CHROMOS

Excellence and Strength:
Solution of analytical needs

Laboratory Gas Chromatography System

chromosGC.com

CHROMOS

About Chromos

Chromos develops and manufactures comprehensive analytical equipment for oil & gas, chemical, petrochemical, environmental and other industries, as well as higher education institutions. The list of Chromos equipment includes: gas and liquid chromatographs, laboratory furniture and peripheral devices – samplers, catalytic furnaces, injectors, heating furnaces.

Being involved in the full production cycle of gas chromatographs – from the idea of determining the components in the gas to installing the device in the laboratory, Chromos strives to optimize the cost of the analytical solution and its subsequent operation.

For these purposes, Chromos invests in:

- **Development.** Based on the study and implementation of promising technologies for determining the component composition, creates new types of detectors that combine the functionality of several in one device.
- **Solution.** It constantly updates the list of analytical solutions in accordance with new methods and standards, as well as initiating the development of new standards itself.
- **Maintenance.** It produces a gas chromatograph in a design, the maintenance of which does not require additional space.
- **Service.** Implements the practice of remote service through the log files of the Chromos software, which allows remote diagnostics of malfunctions in the operation of the device.

Goal of Chromos is to make top digital chromatography technologies as accessible as possible.





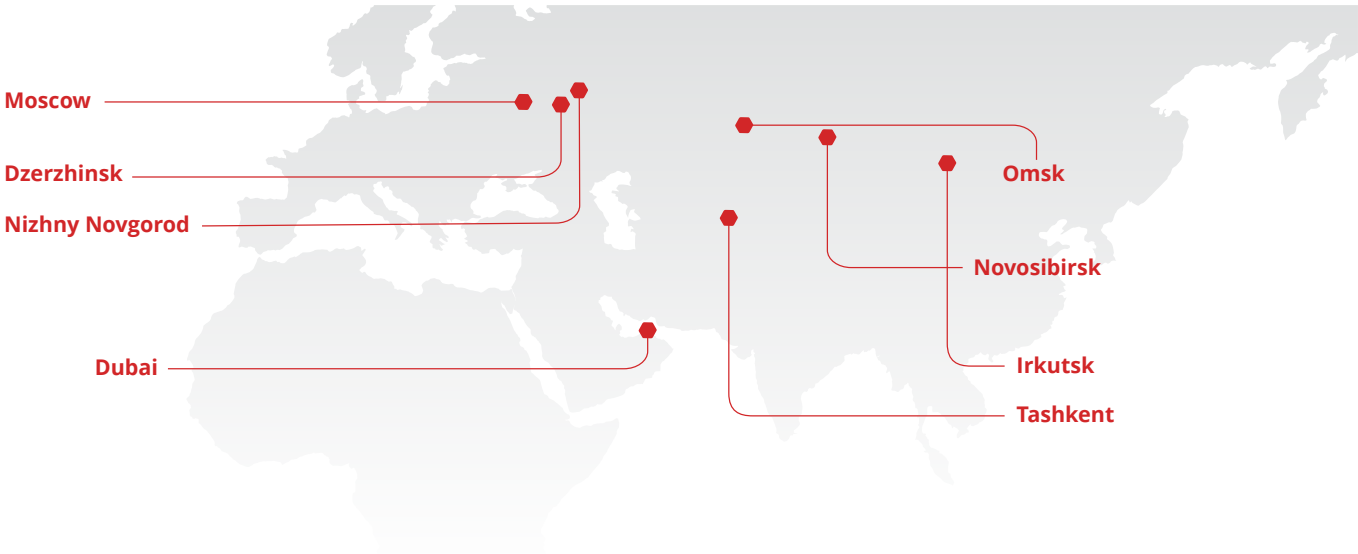






Today, Chromos company is:

- 6 production sites with a total area of over 10,000 square meters in operation and an additional 15,000 square meters under construction across Russia, the United Arab Emirates, and Uzbekistan.
- More than 250 employees worldwide.
- Developed more than 500 Application solutions.
- Network of service centers.
- 3 schools of Analytics Professionals.
- New business development, as the production of chemicals and others.



Licenses and certificates:

CE Certificate.

Occupational health management system ISO 45001 is certified.

Quality management system of the company is ISO 9001 certified.

Environmental management systems of the company is ISO 14001 certified.

Chromos GC configuration

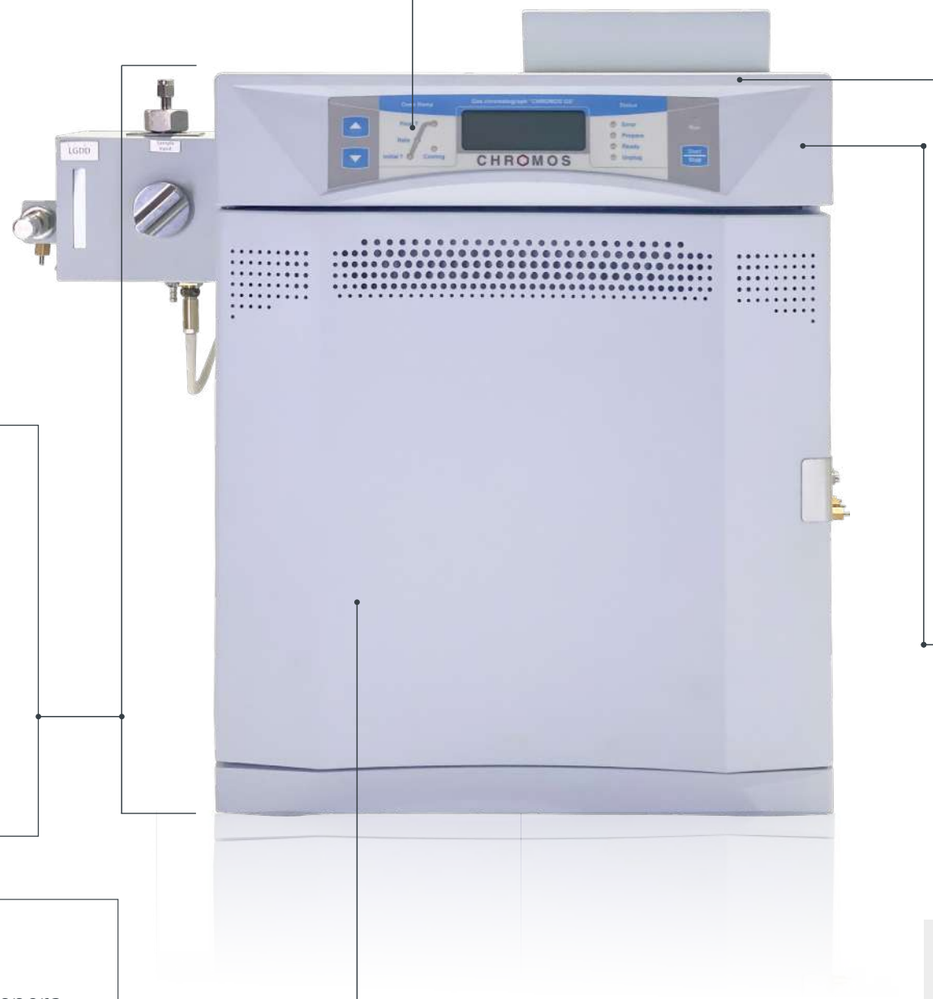
Digital panel

Unit status and oven ratio indication.

Ease of configuration and upgrade

Create a new Solution by installing 1 to 4 detectors any of 18 detectors types and choosing any column or injector.

Basic configuration of GC may vary based on the customer's new analytical issues by changing components or creating chromatograph-based "open" analytical circuits with experimental microreactor units and other devices.



Inlets

- Split/splitless inlet.
- Packed inlet.
- Programmable evaporation inlet. Allows to set up the pressure or temperature. Injection and cooling in column mode.
- Liquid gas injection module. For liquid and liquid gas samples under pressure without degassing.
- Inlet module for unstable gas condensate.

Dimensions

Compact unit of 2 standard sizes:

390 x 480 x 500 mm (WxHxD) at thermostat volume of 14 L,
390 x 480 x 570 mm (WxHxD) at thermostat volume of 19 L.

Chromos GC overall dimensions allow to install up to 4 devices on the same desktop and do not require their movement for maintenance.

Gas sample valve

All switching valves designed for the manual and automated input of gas samples, column switching and back-purging process.

Chromos valves operate for 3-, 4-, 6-, 8-, 10- ports at temperature range up to 220 °C. Valco switch valves operate for 3-, 4-, 6-, 8-, 10-, 12-, 14- ports at at temperature range up to 350 °C.

These valves are equipped with the filters to protect the channels from solid particles and removable injectors.

Main frame. Oven

Design feature of Chromos GC allows to set different temperature conditions in 13 thermostatted zones and install up to 2 ovens.

Temperature of the column thermostat -
T (room) + 2°C - 450°C. With cooling -5°C - 450°C.

Chromos software

Easy control of sample analysis and additional calculations even in remote access mode via the .log status file.

Chromos GC key points

Multiprocessor module system

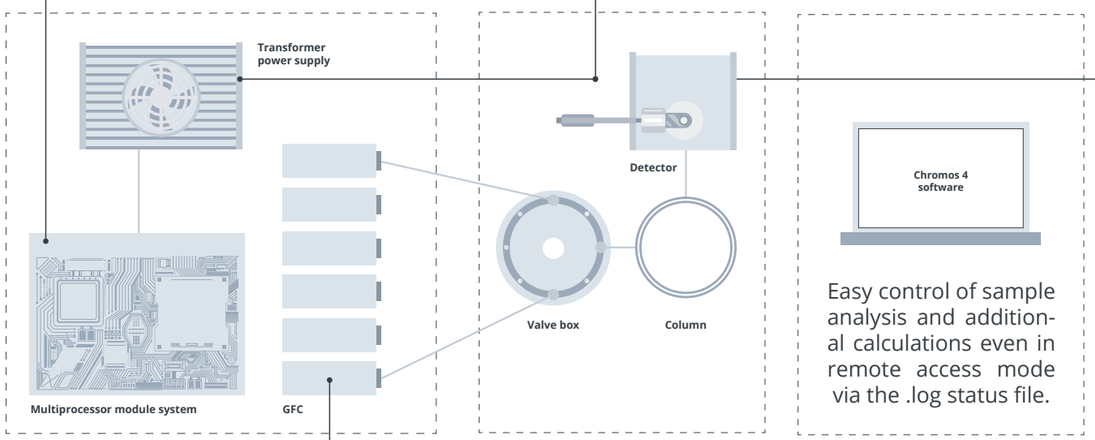
Each module is equipped with a micro-processor and a memory unit that stores all the operating settings.

Control and data transfer between the modules and the central processor are carried out via a digital bus, which reduces signal distortion and acoustic noise.

Transformer power supply

Unlike a pulse power supply using of transformer provides:

- Low energy consumption (<2,5 kVA in operation mode),
- Neutralizing the switch network interferences (500-600 V and above),
- An efficient interference immunity and lower noise level.



Easy control of sample analysis and addition-al calculations even in remote access mode via the .log status file.

Universal Gas Flow Controller (GFC)

Chromos GC allows to implement up to 8 types of gas flow modes among:

- Continuous / Programmed gas flow mode,
- Stable / Programmed pressure mode,
- Continuous / Programmed linear speed mode,
- Gas saving mode,
- Programed flow flame ignition mode.

Maximum flow rate up to 1000 ml /min. Up to 999 flow/pressure setting Minimum pressure setpoint of 0.01 kPa.

18 detectors types for any analytical tasks

FID: Flame ionization detector
High sensitivity for analysis of hydrocarbons compounds. Minimum detection limit up to $1.0 \cdot 10^{-12}$ gS/s by heptane or propane.

TCD (flow, semi diffusion, micro, high sensitivity, special) Thermal conductivity detector
Universal detector for analysis of organic compounds and gases. Minimum detection limit up to $8.0 \cdot 10^{-1}$ g/cm^3.

FPD: Flame photometric detector
Detector for phosphorus and sulfur containing in a compound. Minimum detection limit up to $1.0 \cdot 10^{-13}$ g/s.

ECD: Electron capture detector
Detector for halogenated organic compounds. Minimum detection limit up to $1.7 \cdot 10^{-14}$ g/s.

FTD: Flame thermoionic detector
Minimum detection limit up to $1.4 \cdot 10^{-14}$ gR/s.

CCD: Catalytic combustion detector
Detector for hydrogen and oxygen. Minimum detection limit up to $5.0 \cdot 10^{-10}$ g/cm^3.

PID: Photoionization detector
Detector for mono and polyaromatic hydrocarbons. Minimum detection limit up to $2.0 \cdot 10^{-13}$ g/s.

PDD: Pulsed discharge detector
Detector for helium ionization and electron capturing. Minimum detection limit up to $2.2 \cdot 10^{-13}$ g/s.

TCHD: Thermo chemical detector
Minimum detection limit up to $5 \cdot 10^{-11}$ g/cm^3.

CLD: Chemiluminescence detector
Minimum detection limit up to $5.0 \cdot 10^{-13}$ gS/s.

PFPD: Pulsed Flame Photometric Detector Minimum detection limit up to $2.0 \cdot 10^{-12}$ gS/s.

PED: Plasma emission detector
Minimum detection limit up to $5.0 \cdot 10^{-1}$ g/cm^3.

DID: Discharge ionization detector
Minimum detection limit up to $6.0 \cdot 10^{-13}$ g/cm^3.

GC-MS: Mass spectrometry detector
Universal detector for organic compounds.
Identification via library with S/N ratio up 1500:1.

Software

Chromos software was designed for all competence level users and has simple and clear interface, providing a minimization of the operator's effort for obtaining the final result.

Chromos software makes it possible to set the chromatograph parameters, control them in real time, and process the collected. In Chromos environment you will use two main components - Ingredient Method (data acquisition) and Chromatogram (data analysis).

Method (data acquisition)

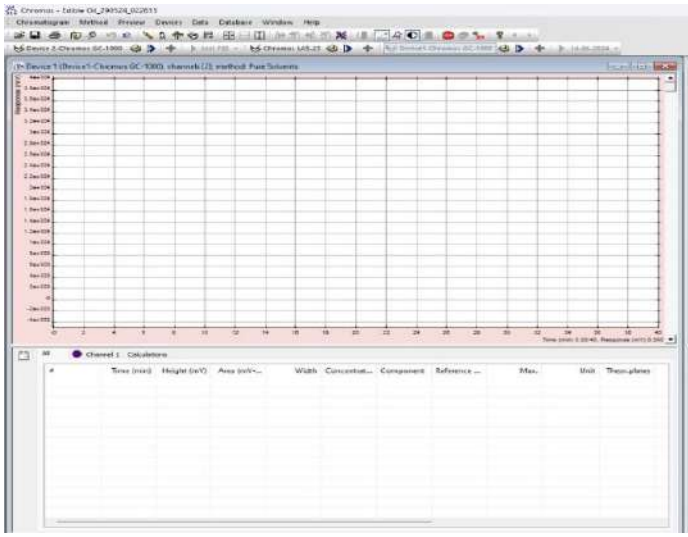
This method describes the operation modes of the chromatograph, quantitative and qualitative calculations, conditions for receiving data and further processing the obtained chromatogram up to the calculation of concentration.

Chromatogram (data analysis)

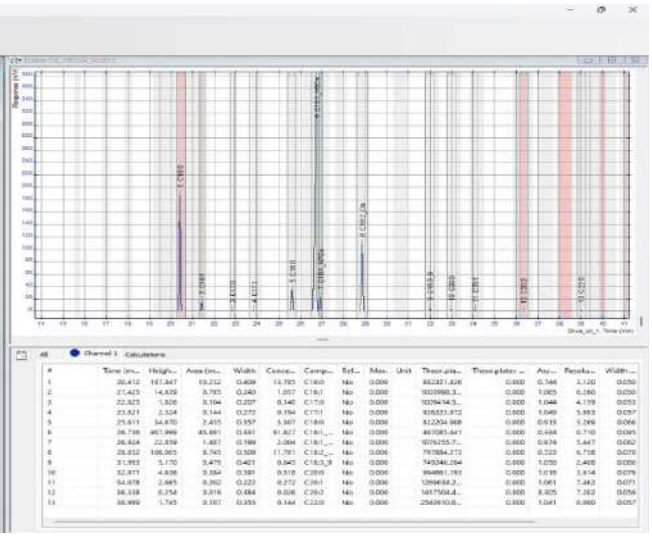
Chromatogram components includes the chromatogram curve with peaks marked and, if there is a marking of the chromatogram, the peak table that indicates the times of peak emergence, height, area, the presence of a reference point, concentration, units of measurement and names of the peaks. If some peaks are grouped, then the table shows the total height, area and concentration for each group.

Additional Calculation software

Chromos additional calculation software allows to find new solutions and calculate analysis for customer's applications as: detailed hydrocarbon analysis of gasoline ASTM D6730, analysis of refinery gas UOP 539, natural gas, calculation of concentrations, physical-chemical parameters and methane number, simulated distillation of oil and oil products, SIMDIST ASTM D7169, determination of the composition of LPG and calculation of density, pressure, octane number, water in transformer oil, formation gas, determination of oil products in water.



Method (data acquisition)



Chromatogram (data analysis)

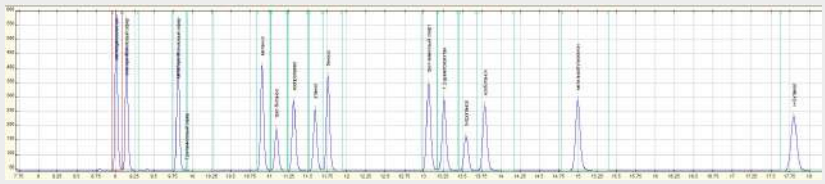
Application – Chromatogram

Solutions that achieve the maximum performance, robustness and cost efficiency or all requirements of all customers

Oil and gas

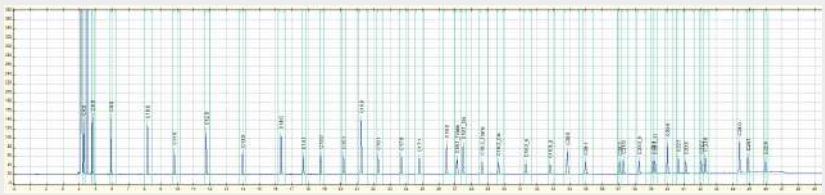
Our primary concern is our ability to implement and achieve most applications requirements for natural gas, refineries, liquefied gas, crude oil and petrochemical products at following Applications:

ASTM D1945, D2163, D2887, D3606, D3710, D4815, D5134, D5580, D6729, D6730, D6730, D6733, D7423, GPA 2261, GPA 2286, ISO 6974, ISO 7941.



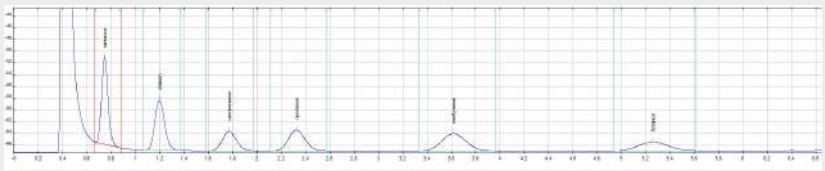
Food and Beverages

Training and application laboratories in factories challenge us to achieve high-quality standard methods in the food and beverage industry.



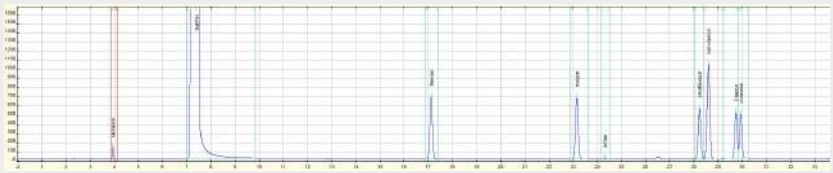
Forensic labs

Accuracy and precision is one of our aims to detect and identify (drug abuse and explosive materials). This is our way to succeed in providing our services to criminal labs.



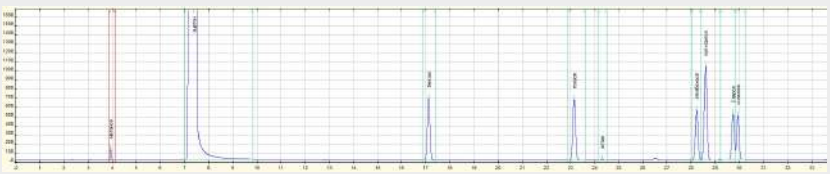
Environment

Fast results, highest precision and maximum reliability is our target for monitoring environmental of water and air pollutant.



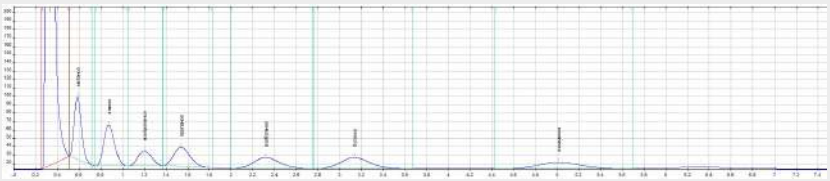
Packaging & recycling

Chromos aims to implement all applications for recycling, packaging and plastics, (acetaldehyde, benzene, limonene and etc.). Plastic, Recycling and packaging industry one of the large markets in the world now.



Pharmaceutical industry

The pharmaceutical industry is of utmost importance to us, and precision and quality control are a basic requirement for all of our customers, including IQ/OQ/PQ protocols.



Additional Equipment

Automatic Headspace Sampler “Chromos DRP-6”

Designed for the analysis of volatile components Electronic control of the tightness of vessels with a sample Rapid achievement of phase equilibrium. Multiple (6-8 times) pneumatic dosing of equilibrium vapor Heated Gas connection lines Temperature: from 30°C to 220°C.

3000A Autosampler

Designed for GC and GC/MS applications. Empowered by Artificial Intelligence, it offers superior performances, high reliability and unmatched usability by intuitive operations.

Zero air generator catalytic oven

Can be used for remove Oxygen and THC from air and carrier gases.

Packed and capillary column

Packed and capillary column for all applications in all sectors Packed column length up to 12 meters with variant outer DI. Capillary column length up to 105 m.

Oil-free air compressor

Designed for feeding compressed air. Flow rate: up to 2.5 l/min. Remarkable for their silent operation. The compressor is equipped with a pressure regulator.

Automatic liquid Sampler “Chromos DALS-23”

Modular design, reliable technical solutions. Multidimensional injection for 3 inlets. Simple input, sandwich, solvent sandwich. Automated rinsing. Quick and easy syringe replacement.

Hydrogen Generator

Designed for the generation of pure hydrogen (99.999%) by the electrolysis of distilled water. Supplied with a water level indicator. Volume Production capacity: (6/8/12/16/30/60/200 l/hour).
Output pressure: Up to 0.6 MPa (6 atm).

Column thermostat cooling system

Allows to cool column up to -5°C.
No cryogenic gas.

Automatic Thermal Desorption

Analysis VOCs in air or solid materials, can be used for a variety of applications including air, toys, building materials, car cabins and food. Analysis of very low ppb level of VOCs with up to 72 sorbent tubes.

Calibration gas standards

Designed for the calibration and gaging of the chromatograph in accordance with the official methods for different type of metal (carbon steel, aluminum, stainless steel) up to 10 liters. Supplied with leak valve and fine control vent valve. All calibration gas cylinders supplied with the manufacturer’s certificate.

Contacts

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