Piezoelectric transformer with parallel oscillatory circuit

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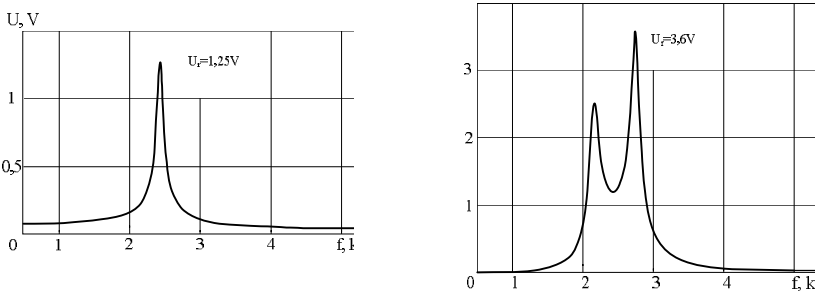
Piezoelectric transducers are widely used in electroacoustics, hydroacoustics, in ultrasound, medical, measurement technique, in scanning probe nanomicroscopes, piezoengines and in other fields of science and technology [1].

To create transducers with necessary characteristics the technology of additional elements can be used.

When connecting the parallel inductance L_{ad} to the piezoelectric transformer (PT) output, this inductance and capacitance between the electrodes C_o form a parallel oscillatory circuit $L_{ad}C_o$.

The amplitude-frequency characteristics (AFC) of the piezoelectric transformer based on the bimorph element of transducer ZP-19 and transformer with parallel inductance are shown in Fig. 1.



a) b)

Fig. 1 – AFC of the piezoelectric transformer without (a) and with parallel inductance (b)

As can be seen from Fig. 1, the application of the parallel inductance allowed raising the output signal level and expanding a bandwidth.

So, a parallel oscillatory circuit can be used for more effectively energy transfer from the piezoelectric transformer to the load.

1. Sharapov V. *Piezoceramic sensors*. Springer Verlag, 2011, 498 p.