![ostec corporate group logo] future's in the making

Operational control of the process of amino gas cleaning from acidic components

- *Purification of hydrocarbon gases from CO2, H2S, R-SH in the production of liquefied natural gas (LNG) and hydrocarbon gases (LHG)*

- *CO2 removal from synthesis gas, ammonia production*

- *Flue gas cleaning and CO2 generation*

The chemosorption method of removing acid components from gases using an aqueous solution of methyldiethanolamine (MDEA) mixed with an activator, piperazine, is one of the most common in industrial practice. The advantages of the method with this absorbent are in the high efficiency of the cleaning process, low energy costs for the regeneration of the solution, resistance to degradation and low corrosivity.

The amine analyzer with a flow measuring cell based on an **IROS Pxx** IR Fourier spectrometer makes it possible to implement a rapid method for quantifying MDEA and piperazine in an aqueous solution to control the parameters of the purification process. The analyzer is supplied with a probe for sampling (V = 50 ml), a transport container, an interface for samples injection into a flow-through measuring cell.
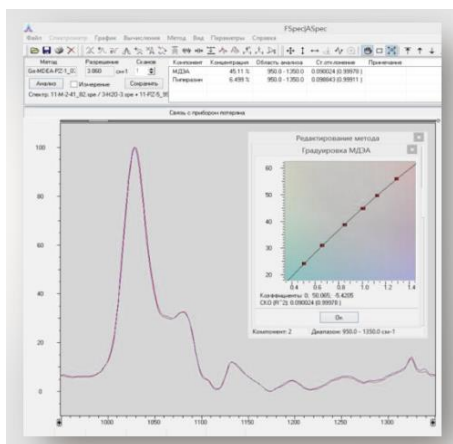
The **FSpec / AmSpec** Amine Analyzer software, with integrated calibration and an interactive "button" interface, provides control over the entire measurement process and spectral data processing, with calculation of the content of the determined amines in the sample, generation of the archive and output of the measurement protocol to print.

Calibration model: determination of MDEA in an aqueous solution of amines

The main parameters of the measurement method:

Measuring ranges

MDEA — 20-60% of the mass.

Piperazine — 2-10% of the mass.

Reproducibility (SD)

MDEA — < 0.5% of the mass.

Piperazine — < 0.3% of the mass.

Duration of the analysis cycle, including sampling operations — 5-10 min.

*Analyzer on the basis of IR Fourier spectrometer **IROS P01** with HATR flow cell*

FEATURES AND BENEFITS

- Automation of measurements, including the functions of start-up testing and self-diagnostics
- Short analysis cycle time. No sample preparation required
- Determination of carbamates and bicarbonate amines presence in the sample. Monitoring of the absorbent regeneration process
- The possibility of using outside the laboratory, measurements in the mode – at-line, on-site

SPECIFICATION

Amine analyzer based on IROS P01 IR Fourier spectrometer

- Michelson interferometer with self-compensation, not requiring dynamic alignment, gold-plated mirrors
- Moisture proof design of the beam splitter and optical windows from KBr.
- Hermetic design of the HATR module
- Flow measuring cell

Technical specifications

Spectral range	370-7800 cm^{-1}
Spectral resolution	1.0 cm^{-1}
Dimensions	520x370x250 mm
Weight	28 kg

Optical attached modules and accessories

- Ge prism in frame for amine analyzer is an optical element of the HATR module. Heat resistance, resistance to water, alkaline media
- Flow measuring cell: fittings with shut-off valves, minimum internal volume - 2 ml, tightness of the sample injection interface
- Probe for sampling liquid samples with shut-off and control valves. Stainless steel, chemically resistant. Simple installation, conditions for the representative sampling
- Shipping container Chemically inert plastic, common interface for the sampling and samples injection into the flow measuring cell of amines analyzer

Software

- **FSpec** – the basic software of the **IROS Pxx** FTIR spectrometers. Obtaining, analyzing, processing spectra, testing a spectrometer. Windows XP / Vista / 7/10 compatible
- **AmSpec** – software for controlling the operation of the analyzer, with automatic calculation of the MDEA and piperazine content in an aqueous solution

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