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Research of frequency generator for vibroacoustic therapy device

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The piezoceramic transducer ia an electroacoustic device capable of reproducing sound by inverse piezoelectric effect. Piezoceramics has its universal properties and are widely used in various fields of engineering.

A lot of experiments have been carried out in the field of vibroacoustic therapy to find the most effective sound frequency. A great contribution to the development of vibroacoustic therapy was made by O. Skille. He spent more than 40 thousand hours to find out. And he identified the most effective frequency range, which is between 40 and 120 Hz. The properties of piezoelectric electrodes gave the opportunity to use them as the best option in vibroacoustic therapy.

One of the disadvantages of the piezoelectric electrodes was rather hard frequency regulation of the device and also the large error during the manual frequency regulation. A frequency synthesizer microcontroller unit can be proposed as the solution of this problem. This makes it possible to automate the operation of the vibroacoustic therapy device and also to create multiple modes of the device, with different ranges of frequency. This also gives an opportunity not only to simplify the work for the user, but also to increase the versatility of the device. As it is known, the frequency synthesizer has a wide range frequencies and a high precision. The installation of frequency synthesizer into the scheme of the device will significantly reduce the error in the choice of frequency.

All of the above will help to create a fairly universal vibroacoustic device with a wide range of frequencies, maximum precision and ease of use. It can be used for therapy, massage or other medical purposes. Also new device can be used not only at hospitals by the medical staff, but also at home by users without mandatory medical education.

1. C. Boyd-Brewer, *Vibroacoustic therapy: sound vibrations in medicine*. *Alternative & Complementary Therapies* 9(5), 257 (2003).
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