

Methane to Markets Partnership Expo

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Cherkasytransgas :

Recent Compressor Station

Methane Emission Detection,
Measurement and Mitigation Activity

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Ukrainian Gas transmission system is the second powerful company in Europe

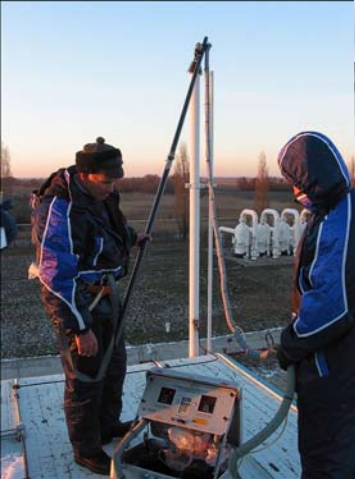
after RAO Gazprom includes 35 thousand km of gas pipelines, 171 compressor stations.

Branch Company "Ukrtransgas" is the main «gas bridge» between Russia - the largest gas extracting country and consumers in the countries of Central and Western Europe, which annually pumps over 190-200 billion m³ of gas.



More than 5 thousand kms of gas pipelines,
23 compressor stations, 196 gas distribution stations
are on its balance.

«Cherkasytransgas» is one of 6 divisions in the structure of Ukrtransgaz. The average capacity of one compressor station is 70 MW. Management transports 100-120 billion m³ of natural gas annually.



Since 2002 the management started to work on the gas leak detection and elimination.

For the first time such works were implemented together with the Partner Indaco Air Quality Services on two compressor stations, in the frame of the project «Program on energy saving and environmental protection», which won grant EcoLinks.

The project includes:

- natural gas leak detection and leak measurements;
- leak repairs;
- leak measurements after repair;
- estimation of results.



As a result of the project Cherkasytransgas saved
1.9 million m³ gas per year at two compressor stations.

The total project cost is 83 thousand USD.

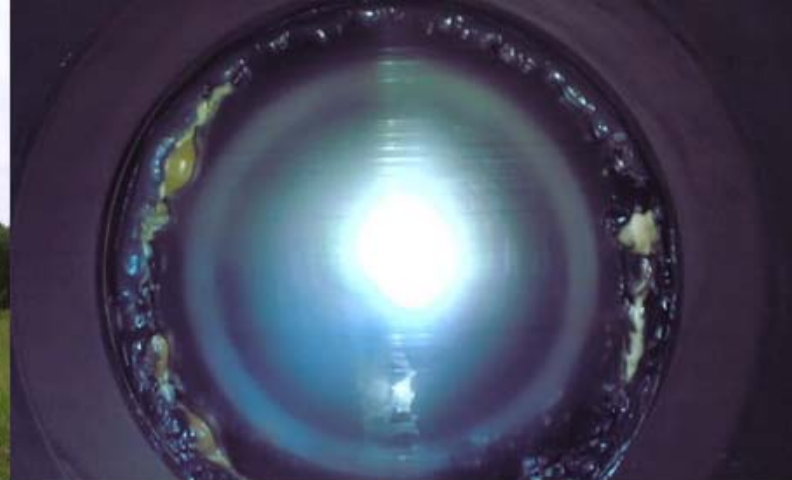
And the cost of the saved gas is 101.3 thousand USD.

The Management used EcoLinks funds to purchase Hi Flow Sampler Bacharach for gas leak measuring. The similar devices are not found in Ukraine.

Since 2002, according to the enterprise's order on leak inventory, equipment inspections to detect gas leak have been delivered to all facilities of the management.

The order committed chief engineers of linear managements to run leak detection logs and quarterly submit leak elimination data to the Department of Ecology and Energy Saving.

The repairs of the leaks reductions are carried out by own forces. The leakages through flanges of valves are eliminated by Company Kiaton. Ecology laboratory implements measurements of the gas leakage volumes before and after repair by Hi Flow Sampler.



Analysis showed that the largest leakages appeared on the vent valves.

The protocols of leakage inventory were prepared for every compressor station. Analysis showed that the largest leakages appeared on the vent valves. The operation term of the valves is more than 25-30 years. The surface of the balls is worn out and regular lubricant, which is used in Ukraine, did not remove such defects. During our first trip to USA we got to know about the production of Sealweld Company, which issued sealant materials for gas valves.



Our next project was
«Leak reduction at natural gas compressor station»,
which won grant IUEP in 2005.

Gas leak reduction reached 5.9. million m³ at 251 valves.

The main goal of the project was to reduce the leakages on stop valves together with Seaweld Company with the help of the high quality valve sealants.

The project cost is USD 446,000.

- USD 152 thousand – IUEP grant funds.
- USD 294 thousand – own funds.

The project payback period is less than one year.

IUEP grant was used to purchase new laboratory equipment.

Seaweld company provided training to «Cherkasytransgas» divisions on methodologies of repair technology and valve diagnostics.



In December 2006,
under the Department of Ecology and Energy Saving

the certified ecological laboratory was established

to provide the following activities:

- Detection of gas leak at valves;
- Gas overflows at valves;
- Sealing valves;
- Post-sealing measurements to define sealing efficiency;
- Reports on conducted work;
- Pollutant emissions measuring at gas combustion equipment;
- Measured data processing and estimation of environmental charge.



Laboratory equipment

Ecological laboratory of Cherkasytransgas with its activity and equipment is single in the gas transmission system of Ukraine.

The volume of gas leak at compressor stations and linear gas pipelines is measured by Hi Flow Sampler Bacharach.

Overflow is detected by body vent opening and infrared camera «Therma Cam-P 65».



Laboratory equipment

For example, our laboratory provided maintenance to valves that had to be removed, as a result, it stopped leaking and the valves still operate.

Valve sealant is injected by hydraulic pump Seaweld Activ-8 and Speedaire air compressor. They accelerate sealing by 5-10 times compared to hand-operated pumps.

Valve maintenance is provided by valve cleaner Valve Cut and sealant Desco -108, 111, 600, 50/50 that extend operation life of valves.



During 2007-2008 the laboratory conducted measurements at **all**
compressor stations, gas distribution stations
and linear valves, and created a database for all the leaks.

Post-sealing measurements are carried out to define sealing efficiency.

At the end report on work results is compiled and consists of:

- Protocol of results of gas leak measurement at valves;
- Valve sealants report;
- Valves passport system with full description, which allows further diagnostics of valve state.

Data are collected and processed to define leak normative for compressor stations and linear gas pipelines subject to valve service life and type.



Forecasted reduction of methane emissions -

4.45 million m³.

Now, the program on reduction of methane emission is carried out on objects of «Cherkassytransgaz» in a collaboration with the Pacific North-Western Laboratory . These activities are aimed to eliminate methane emissions at 255 valves in the period of 2008-2010.



Our goal is:

Improving Diagnostics Extending Upgrading

Our goal is:

- Significant reduction of methane emissions in the facilities of «Cherkasytransgas»;
- Improving efficiency and speed of gas leak elimination at valves;
- Improving valve operation after sealing;
- Upgrading valve sealing;
- Diagnostics of valve state;
- Extending «Cherkasytransgas» experience around the whole gas pipeline system of Ukraine.



ЕКОЛОГІЧНА ЛАБОРАТОРІЯ • УМГ «Черкаситрансгаз»

НАК «НАФТОГАЗ УКРАЇНИ»
ДК «УКРТРАНСГАЗ»

Діагностування стану запірної арматури
та роботи по відновленню герметичності затворів кранів.

ЕКОЛОГІЧНА ЛАБОРАТОРІЯ
УМГ «Черкаситрансгаз»
ВІДДІЛ ЕКОЛОГІЇ ТА ЕНЕРГОЗБЕРЕЖЕННЯ



the decision was made to

create the same laboratories such as in Cherkasytransgas in every management branch

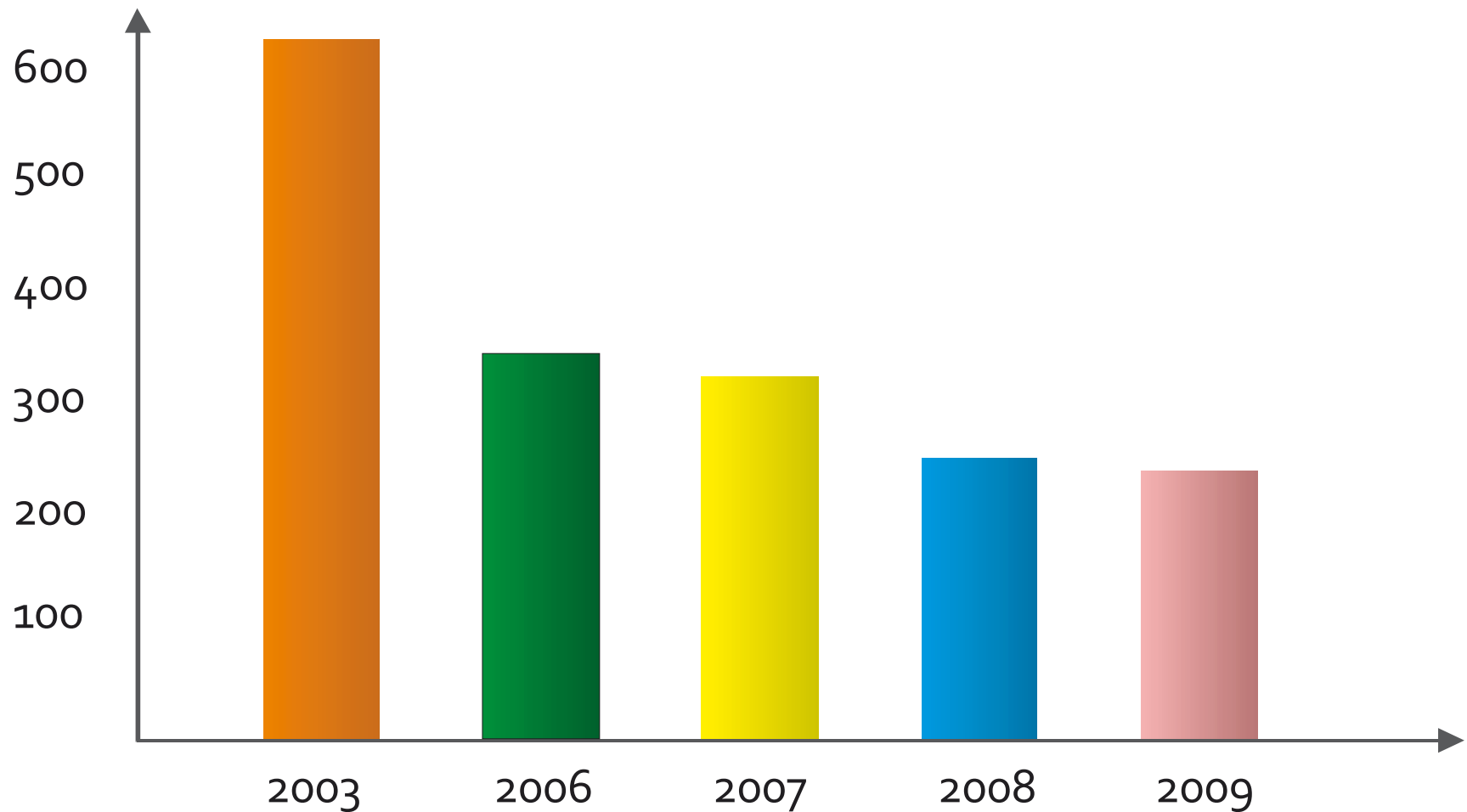
of main gas pipelines of Ukraine

In July 2008 PNL has supplied high-efficiency sealant to Cherkasytransgas for the sum of 73000 US dollars. Since August 2008 till December, 2009 in management it is eliminated 3.458 million cubic meters per year of gas leakage on 174 valves of compressor stations and linear part of pipelines, that makes in money terms 573,130 US dollars. At that time total expenses on repair have made 257,639 dollars of the USA. The repair of the valves was done by sealants and on the flanges by Kiaton method.

Monitoring of volumes of gas emissions on the compressor stations of «Cherkassytransgaz» from 2003 to 2009 showed that as a result of the conducted works the volume of gas losses on the average on one compressor station reduced more than in 2 times, that is represented on the diagram.

In 2010 Cherkasytransgas will continue the work according the Program and Grant Agreement between PNL and Cherkasytransgas.

The average volume of gas leakages on one Compressor station of Cherkasytrnsngas for 2003-2009 years, thousand m³/per year



thank you