

Electronic eye: Technology for breakdowns prevention

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The wireless device is placed into a tube, and the image from the camera is sent to a computer screen Credit: D-TEST

Detecting deformations and the wear-out rate of underground water mains is one of the functions of the measuring optical device created by the scientists of Ural Federal University in collaboration with D-TEST Optical Measurement Systems, a research and production company.

The project is carried out within the framework of competencies of the Interregional Ural Scientific and Educational Center "Advanced Industrial Technologies, New Materials and Energy," created by the three Russian regions, the Sverdlovsk, Chelyabinsk, and Kurgan.

"The wireless device with a rotating laser scanner is placed inside a pipe and can move within it. The image from the built-in camera is sent to a computer screen," says Sergey Pesterev, one of the developers. "This allows us to, firstly, decrease the risk of utility breakdowns, and secondly, if the monitoring shows that the pipe is still in good condition and doesn't need to be dug out and changed, it saves contractors, and therefore the householders, significant sums of money."

Similar "electronic eye" technologies developed by UrFU scientists and combining advanced features of sensorics and optics, are also used in the military, nuclear, oil and gas, [chemical industry](#), in railway transport and aviation with the purpose of national security support.

Technologies developed by UrFU allowed to create dozens of high-precision and high-speed optical systems for machine-tool building, automotive industry, polymer and other industries, which are employed both in the CIS and far-abroad countries.

"The relevance of our innovative technologies and devices is explained by the fact that UrFU is one of the recognized centers for sensorics in Russia. The management and staff of the D-TEST Optical Measurement Systems are graduates of the University, and our students do practical training at the company," says deputy director of UrFU's Center for Enterprise Communications Aleksandr Cherepanov. "We keep track on the advanced practices of the global leaders in the area and offer best, world-class solutions."

Aleksandr Cherepanov also adds that the purpose is not just to cover the demands of domestic markets, but also enter the international ones and compete with such "champions" as Japan.

Provided by Ural Federal University

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