POWER SUPPLY STUDY FOR ELECTRICAL DEVICES CLEANING AND SUSPENSIONS SEPARATION

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The results of the study multiphase high voltage power supply devices for electric cleaning and separation slaboprovodidnyh suspensions. Compared waveforms of output signals of two frequencies with their calculated values. The possibility of using the proposed scheme the power source.

Power supply, power generator, transformer, electric chne purification and separation.

For purification and separation slaboprovidnyh suspensions used large electric field intensity. Such liquids include vegetable oils, fats, biofuels, technical oils and other liquids with low conductivity. In [4] shows that the use of traveling electric field can significantly increase the efficiency of purification and separation of liquids. This field is created by applying to the electrodes Electroseparators multiphase alternating voltage of a frequency which is predetermined electrical properties of both the liquid and suspended particles. Therefore, these devices need power supply with adjustable output multiphase high voltage and a variable frequency.

At present in clean electric devices used constant voltage or high voltage power frequency, the sources of which are up transformers and rectifiers or voltage multiplier [5]. In [3] proposed scheme multiphase power supply with adjustable frequency and voltage. This scheme contains a two-phase generator adjustable frequency and voltage amplifier and four two-phase high-voltage transformers, which provide chotyryfaznu symmetrical voltage.

The purpose of research - experimental studies were conducted to identify the frequency band power and possibilities of mixing (mixing) signals of two frequencies.

Materials and methods of research. In the study of power supply in the laboratory recorded voltage waveforms taken on both channels output soundcard PC,

which acts as a generator. [1] Oscillograms voltage block removed after strengthening on chips TDA7293 [2]. For oscillograms used Versatile dvohpromenevyy virtual oscilloscope "Vanguard" writable files oscillograms and their subsequent analysis [1]. To eliminate errors associated with the measurement signal is fed from the sound card on the same card, the program "Vanguard" is installed on another computer that performs the function of the oscilloscope. To coordinate the output amplifier to the input of the sound card voltage is used for variable voltage divider resistors.

On the channel oscilloscope signal is arbitrary frequency and voltage output from the respective channel sound card after a gain. The second channel - the signal of the same voltage and frequency, but shifted to an angle of 90 °. These signals start coming after the first call virtual application generator and related adjustments.

To study the quality of mixing two arbitrary frequency signals from a personal computer that acts as a generator, Redial program virtual generator set two signals on two channels with arbitrary frequency and voltage also shifted at an angle of 90 °. The second signal voltage oscillogram recorded at the first signal is off.

By the power source is a requirement ensuring desired voltage in a range of frequencies. To identify this range need to build an experimental amplitude frequency response of the amplifier system - up transformer. To remove this characteristic to the input of the chip unit gain voltage is fixed level and frequency varies from 0 to 1500 Hz. With electrostatic Kilovoltmeters C-196 measured voltage on the secondary winding-up transformer SALT 0.12 24-220 / 6000.

Results. The resulting voltage waveforms are shown first frequency

The frequency of the first channel signal was 200 Hz at the amplitude of voltage 1,075 V. The voltage signal of the second channel shifted by an angle of 90 °, thus amounted to 1,091 V. To this was added a couple of pairs of signal frequency 240 Hz signal voltage and 1,035 in the first channel and voltage 0.952 In the second channel shifted by an angle of 90 °. As a result of mixing computer sound card received aggregate signals on two channels outputs chip unit gain (Fig. 3) with the first channel amplitude voltage - 2.031 V and the second - 1.988 V with a phase shift between them is 90 °.

Were compared after mixing of signals (Fig. 3) with functions arithmetic obtained by adding signals /

Thus, the maximum rated voltage on the first channel (Fig. 4) is 2.11 V, which is different from experimental to 0.077 V or 3.6%. The maximum rated voltage on the second channel - 2.043 V, while the difference with the experimental determination is 0,055 V or 2.7%. This makes it possible to conclude additive stress two frequencies, obtained software and hardware PC and enhanced chip TDA 7293.

Built experimental amplitude frequency characteristic amplifier system - up transformer.

Conclusions

Research results suggest the power supply, the signals after amplification with a sinusoidal shape and can be used to power step-up transformers.

The measured characteristics of power source indicated that the range of voltage regulation chotyryfaznoyi prototype is 0 ... 6 kW, operating frequency range - 40 ... 1000 Hz. Deviations from the desired phase shift does not exceed 4%.