



**ELEMENTALE**  
ENTERPRISES INC  
SUSTAINABLE PROCESS SOLUTIONS



# NEMS GC MODULAR MULTI GAS ANALYZER

For Industrial And Process Use

## HOW IT WORKS:

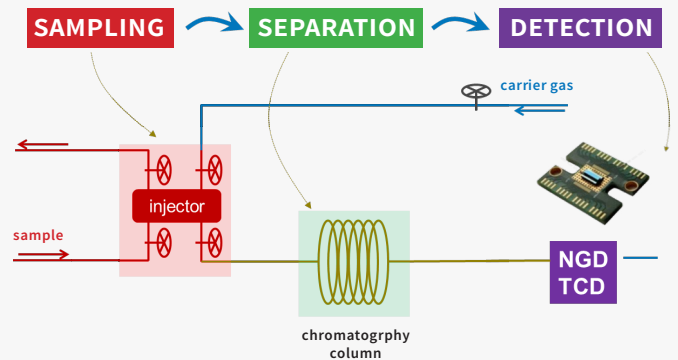
Our highly miniaturized multi-gas analyzer systems are based on integration-on-silicon of traditional analytical chains: **sampling**; injection of gases; **separation** of complex gas mixtures to enhance specificity; **detection**; identification; and quantification of each mixture compound.

## WHY NEMS?

Nano Electro-Mechanical Systems (NEMS) provide innovative gas chromatography (GC) solutions for real-time, on the spot sampling and analyzing. **Elementale Enterprises** has partnered with APIX Analytics to bring state-of-the art miniaturized GC for accurate measurements of liquid and gas streams. Through the use of Plug & Play modules, these systems are easy to install, use, maintain, and customize.

## ADVANTAGES OF NEMS GC TECHNOLOGY:

- » Miniaturized GC system; smaller footprint and less utilities used
- » Durable Plug & Play GC modules for flexibility, expandability, and ease of use
- » Fast analysis time—less than two (2) minutes
- » Flexibility; can measure up to four (4) measuring points
- » Can measure up to C41+
- » Low maintenance; increased uptime
- » On-demand or automatic calibration
- » Flexible carrier gas: Ar, He, H2, N2
- » Touchscreen panel and/or WIFI options



### COMPONENTS:

- ✓ A mechanical injection system based on a diaphragm valve
- ✓ A temperature-regulated guard column (depending on the nature of the analytical modules)
- ✓ A temperature-regulated GC capillary column
- ✓ A micro-TCD (Thermal Conductivity Detector) detector or NGD (Nano Gravimetric Detector) detector with silicon technology



### CERTIFICATIONS:

ATEX II 2 G EX DB IIc T5 GB | IECEx |  
OIML R140 / WELLMEC / ISO6976

### SPECIFICATIONS:

**ChromEx 200**  
485 x 405 x 280 mm (19" 4U) • 30,4 kg

**ChromEx 400**  
596 x 526 x 290 mm • 39.2 kg  
100 – 240V AC, 50 – 60 Hz  
150W consumption\* (steady state)  
Carrier gas pressure: 4 bar  
Sample gas pressure: 30-500 mbar  
Carrier gas options (He, H2, N2, Ar)  
Up to 2/4 analytical modules in one package  
Up to 2mL/min/module carrier gas  
Up to 2mL/min/module sample gas  
Operating T°C range: -10 to 40°C  
Module Operating T°C range: up to 300°C (depending upon module)  
Noise emission: 45 dB

## ✓ APPLICATIONS INCLUDE:

NATURAL GAS ANALYSIS      FLARE STACK ANALYSIS  
BIOMETHANE ANALYSIS      SPECIALTY GASES ANALYSIS  
PETROCHEMICAL ANALYSIS

## DETECTION CAPABILITY:

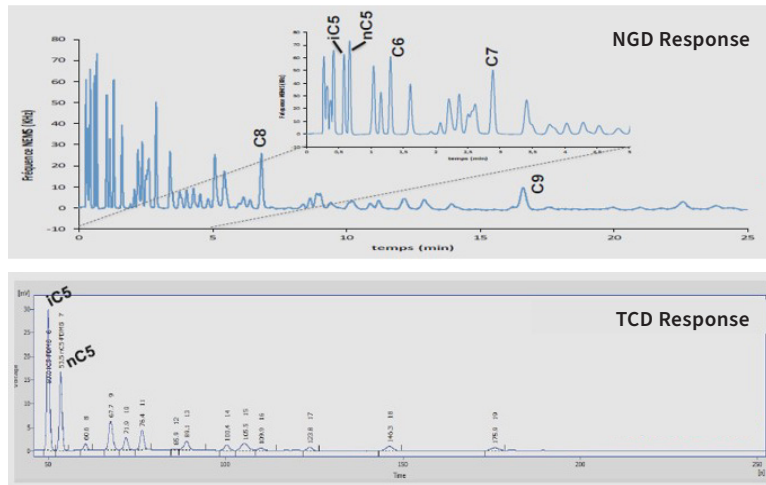
- Calorific Value – H2 Fuel Blending
- BioGas – Gas to Methanol
- THT, H2S, TMB – Odorization
- Alkanes, Alkenes
- Gas Purity – O2, H2, N2
- Ethylene, Propylene
- And Many More...

# WIDE SPECTRUM OF ANALYSIS FROM HYDROGEN TO HEAVY OILS

## » NGD vs TCD COUPLING

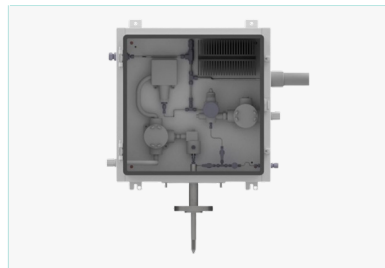
**NGD** The **Nano-Gravimetric Detection (NGD)** technology provides a high sensitivity (sub ppm) on heavier gaseous compounds up to C12 and allows temperature ramping as needed. NGD sensitivity performance allows detection of liquid compounds (up to C40) and gives access to many sectors of petrochemical applications (kerosene, gasoil, petroleum fractions, etc.)

**TCD** The **Thermal Conductivity Detector (TCD)** technology provides a high sensitivity (of the order of ppm) over the entire range of permanent gases and heavy compounds up to C6+, with a high speed of analysis. The typical duration of a measurement is less than two (2) minutes.



## OPTIONAL TEMPERATURE-REGULATED VIV PROBE ASSEMBLY

As a complete system, **Elementale Enterprises'** proprietary Vaporizing Regulator + Sample Probe allows for precise temperature control to eliminate Joule-Thomson Effects. This coupled with our Saguaro Probe with VIV treatment ensures accurate and speedy response of the analyzer.



**Vaporizing Probe**

- optional VIV probe and vaporizer

**ChromPix**

- multi-gas analyzer
- with on-board computer

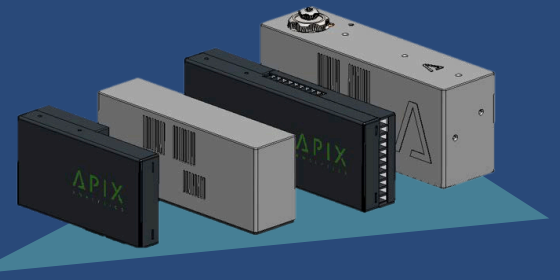
**ChromEx**

- multi-gas process; hazardous area
- wireless measurement (optional)

**AlphaPix | TwinPix**

- liquid & gas
- very low concentration
- transportable

## PLUG & PLAY GC MODULES



Plug & Play modules specially developed for application-specific family of samples from natural gas analysis (up to C6) and HHV measurement to liquid samples such as petroleum and/or diesel fuels.

The modules are fully compatible with a ChromPix, ChromEx, and TwinPix analyzer.

### THE MODULE EMBEDS:

- » High temperature injector that can be heated from 160°C to 300°C
- » TCD detector to measure light compounds from N2 to C6
- » NGD detector to measure gaseous or liquid compounds from C7 to C41
- » Up to a 30m capillary column
- » GC temperature ramp: max temperature 300°C with a maximum heating rate of 100°C/min. Fast cooling rate 100°C/min to minimize analysis cycle time.
- » Integrates GC backflush
- » Reduced power consumption and gas consumption (carrier and sample)
- » Ultra-fast cycling time analysis

