

Triple One Wire System without Grounding

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Abstract

Today the entire globe is shrouded in an inefficient three-phase system. There is however an efficient single-wire system. To use the single wire method, three phase systems can be converted to triple one wire systems.

Keywords

Three-Phase, One-Wire System, Zeroing, Grounding, Nullifier

1. Introduction

There is a common following opinion. “Electrical devices needed grounding. It is needed for human protection and for balancing electrical schemes”.

Today there is opportunity to transform a three-phase signal to one wire signal and come back. For this purpose, one can use converters 3 - 1 and 1 - 3 (see in references below). This transformation allows to reduce the three-phase systems which are difficult and costly [1] [2] [3] [4].

After a converter 3 - 1 we receive a signal with a voltage about 2 time greater than a voltage in each phase and a current which is equal to a current in each phase line. In articles and patents about converters a zeroing is disclosed also.

Additionally, if a one wire system uses grounding, the word combination “one wire” may be no precise.

The use of a grounding for zeroing is not always possible. Let us show that one can make zeroing without the grounding. **Figure 1** shows a very simple scheme with the grounding.

Below it will be shown that a zeroing can be done without a grounding. For this task we will use a nullifier. A zero potential can be obtained if one will sum a positive voltage and a negative voltage. But in this case one will get a short-circuiting and large losses. Below one can see a nullifier scheme where zero is obtained after summing two electromagnetic fields with opposite polarity in

windings of a inverter.

For this, like in a converter 2 - 1, we must make the zeroing by dividing one wire into two wires and in one of them by changing a polarity by inverter (Figure 2).

One can see here a nullifier scheme where zero is obtained after summing of two electromagnetic fields with opposite polarity in a transformer.

Obviously the one wire method will meet many difficulties because three-phase lines exist and are working everywhere. However, these lines can be used also as three one wire lines as can see on Figure 3. In this case the three wires can transmit more power without using the grounding.

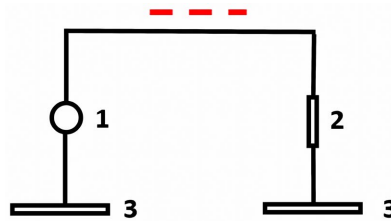


Figure 1. Simple scheme with grounding. 1. Sine Source—230 V, 50 Hz, Phase 0 degree; 2. Simulation of consumer in the form of resistance—100 Ohm; 3. Nullifier.

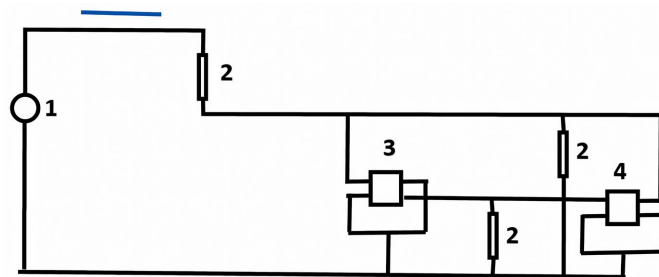


Figure 2. Nullifier scheme. 1. Sine Source—230 V, 50 Hz, Phase 0 degree; 2. Simulation of consumer in the form of resistance—100 Ohm; 3. Inverter—transformer with opposite windings; 4. Transformer.

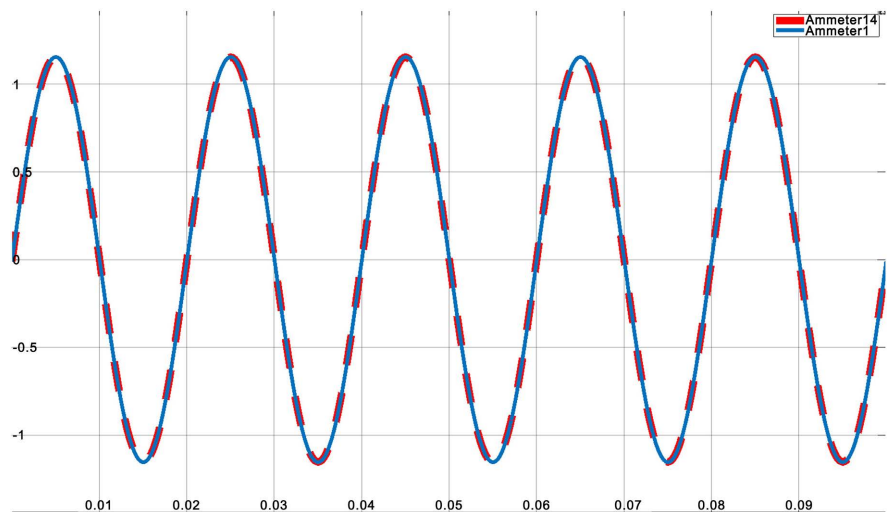


Figure 3. Current in Figure 1 and current in Figure 2 are equals in their amplitudes and phases.

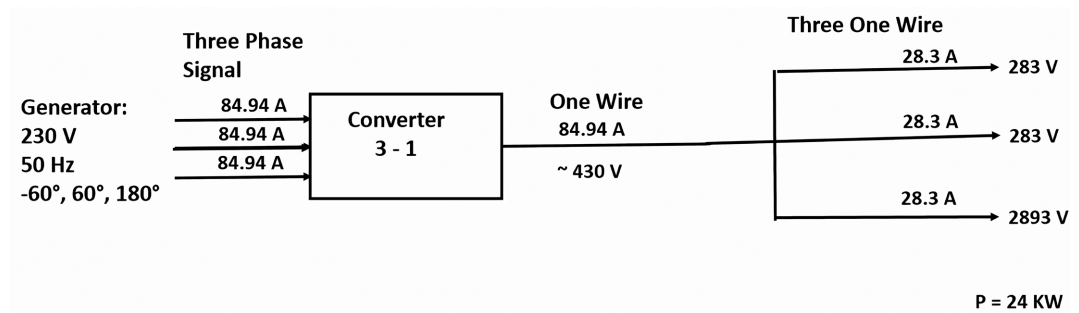


Figure 4. Triple one wire system structure.

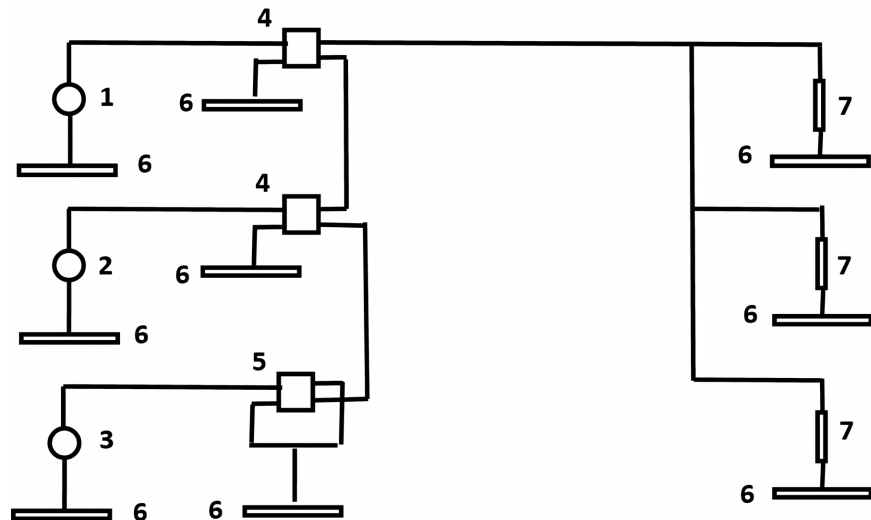


Figure 5. Simulation example of triple one wire system. 1. Sine wave source with 0 degree phase; 2. Sine wave source with 120 degree phase; 3. Sine wave source with -120 degree phase; 4. Transformer; 5. Inverter—transformer with opposite windings; 6. Nullifier; 7. Simulation of consumer in the form of resistance—100 Ohm.

The nullifier proposed here solves many problems, for example:

- It is not needed to make zeroing using grounding if your device is at a high place.
- Is not always that the grounding allows getting small resistance of zeroing.
- Grounding resistance depends on weather.
- Insects in the ground will not be killed.

The three phase systems are used very widely today. And we are not thinking about their reconstruction. However, we can use them for transmitting three one wire signals.

This idea is illustrated in **Figure 4** and **Figure 5**.

2. Unusual Conclusion

Here is a proposed type of a new system for transmitting electrical energy. The basis of this proposal is detailed in studies and comparison of three-phase and one-wire methods. This process is not an example of artificial intelligence. Today many people, from ordinary to presidents, are talking about artificial intelli-

gence. However, it is believed that human intelligence perhaps can do more and better. An example of this can be seen in the book “Intellect and the City”, in which the author explains why St. Petersburg is a special city. In particular, this book discloses detailed information about the lives and work of many talented individuals who were living in this special city and were responsible for amazing achievements in art, science, industry and other areas of life.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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