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## The use of an ultrasonic technology to increase the productivity of oil wells

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U Analysis of the results revealed high efficiency of the technology. The technology can also be used in combination with chemicals, which was tested on injection wells. The combined sonochemical technology proved to be even more efficient. The ultrasonic equipment based on the magnetostrictive transducers consists of a ground part – the modernized ultrasonic generator TS10 – and a downhole part – either a tool with the diameter 42 mm (PSMS-42) or a tool with the diameter 102 mm (SSMS-102).

The criteria to be followed during the selection of oil wells for treatment were determined based on an analysis. These criteria are presented in the table below:

Decrease of the reservoir pressure (comparing to initial)	Higher than 25%
Current water cut	Less than 80%
Minimum thickness of the productive layer	3 m
Values of alpha PS	Higher than 0.5
Permeability	Higher than 0.25 mkm <sup>2</sup>
Clayiness	Less than 15%
Decrease of oil production over the last 1-2 years, not related to the decrease of the reservoir pressure	2 times and higher
Dynamic viscosity in reservoir conditions	Less than 25 mPa <sup>-s</sup>

The technique of the round trip operations of PSMS-42 is similar to the one used for geophysical surveys of the well. In this case, the downhole tool is put into the well through the tubing on a logging cable with the length of up to 4000 m. SSMS-102 is used for well with oil with higher viscosity. It is fixed on the tubing and stays in the well continiously.

More than 100 operations were performed in West Siberia and the Samara region in the period from 2010 to 2012. The average increase in oil production the treatment was 4.4 tons/day for Western Siberia and 10.2 tons/day for the Samara region.

Ultrasonic treatment causes an average increase in the productivity factor of 33%. In addition, the electoral impact of the ultrasound on layers leads to an average decrease in the water cut of 4%.

## **Biography**

A V Abramova (Ph D) is a researcher in the laboratory of ultrasonic technique and technology. The team works in the field of high-power ultrasonic for many years.

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