**Vladimir Kozlov**, professor, doctor of science
**Aydar Sabitov**, director of "SPE "Sakosa"

Today, the existing chemical methods of diagnosing paper-oil insulation of power transformers in the Russian standart 25438-82 and IEC 450 in the world:

- are time-consuming;
- contribute the destruction of the paper insulation during sampling;
- require the equipment skitching off, depressurization of the transformer, transportation to the place of diagnosis.

The developed experimental model of the device eliminates sampling, the introduction of defects in paper-oil insulation of power transformers, improves the system of monitoring and diagnosis of transformer and reactor equipment and allows energy companies to move from a system of scheduled maintenance to repairs on the state. Use of the optical measuring device operating on the degree of polymerization of power transformers in the system will allow "smart transformer" to monitor the status of paper-oil insulation in real time.
Competitive advantages: measurement limits the degree of polymerization of 200 to 1200 units, the area of coverage of the surface under study from 1.57 to 14.13 mm2, operating temperature, ºC: from -40 to +40; eliminates sampling, the introduction of defects in paper-oil insulation of power transformers and a significant reduction in the environmental impact on the environment in determining the degree of polymerization, in contrast to chemical methods of diagnosis.
This technology is patented, patent for invention №2392684. It is planned to conduct certification.


РОССИЙСКАЯ ФЕДЕРАЦИЯ

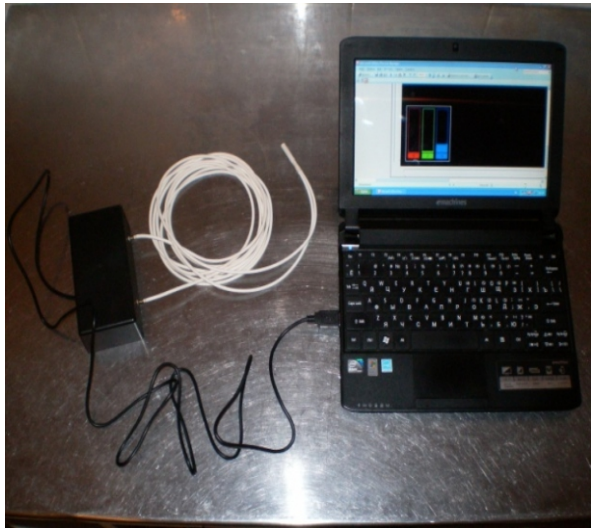
ПАТЕНТ

№ 2392684

СПОСОБ КОНТРОЛЯ КАЧЕСТВА БУМАЖНОЙ ИЗОЛЯЦИИ ТРАНСФОРМАТОРА

The project awards:
- The winners of the program Start 1 in the program of innovative projects "IDEA-1000" (2010).
- The winners of the program Start 2 in the program of innovative projects "IDEA-1000" (2012).

The project is implemented with the financial support of the Fund for Assistance to Small Innovative Enterprises in Science and Technology in Moscow and "Investment and Venture Fund of the Republic of Tatarstan" Kazan.



## Contact information:


**Kazan State Power Engineering University:**
420066, Kazan
Krasnoselskaya Street, 51

**Phone/Fax:**
+7(843) 519-43-55 - reception
of vice-rector in science
kgeunauka@mail.ru

+7(843) 527-92-04 - department on science & technology information
onti-kgeu@mail.ru

**Contact person**
Aydar Sabitovh, director of "SPE "Sakosa"
420036 Kazan, Dementieva str., 2B
+7 (917) 220-36-73
ooocakoca@gmail.com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# Optical measuring the degree of polymerization of paper-oil insulation of power transformers

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