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INVERTER GENERATORS

Inverters are devices with a gasoline, diesel or gas fuel system that allow converting the input alternating current of the network (220 V) into direct current (12 V) by means of a semiconductor rectifier and, after smoothing its pulsations with capacitive filters, transform the DC voltage current back into alternating current with the specified parameters on the load. Due to this method of conversion, it is possible to obtain an output electrical signal characterized by high accuracy of voltage and current.

These devices are generators of periodic voltage, which is most often as close as possible to a regular sine wave in shape. Theoretically, they allow you to get a current at the output that has any necessary parameters that do not depend on the incoming voltage. In this case, it is possible to obtain not static current parameters, but adjustable ones of different frequencies and voltages. A constant voltage of 12 V is generated by the included batteries. The switches are available with thermal, electromagnetic and combined (thermal and electromagnetic) disconnectors with a different number of poles – one, two and three. In single-phase circuits, one and two-pole circuits are used, and in three-phase circuits, three-pole circuits are used.

One of the most popular ways of using an inverter is its operation as an emergency or backup power source for powering household appliances and appliances consuming 220 V AC. Most often they are used to connect kitchen and office equipment, TV, refrigerator, as well as high-frequency equipment in the country or in a country house when the light is suddenly turned off. Depending on the total power of the load connected to it, this technique will be able to work autonomously for at least several hours. Also, with the help of inverter stations, power tools (electric saws, drills, planes) are con-

nected to carry out repair and construction work in places where there is no supply voltage of 220 V. Such units are no less in demand among anglers and hunters.

Basically, inverter stations are designed for episodic operation in case of spontaneous power outage. They are purchased once and serve for many years. The longer service life is explained by the reliability of the mechanism of these devices, provided by the following factors:

1. the presence of a special ignition system at the heart of these devices, which guarantees a quick start of the inverter;
2. control of the devices by means of an automatic control system that contributes to economical fuel consumption, the indicators of which are reduced by 40%.

Depending on the form of the output signal, these devices are divided into two groups that differ in cost. The first includes units with a pure sinusoidal output voltage, the second group consists of devices that provide a simplified output signal (trapezoidal sine).

Most modern electrical equipment can operate normally from inverter generators whose output signal is a modified sine wave. Therefore, if you are faced with the task of providing autonomous power supply to standard household electrical appliances, such as a refrigerator, TV, lighting lamps, etc., then the most optimal and economical solution will be an inverter generating a modified sine wave, and models with a "pure sine" are better to be chosen for more sensitive equipment.

The main modes of operation of inverters are:

1. long-term operation mode which provides for the operation of the inverter at rated power.
2. overload mode: most of these units allow operation for no more than 30 minutes at the maximum power, the value of which can be 1.5 times higher than the nominal. Such large, but short-term overload can occur when the refrigerator is turned on.
3. start-up mode: the power plant is in the process of powering up within a few milliseconds of increased instantaneous power necessary to ensure a normal start of the device and overcome capacitive loads.

The most important advantages of inverters are the wide possibilities expressed in the conversion of electric current, as well as their high speed. Due to this, they are rightfully considered the best sources of independent power for welding equipment. In addition, they are perfectly compatible with a wide range of electrical appliances. These devices are equally suitable for household appliances, electrical tools and electronic equipment.

The features and advantages of generators with an inverter circuit listed in this article allow us to confidently declare high functional, technical, as well as operational characteristics and indicators of this equipment.