LEAK REDUCTION
AT NATURAL GAS COMPRESSOR STATIONS

of gas transition system of
UKRAINE

Olena Mandra
Natalka Novakivska
Ukraine is located in the center of Europe and boarders Russia the east and Belarus, Poland, Slovakia, Hungary, Romania and Moldova in the west.
Gas transition system of Ukraine is the second on capacity in Europe after RAO Gazprom.
“Ukrtransgas” branch company

35 thousand km of gas mains

171 compressor stations
Branch Company "Ukrtransgas" is the main «gas bridge» between Russia - the greatest gas extracting country and consumers in the countries of Central and Western Europe.
"Ukrtransgas" branch company. 190-200 billion m³ of gas.
5 thousand km of gas mains
23 compressor stations
100-120 billion m$^3$ of gas

Comparative Volume of gas transition of Ukrtransgas and Cherkasytransgas, billion m$^3$ per year

- Cherkasytransgas: 90 billion m$^3$
- Rest of Ukrtransgas: 110 billion m$^3$
management of Main Gas Pipelines

“Cherkasyransgas”

NARRATIVE PART
LEAK REDUCTION at natural gas compressor stations

1. Leak detection and measuring
2. Development of leak repair plan
3. Repair works
4. Summarizing

Before: 308
After: 42

Management of Main Gas Pipelines “Cherkasytransgas”
Branch Company “Ukrtransgas”
National Joint-Stock Company “Oil and Gas of Ukraine”
20-100 billion m³ of gas
1 thousand km of gas mains
3 compressor stations
management of Main Gas Pipelines

“Cherkasytransgas”

KREMENCHUK Linear Management

Compressor station

leak detection

before

after
Leak detection combination of soap solution and natural gas electronic detectors
Leak detection

three measuring techniques

Leak measuring using Hi-Flow Sampler

“Vent-Bags” method

Leak measuring using anemometer
Leak measuring using Hi-Flow Sampler
“Vent-Bags” method using calibrated bags made of anti-static plastic
Leak detection using anemometer.
Results of measurements

169 leaks with a total leakage of 2209 thousand m³/year were found at Zadniprovska compressor station.

112 leaks with a total leakage of 749,0 thousand m³/year were found at Kremenchugskaya compressor station.

The carried out analysis has shown, that 70 % of the total leakage at each site comes from 20 % of the leaking components.
The total leakage at two Compressor Stations was reduced by 1954 thousand of m3 per year that makes in money terms 101,3 thousand US dollars per one year at cost of gas of 51,7 US dollars for thousand m3.

101,3 thousand US dollars per one year
OUTCOMES OF THE PROJECT

- For the first time in Ukraine was conduct leak measurements using “Indaco” techniques.
- To estimate existing leak rates on equipment of natural gas compressor stations.
- Define the priority of components to be repaired and demonstrate feasibility of such repair.
- The modernized “Indaco” instrument for leak measurement was bought at the expense of grant.
OUTCOMES OF THE PROJECT

Within the project the gas leaks has been measured twice before and after repair.

**Initial** leak rate measurements have allowed:
- to create leak database.
- develop norms of technological leaks.

Measurements conducted **after repair** have allowed:
- to define efficiency of repair.
- provide the internal monitoring system.

The article about the project is placed on “Ecolinks” site:
www.ecolinks.org
Implement the experience of “Cherkasytransgas” in all divisions gas transition system of Branch Company "Ukrtransgas ".

For last two years gas leak measurements have been done at 23 compressor stations, linear valves and gas distribution stations, after repair at 8 compressor stations.

In future we plan to conduct measurements at all compressor stations, gas distribution stations and linear valves, to create database for all the leaks.
Thank you!