-over-single-phase-system: "Transmitting the same amount of power at the same voltage, a three-phase transmission line requires less conductor material than a single-phase line. The three-phase transmission system is so cheaper". You can find a lot of similar quotes.

Now about 130 years, in most cases, electrical energy is transmitted by a three-phase method. In Refs. [1, 2] and other articles and patents, it is shown that all the energy that is transmitted in a three-phase system can be transmitted through one wire and without the participation of grounding. Moreover, this single wire can be one of the wires of the compared three-phase system. In addition, the single-wire method does not require expensive intermediate stations for reactive power compensation and bulky supports. This method allows you to transfer energy underground or under water. It is proved that a single-wire system is several times cheaper than a three-phase system.

Maybe it is time to stop throwing out millions of dollars.

References

Bank, M. 2012. "New One-Way Line for Electric Transmission System." *Journal of Energy and Power Engineering* 6 (8): 1320-7.
Bank, M. 2017. *It Is Quite Another Electricity: Transmitting by One Wire and without Grounding*. Patridge.

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