



Measurement of methane emissions

Head of Environmental
Protection Department
D.A. NERETIN

Head of the laboratory of
Environmental protection and
Resource saving
G.S. AKOPOVA
Gazprom VNIIGAZ LLC

History

Gazprom transgaz Samara history stems from the origins of the national gas transportation system. On September 15, 1943 the Buguruslan – Pokhvistnevo – Kuibyshev gas pipeline was commissioned (length - 165 km , capacity - 220 million m³ per year), first ever in the USSR. Defense companies evacuated in 1941 to the USSR “reserve capital” of Kuibyshev (present Samara) received the demanded fuel.

In 1945 a Kuibyshevgaz fund was established, which had been supporting gas production, processing and transportation as well as industrial and household gasification of the city and the region for more than 20 years thereafter.

In the early 1970s construction of the Chelyabinsk – Petrovsk, Urengoy – Petrovsk and Urengoy – Novopskov gas trunklines resulted in a considerable increase in the scope of gas transportation activity and the expansion of the company itself. During that decade seven out of eight currently existing line pipe operation centers were also constructed.



Core business activities

Gazprom transgaz Samara is involved in natural gas transmission through gas trunklines and its supply to consumers of six Russian regions: the Samara, Ulyanovsk, Orenburg, Penza and Saratov Oblasts, as well as the Republic of Mordovia.

Gazprom transgaz Samara is an intensively developing company operating over 4,300 km of gas trunklines, 19 compressor stations, 144 gas distribution facilities and facilitating transportation of natural gas in the amount of some 20 per cent of the total domestic production.

Gas transportation is carried out by 8 line pipe operation centers of gas trunklines. Gazprom transgaz Samara incorporates service divisions responsible for technical maintenance, capital repairs of all types, hookup works, monitoring of equipment condition, technical retrofit and reconstruction



Prospects

By the end of 2007 the company was certified in compliance with the requirements of ISO 9001:2000, the process of managing gas transportation via gas trunklines. The company envisages a further upgrade of business processes and their certification in compliance with international standards requirements.

By 2009 the company was certified in compliance with the requirements of ISO 14001:2004, the process of managing gas transportation via gas trunklines.

With the purpose of improving the governance structure the company will keep implementing automated information management systems. Gazprom transgaz Samara was identified a pilot company responsible for creating and introducing a standard template of a company information and control system in the Gas Transportation sector.



TIMELINESS

- ✓ Russia's obligations under international agreements on stabilization and reduction of greenhouse gas emissions
- ✓ Environmental Policy of Gazprom
- ✓ The implementation of Gazprom Transgaz Samara measures in environmental protection and resource saving
- ✓ Assessment of natural gas emissions which relate to technological purposes including leaks into the atmosphere
- ✓ Interest of foreign partners in joint implementation of priority projects to reduce natural gas emissions

GOALS AND OBJECTIVES

- ✓ Objective assessments and trends of methane emissions
- ✓ Justification of the priority tasks and necessary measures
- ✓ Reduction of methane emissions
- ✓ Energy efficiency improve at Gazprom Transgaz Samara
- ✓ Detection and measurement of natural gas leaks in the communications and technological equipment
- ✓ Evaluation of natural gas emission amount and its share in technological consumption

METHODS

Statistical, analytical methods of information processing in terms of natural gas emissions

Remote and contact methods of monitoring using technical media which are consistent with the Gazprom acting regulations and certified in the Russian Federation

CONTACT METHODS FOR DETECTION AND MEASUREMENT EMISSIONS



Leakage detectors, methane concentration meters



Portable gas meter



Multifunctional IrDA gas analyzer



Sampler unit

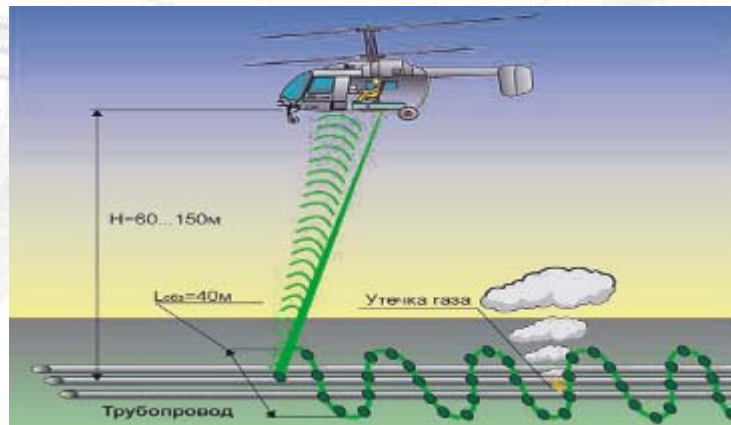


Volumetric emissions measuring and detection device



Gas detector

REMOTE METHODS FOR DETECTION AND MEASUREMENT OF EMISSIONS



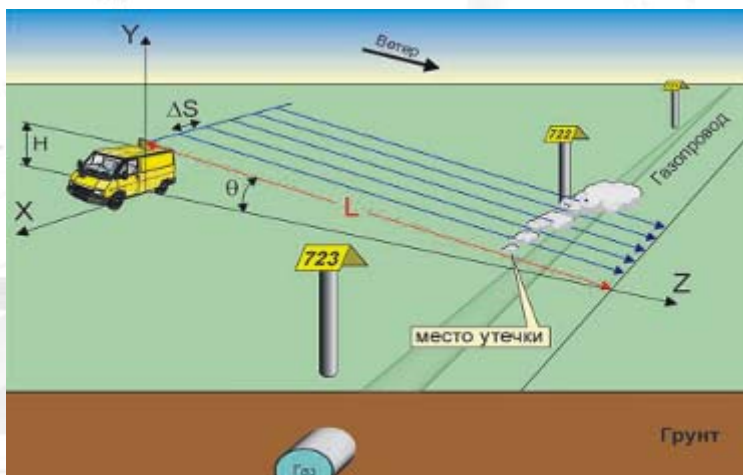
Helicopter distant laser gas analyzer for pipelines



Laser system of the methane spatial concentration



Board passive distant gas meter for methane concentration



Vehicle distant laser gas analyzer for pipelines



Portable passive gas analyzer for methane



DGA of methane concentration based on an IrDA sound and optical spectrometer and projector

EMISSION NATURAL GAS LEAK OF NATURAL GAS

Potential sources of gas leaks from ground-based equipment :

Pipe and Fittings technology

Valve vents
(In the position "closed")

Causes of leakage

- ⌚ Leakage in case of depressurization of equipment during operation
- ⌚ Omissions valves
- ⌚ Leakage in case of emergency equipment damage

Places of Leaks

- ⌚ Welds
- ⌚ Flanged and threaded connections
- ⌚ Stuffing-box Seals
- ⌚ Piston rods
- ⌚ Pulse tube
- ⌚ Cracks
- ⌚ Gaps
- ⌚ Cross-cutting damage due to corrosion





Technical guidelines on measuring the volume of methane emissions into the atmosphere on Gazprom



Typical evaluation program for the emissions of natural gas at Gazprom facilities

Comparative assessment of methane leaks from a typical technological equipment (Shop-10, Shop-23) Syzran LPUMG

Organization	Specific indicator of Methane leak m^3/MMSCM of transported gas
Gazprom VNIIGAZ	3.32
Pacific Northwest National Laboratory, USA	2.80



Thank you for your attention

Gazprom Transgaz Samara
<http://www.gazpromsamara.ru>
samstg@samaratransgaz.gazprom.ru
телефон: +7(846)333-07-87, 242-41-95

VNIIGAZ Central Office
Tel.: (+7 495) 355-92-06
e-mail: vniigaz@vniigaz.gazprom.ru
www.vniigaz.ru