

# $\mu$ GC-3000

## Online Portable Micro Gas Chromatograph



EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

**Analytical Technologies Limited**

An ISO 9001 Certified Company

[www.analyticalgroup.net](http://www.analyticalgroup.net)

## ►► Technical Specifications:

- Composition analysis by micro gas chromatography
- Designed for continuous monitoring & system integration
- Compact and OEM configurable up to 4 GC ovens
- Fast and accurate
- Low consumption and easy maintenance
- 3-stream selector integrated
- Calculations included
- Automatic sequence programming, autocalibration

## ►► Specifications:

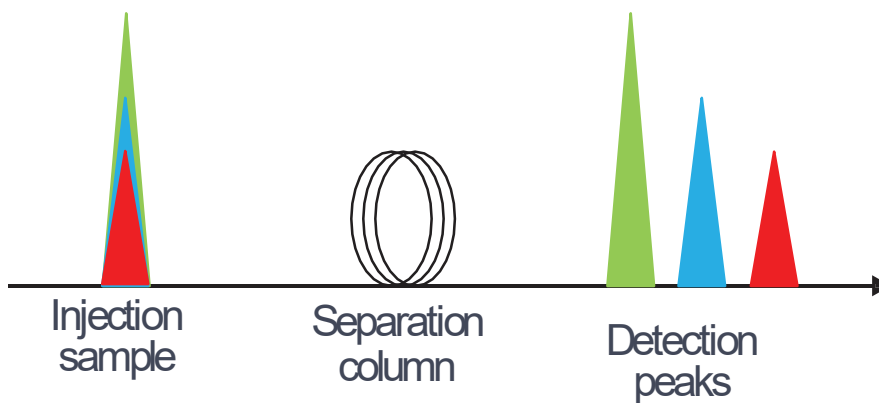
<b>Operating temperature</b>	5 ... 55 °C / 41 ... 131 °F
<b>Storage temperature</b>	-20 ... 60 °C / -4 ... 140 °F
<b>Moisture</b>	5 ... 95 %
<b>Power supply</b>	20 ... 28 VDC
<b>Power consumption</b>	75 W max
<b>Dimensions</b>	250 x 182 x 96 mm / 9.8 x 7.2 x 3.8 "
<b>Weight</b>	< 8 kg / 17.6 lb.
<b>Gas ports</b>	1/16" VICI
<b>Carrier gas</b>	He, Ar, N <sub>2</sub> , or H <sub>2</sub>
<b>Carrier gas input pressure</b>	450 ± 5% kPa
<b>Carrier gas consumption</b>	2-5 ml/min per GC channel
<b>Sampling</b>	Pressurized or atmospheric (integrated pump)
<b>Sample pressure</b>	10 ... 200 kPa
<b>Sample streams</b>	3 (optional more)
<b>Detectors</b>	Foreflush and backflush micro TCD
<b>Detection limit</b>	500 ppb ... 100% (application dependent)
<b>Cycle time</b>	15 ... 60 s (typical) <0.05 % RSD
<b>Repeatability</b>	(typical)
<b>Communications supported</b>	Digital I/O, RS232, RS485, Ethernet
<b>Protocols supported</b>	Modbus / TCP
<b>Memory storage</b>	Up to 256 GB
<b>Conducted emission, test with a LISN</b>	EN 55011 (2009) + A1 (2010)
<b>Radiated emission up to 1 GHz (SAC)</b>	EN 55011 (2009) + A1 (2010)
<b>ESD</b>	EN-IEC 61000-4-2 (2009)
<b>Radiated Immunity</b>	EN-IEC 61000-4-3 (2006) + A1 (2008) + A2 (2010)
<b>EFT</b>	EN-IEC 61000-4-4 (2012)
<b>Surge</b>	EN-IEC 61000-4-5 (2014)
<b>Conducted Immunity</b>	EN-IEC 61000-4-6 (2014)
<b>Power frequency magnetic field</b>	EN-IEC 61000-4-8 (2010)

## ►► Gas Chromatography

### GC principle:

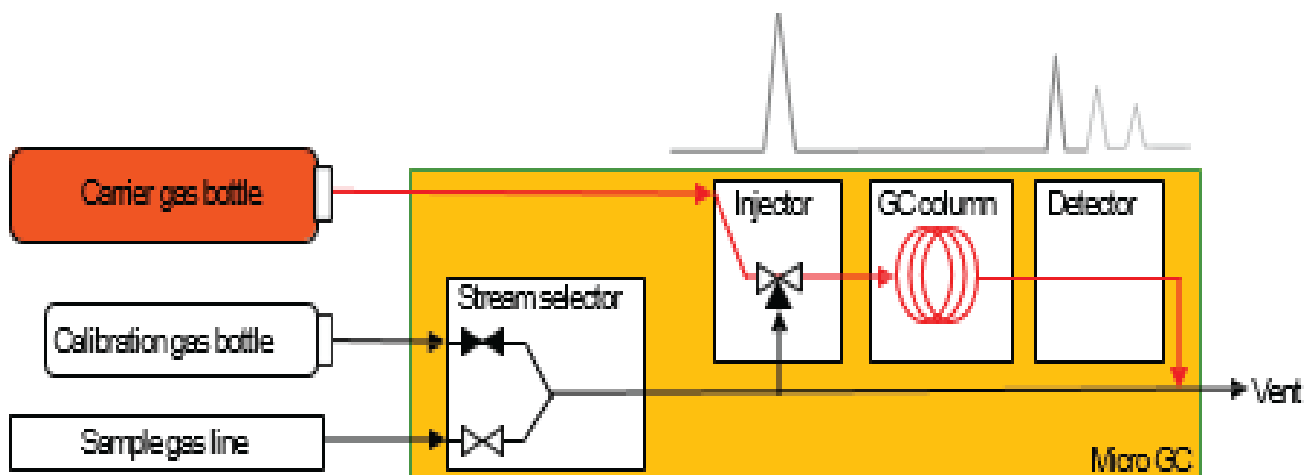
Gas Chromatography = separation and detection of gas components in a gas mixture

- 1) Injection of sample peak in carrier flow
- 2) Separation of gas components in heated GC column
- 3) Detection in time by separated peak components



### GC instrument:

- Continuous flow of SAMPLE gas and CARRIER gas
- Gas components separated in time flow out 1 by 1
- Component and concentration definition by calibration gas
- Different GC columns for different gas components



## Online GC



- micro GC
- Lab or automation
- Module for system integration
- Potential as lab instrument (versatile)

## Replaceable cartridge



- Cartridge contains 1 -4 GC channels with:
  - Injectors (chip)
  - Heated columns
  - Detectors (chips)
- More (types of) columns => more gas components

## Connections



Electrical connections



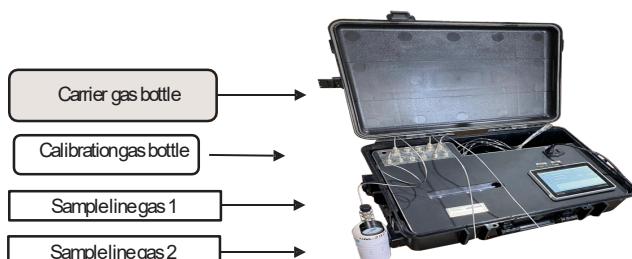
Gas connections

## General usage

### 1. Set method parameters with PC Software, program sequence



### 2. Run the GC analyzer automatic:



### DCS Data system



## CVP

- Compact = small, low weight, easy shippable, easy to built-in
- Fast = 20 seconds.. 2 minutes per analysis
- Functional = up to 4 parallel GC analysis, since 4 columns (channels)
- Robust = reliable, reproducible, long lifetime, tubeless!
- Support = “just” change a cartridge, have a back -up locally on the shelf

## Specification

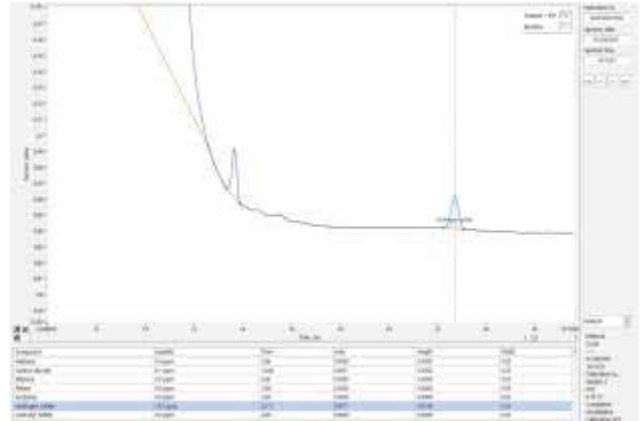
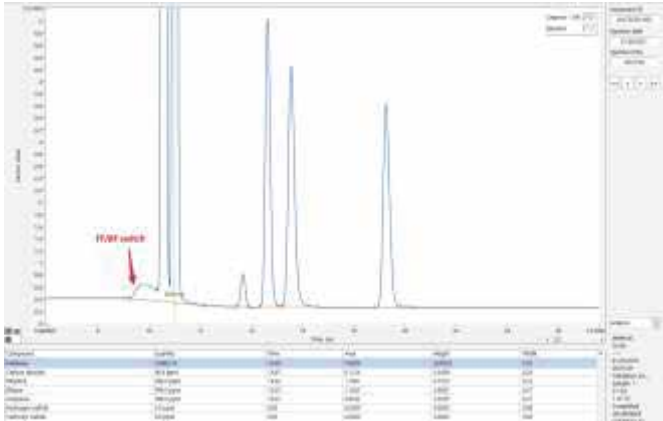
- Only for gases, typical for hydrocarbons, permanent gases, sulphurs
- 1 ppm – 100%, RSD 0.1%, ‘whole spectrum of gas composition’
- Often built in a system, can be applied as an unmanned continuous monitor
- Fast and accurate : 20 second / run
- Automatic sequence programming, autocalibration
- Can also be used in a laboratory, connected to a PC

## gas application examples

### Applications

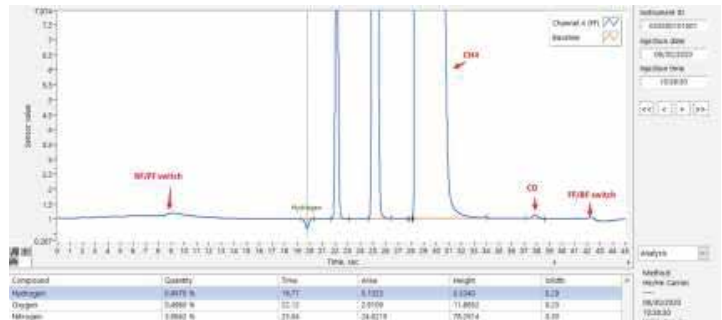
- Coal Mining Gases like Methane,  $\text{CO}_2$ ,  $\text{O}_2$ ,  $\text{H}_2$ ,  $\text{CO}$ ,  $\text{H}_2\text{S}$  & Higher Hydrocarbons  $\text{C}_2\text{H}_2$  (Acetylene),  $\text{C}_2\text{H}_4$  (Ethylene),  $\text{C}_2\text{H}_6$  (Ethane).
- Coal Mining Applications hydrogen ( $\text{H}_2$ ), Carbon dioxide ( $\text{CO}_2$ ), carbon monoxide ( $\text{CO}$ ), Nitrogen oxides ( $\text{NO}_x$ ), methane ( $\text{CH}_4$ ), nitrogen ( $\text{N}_2$ ), hydrogen sulfide ( $\text{H}_2\text{S}$ )
- Environmental Pollution Control
- Natural gas analysis:  $\text{C}_6+$  for caloric value / BTU, sulphurs, odorants, BTX
- Biogas: Methane,  $\text{CO}_2$ , sulphurs
- Flare gas:  $\text{H}_2$ ,  $\text{O}_2$  in burnt natural gas
- Exhaust gas for carbonizing: Hydrocarbons, sulphurs, BTX
- Process gas: running in factory’s, VOC;s and permanent gases,
- TOGA/DGA (Transformer Oil Gas Analysis): Hydrocarbons, ethylene

## gas application examples



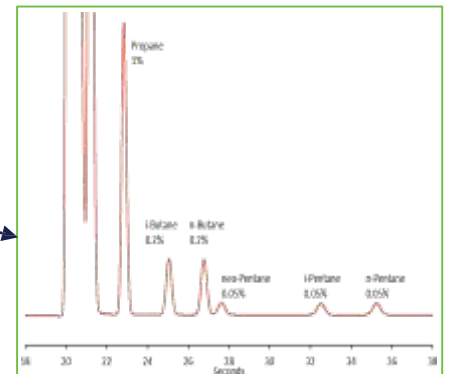
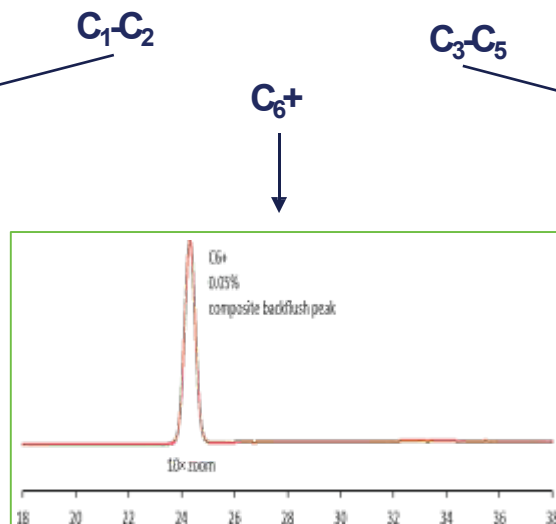
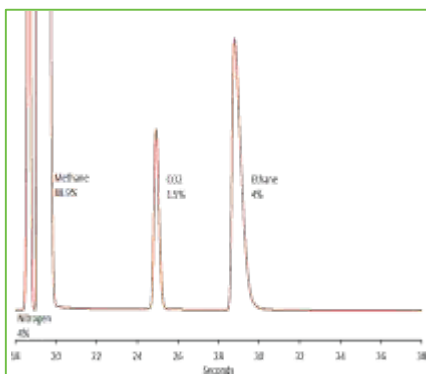
### Syngas components

- Methane, Ethylene, Acetylene, Ethane
- CO<sub>2</sub>
- H<sub>2</sub>, N<sub>2</sub>, CO



## gas application examples

### Example of natural gas chromatograms



## Various natural gas applications

- Natural gas analysis standard: C<sub>6</sub>+ for caloric value
- Natural gas analysis extended: C<sub>6</sub>+ for caloric value & hydrogen/oxygen
- Natural gas analysis extended: C<sub>9</sub>+ for caloric value
- Natural gas analysis extended: C<sub>6/9</sub>+ & sulfurs
- Natural gas analysis extended: C<sub>6/9</sub>+ & BTEX
- Natural gas analysis extended: C<sub>6/9</sub>+ & odorants
- Biogas: Methane, CO<sub>2</sub>, sulfurs
- Flare gas: H<sub>2</sub>, O<sub>2</sub> in burnt natural gas



## HPLC Servicing, Validation, Trainings and Preventive Maintenance :

**HPLC Servicing** :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

**Trainings** :We also take up preventive Maintenance to reduce downtime of HPLC's Trainings.

**AMC's/CMC** :AMC's/CMC :We offer user training both in-House and at customer sites on HPLC principles, operations, trouble-shooting.

**Validations** :Validations :We have protocols for carrying out periodic Validations as per GLP/GMP/USFDA norms.

**Instruments** :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.



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## Our Products & Technologies



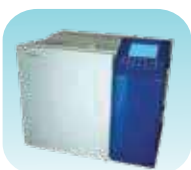
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Infra FTIR



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Chromatograph  
3007



Optima Gas  
Chromatograph  
2979 Plus



Flash  
Chromatograph



Atomic Absorption  
Spectrophotometer



Liquid Particle  
Counter



Optical Emission  
Spectrophotometer



DSC/TGA



Semi Auto Bio  
Chemistry Analyzer



HEMA 2062  
Hematology  
Analyzer



Micro Plate  
Reader/Washer



URINOVA 2800  
Urine Analyzer



Total Organic  
Carbon 3800



Fully Automated  
CLIA



NOVA-2100  
Chemistry Analyzer



PCR/Gradient PCR/  
RTPCR



TOC  
Analyzer



Laser Particle  
Size Analyzer



Ion Chromatograph



Water purification  
system



## Regulatory compliances



## Corporate Social Responsibility

Analytical Foundation is a nonprofit organization (NGO) found for the purpose of:



**Analytical**  
**Foundation**

1. Research & Innovation Scientist's awards/QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personalities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at [Info@analyticalfoundation.org](mailto:Info@analyticalfoundation.org)

2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

## Reach us @



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