

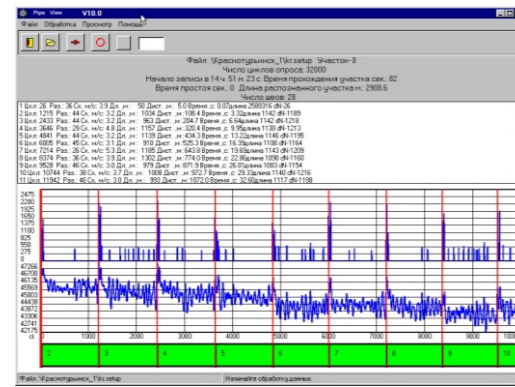
Data processing and analysis of information collected during the motion of KOD-4M inside the pipeline.

Data processing and analysis are performed by means of powerful, modern software developed by the specialists from 'AUTOGAZ'.

Worked out for research purposes mathematical model of magnetic flux leakage made it possible to calculate the parameters of found defects.

After short data examination onboard, the further processing is performed in the laboratory in several stages:

evaluation of parameters of individual pipes (length, wall thickness, number and orientation of longitudinal joints, assortment);



- search and recognition of technological objects (valves, 'rolls', end cups, etc.);
- search and recognition of defects in individual pipes;
- Recording of all identified objects of interest and importance into created data base.

Basing on obtained data the final report can be performed. It contains all details about results of the examination of each inspected pipe of the pipeline. Information is presented to the Client in printed form and on CD ROM. The final decision about state and condition of the pipeline is can be done by the independent experts.

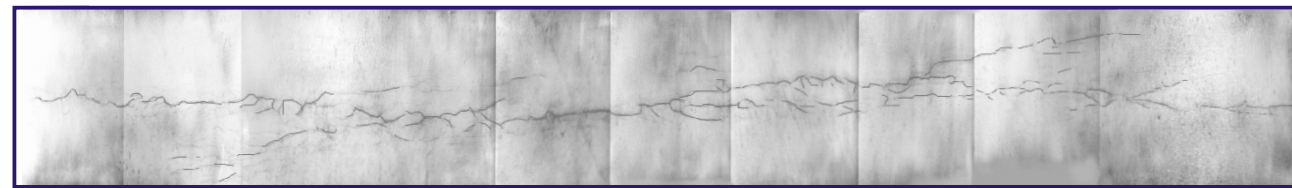
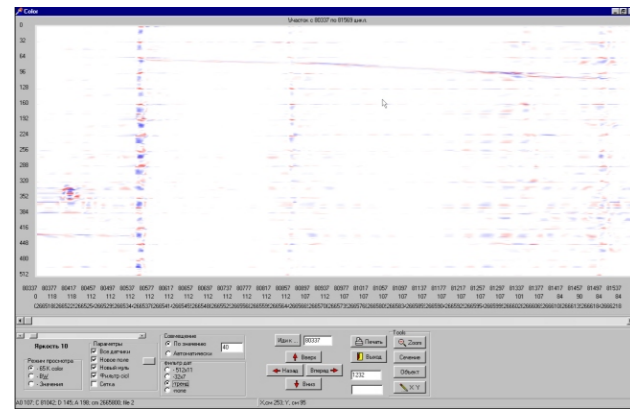


Photo 1.

The results of magnetic particle testing of the real internal surface crack detected by the intelligent inspection tool KOD-4M.

Photo 2. The image of the crack presented on photo 1. The image is a result of data processing by the original software.



The Department of Pipeline diagnostics of the Joint-Stock company 'AUTOGAZ' has saved up a great experience in the field of development of the NDT methods, means and systems and In technical diagnostics of objects of a gas-oil complex.

During many years the specialists of the Department of Pipeline Diagnostic of 'AutoGaz' have been developing the magnetic defectoscopic tools for in-line inspection of underground gas pipelines. During designing these tools a number of important scientific tasks have been solved. One of this tasks was the development of implementation of magnetic flux leakage technology for flaws detection in case of interaction of inspected object and gas flow inside the pipeline under the tough operating conditions, i.e. in terms of increased dynamic loads and high motion speed relative to the inspected surface.

The methods of pipeline inspection in applied transverse magnetic field were worked out by means of mathematical modeling of defects of stress corrosion type. By means of models were determined new informative parameters for flaws classification. Due to the newly developed procedure it is possible to detect the colonies of stress corrosion cracks, groups of cracks and single cracks, different combinations of defects, etc., as well as to follow up parameters of



To carry out trials, verification and calibration of the fabricated equipment, the special test bench was created simulating parts of gas pipeline with diameters of 720, 1020, 1220 and 1420 mm. Each line is 60 m long. This test bench is equipped with special winch from drilling rig providing pulling speed of 3 m/sec. The artificial defects are fabricated on the pipes, they simulate stress corrosion cracks and corrosion cavities.

magnetization system providing valuable detection of above parameters.

The algorithms for defects sizing use correlation of interacting parameters of the space field distribution corresponding to this or that type of defect.

The results of research and development works obtained during initial trials of the pilot sample of the tool "KOD-4M-1420" were implemented in the new products like tools for inspection of gas pipelines with diameter of 1220, 1020 and 720 mm.

In such a way, developed defectoscopic complex provides fast in-line inspection of gas pipeline walls for there integrity and gives possibility to size detected flaws and locate there coordinates with high accuracy. All above features provide proper estimation of the condition of the inspected pipeline and give required information to make decision about pipeline reliability and possibility of further run, last decision is taken with the help of specially written, approved

KOD-4M-1420 MFL - TOOL OF HIGH RESOLUTION FOR STRESS-CORROSION DETECTION



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