

Process application

Chromatotec®

Outline

- Pure gases market
- Products – Pure gases
- Price list
- Conclusion



Pure gases market

- Different kind of applications:
 - Food industry (CO₂ quality control)
 - Medical (e.g. oxygen)
 - Clean room (electronic devices production)
 - Nuclear power plant (different applications)
 - Pure gases manufacturers (Air Liquide, Messer,...)



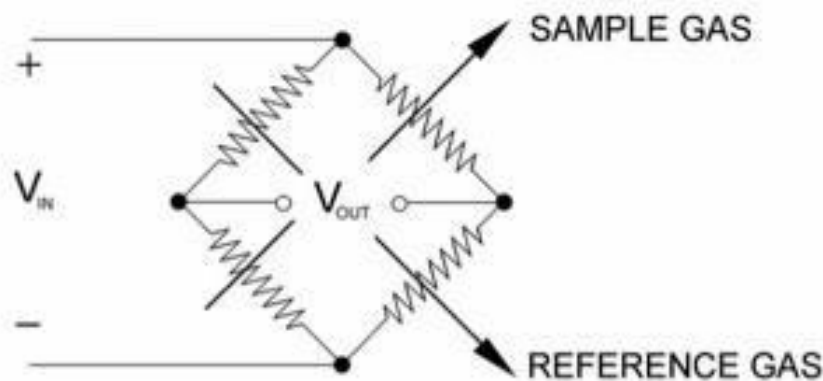
Products – Pure gases

- Impurities in Pure gases
 - chromArgon
 - Detector: Thermal Conductivity Detector (TCD)
 - Carrier gas: Argon
 - Sampling loop
 - Sensibility: low ppm
 - Possible gases to be analysed:
 - Ne / H₂ / He / N₂ / O₂ / CO₂ / CO / CH₄



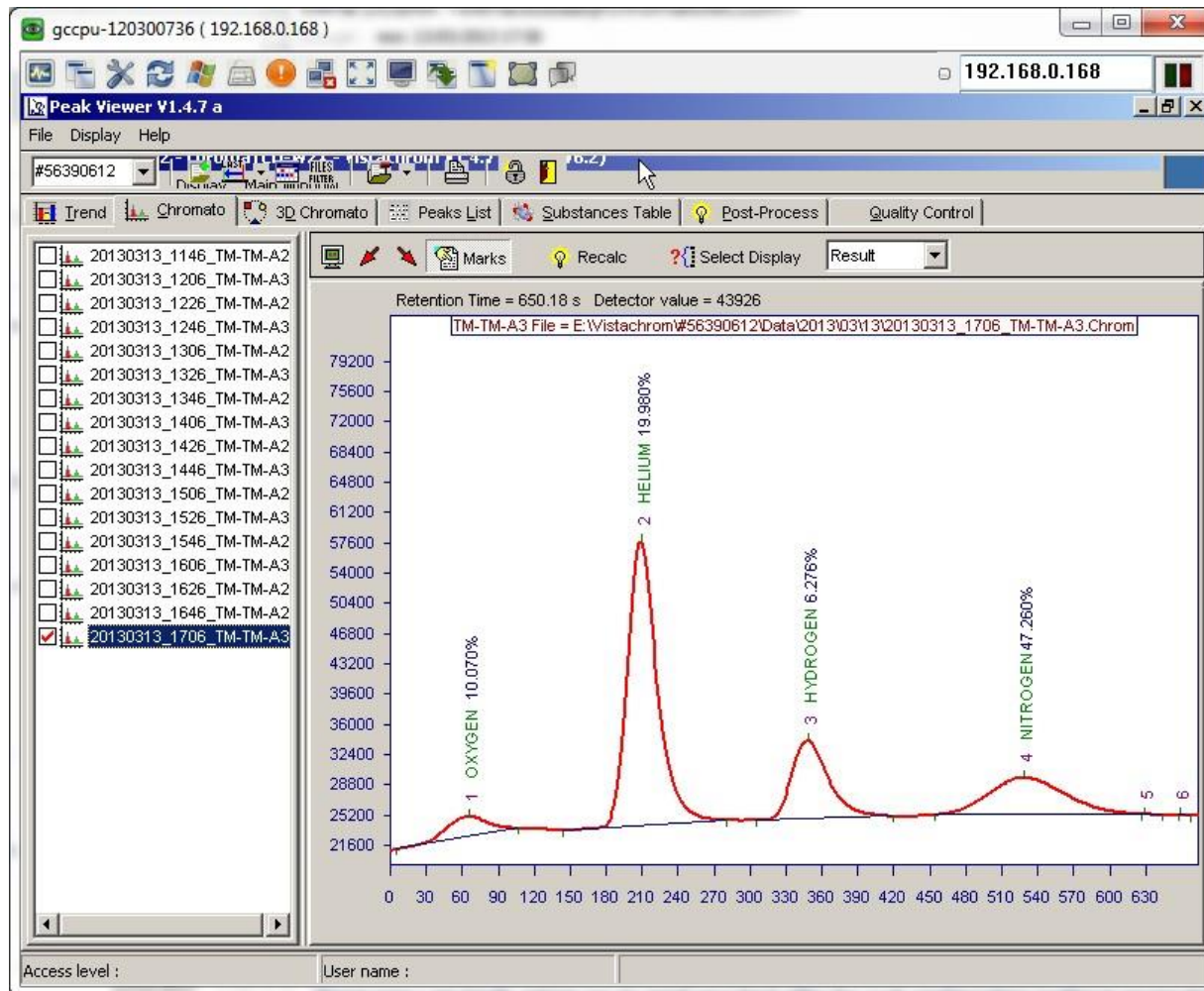
chromArgon
Ref: C41022

Thermal Conductivity Detector



- The Thermal Conductivity Detector (TCD) can detect all kind of compounds.
- The Wheatstone bridge is made of 4 Tungsten-Rhenium wires. It works with **constant current** or **constant voltage**. With the detector, a thermal conductivity difference between the reference cell (carrier gas) and the measure cell (outlet of the column) is measured.
- This value is transferred to an electrometer and the generated signal is proportional to the compounds concentration in the sample.

chromArgon application

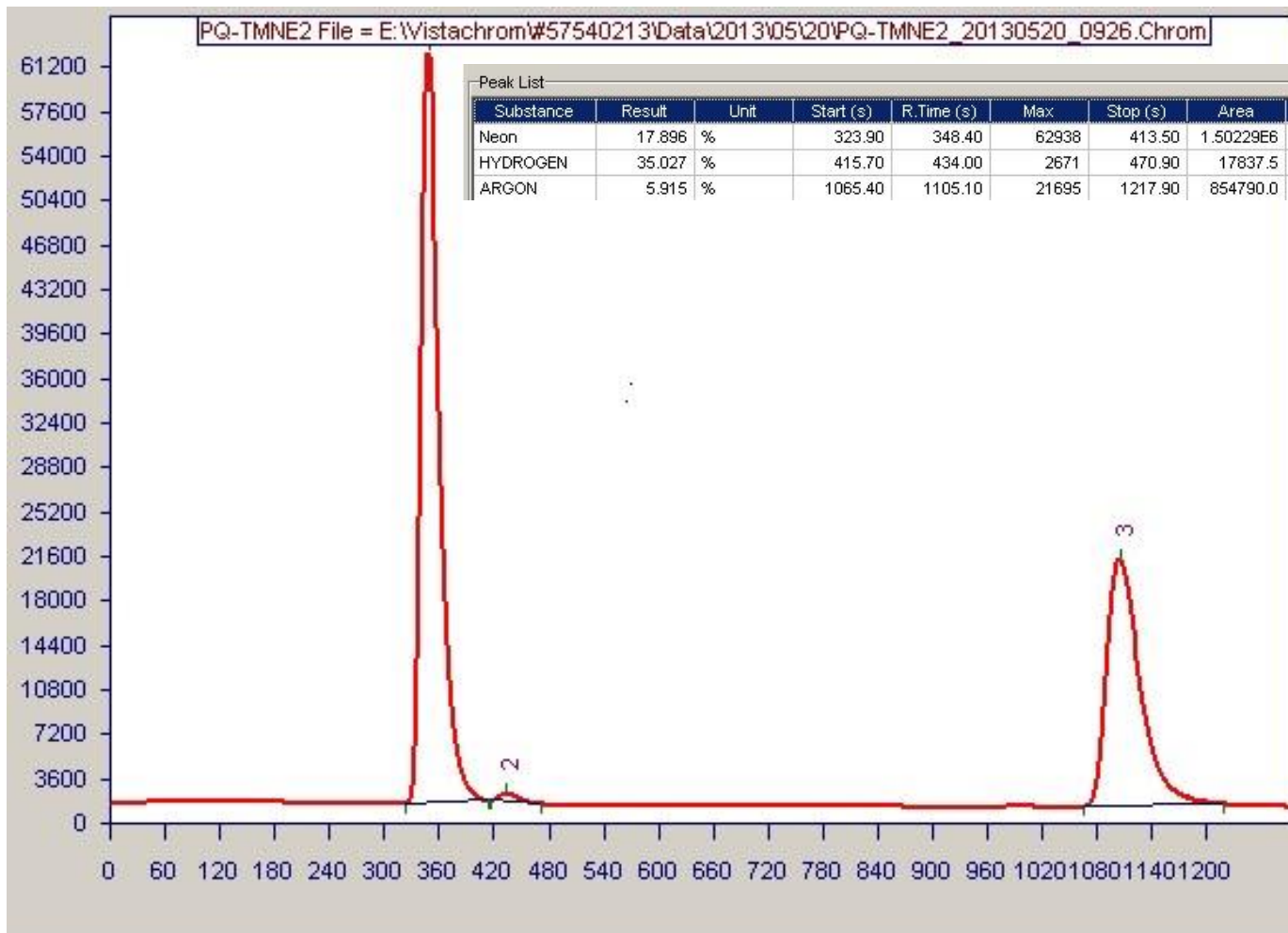


Products – Pure gases

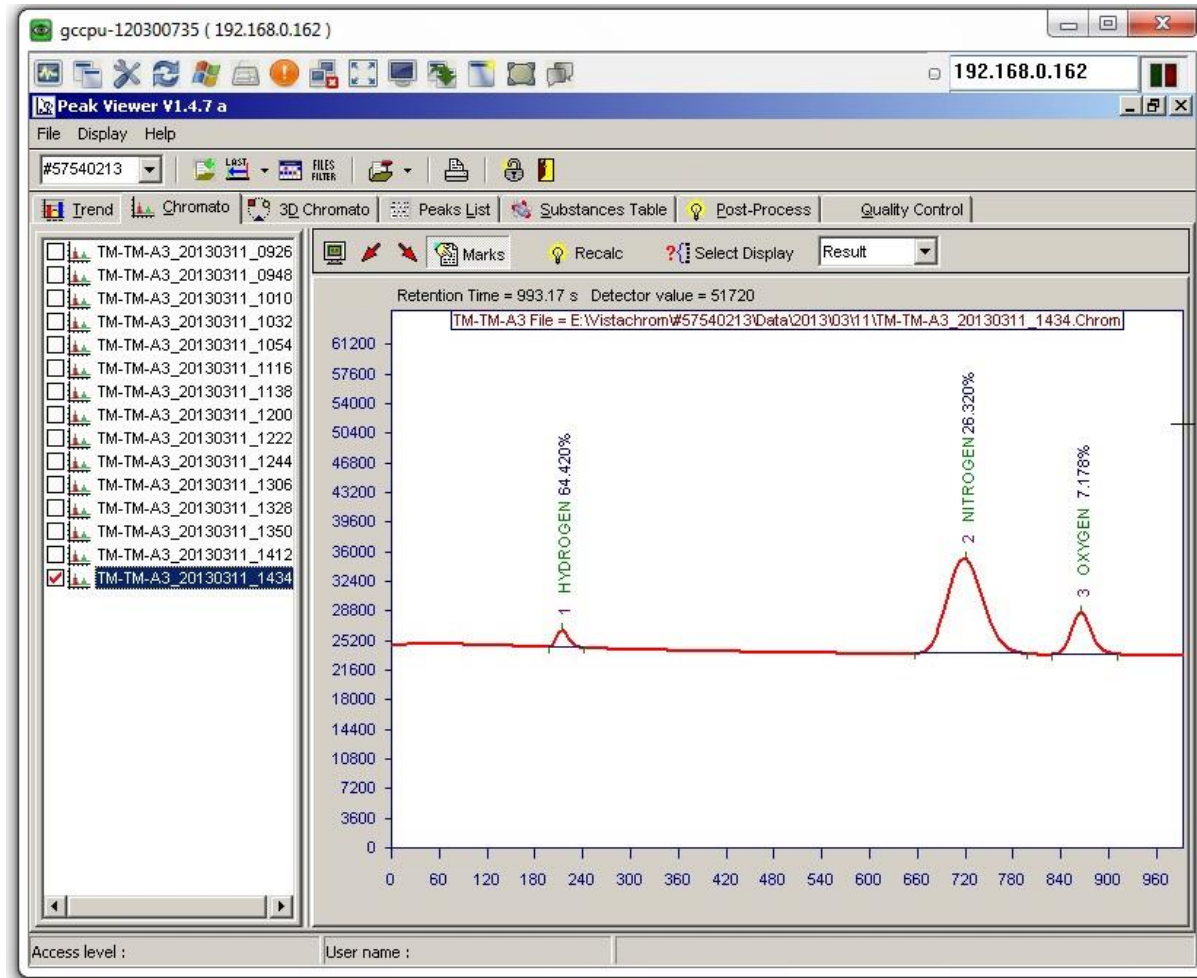
- Impurities in Pure gases
 - chromaTCD
 - Detector: Thermal Conductivity Detector (TCD)
 - Carrier gas: Helium
 - Sampling loop
 - Sensibility: low ppm
 - Possible gases to be analysed:
 - Ne / H₂ / N₂ / Ar + O₂ / CO₂ / CO / CH₄



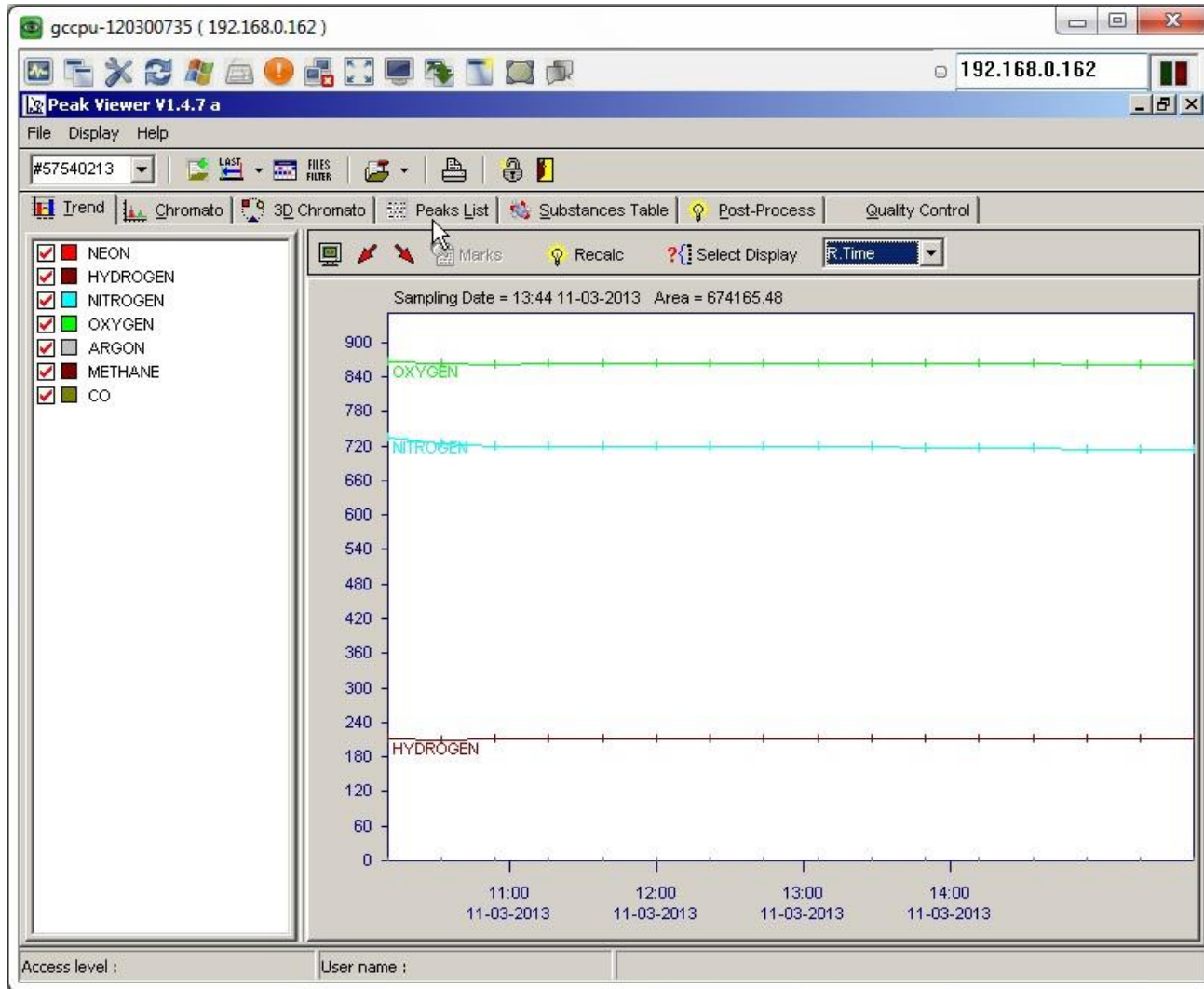
chromaTCD application Ne/H2



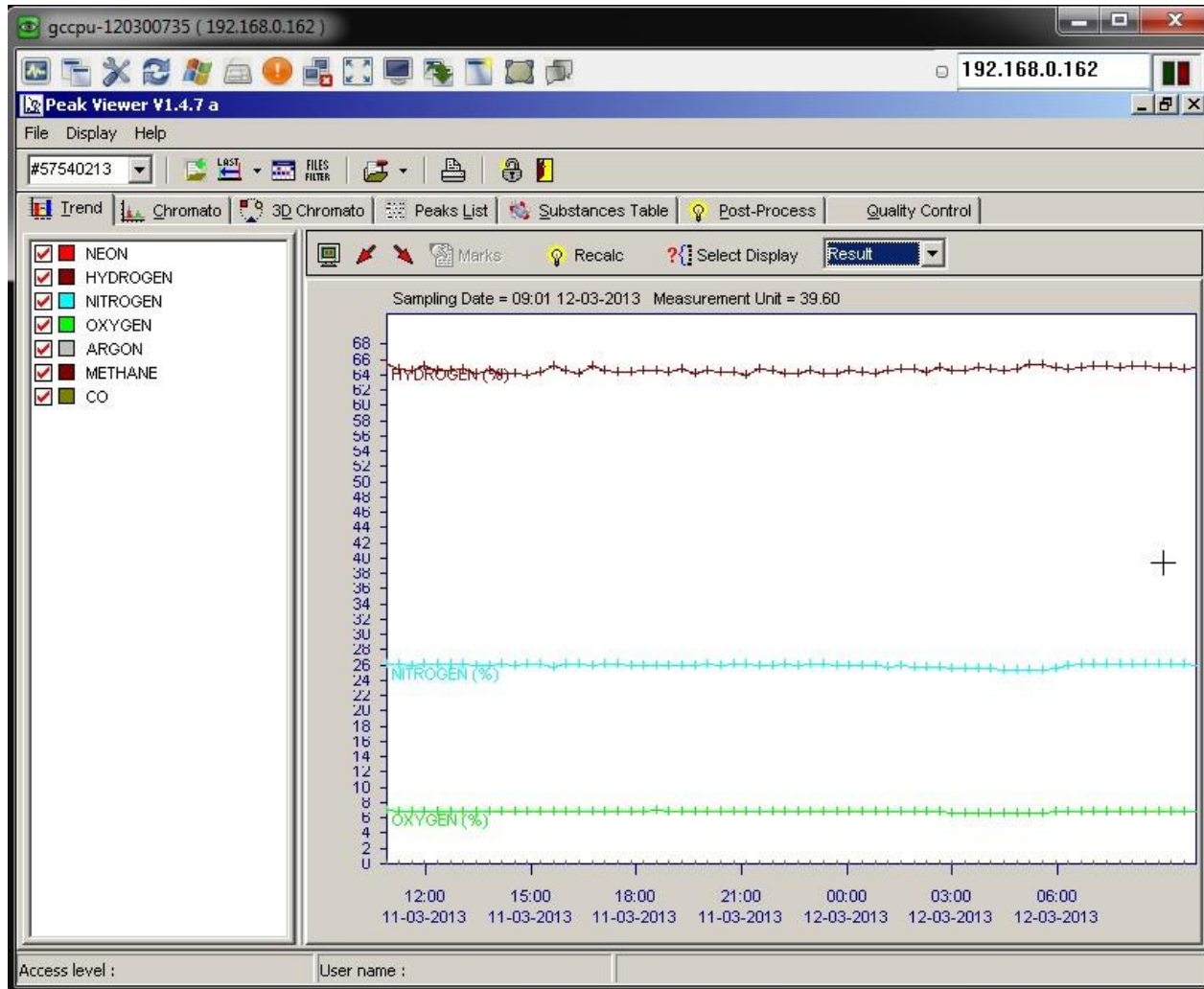
chromaTCD application H₂/N₂/O₂



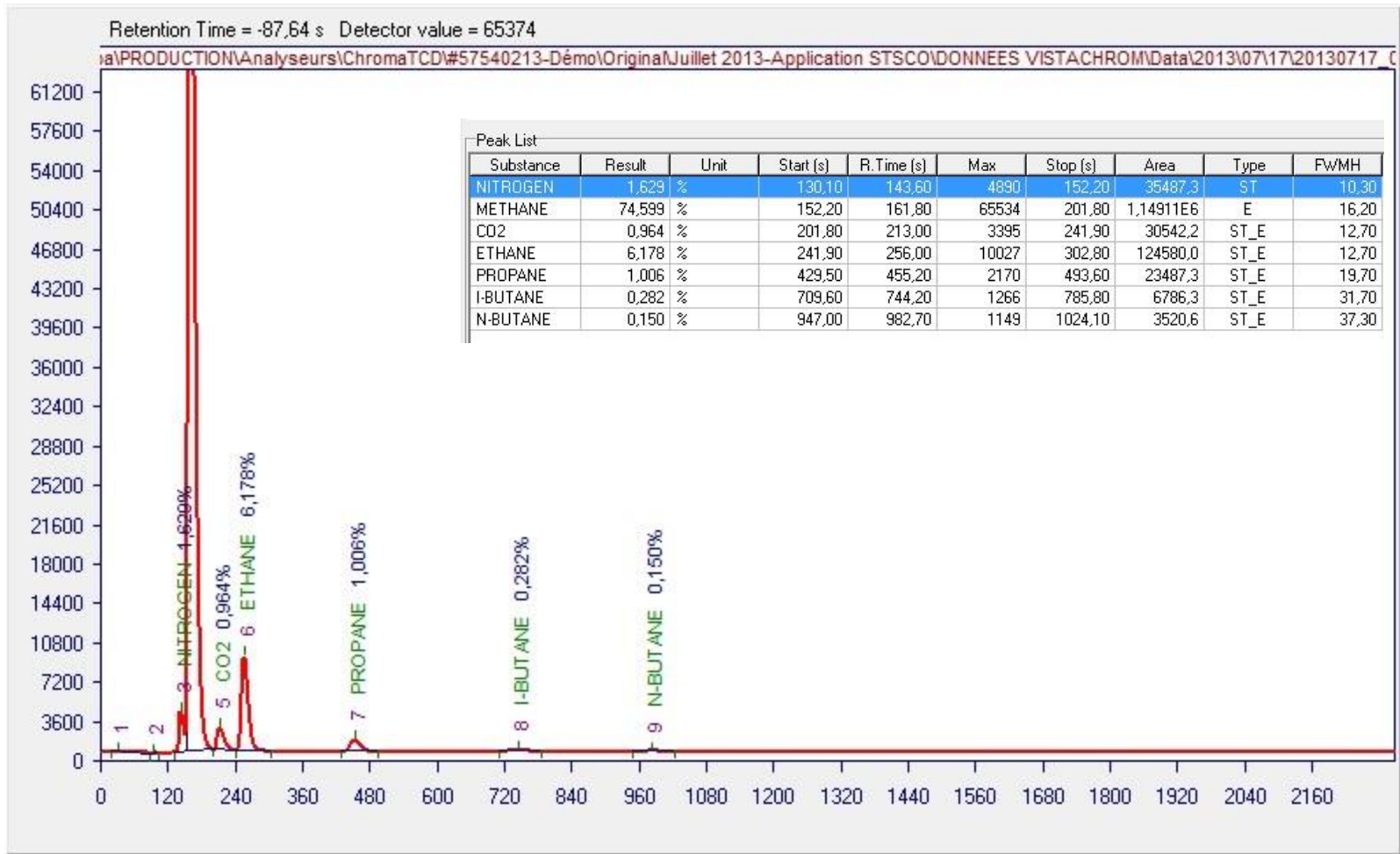
chromaTCD application H₂/N₂/O₂



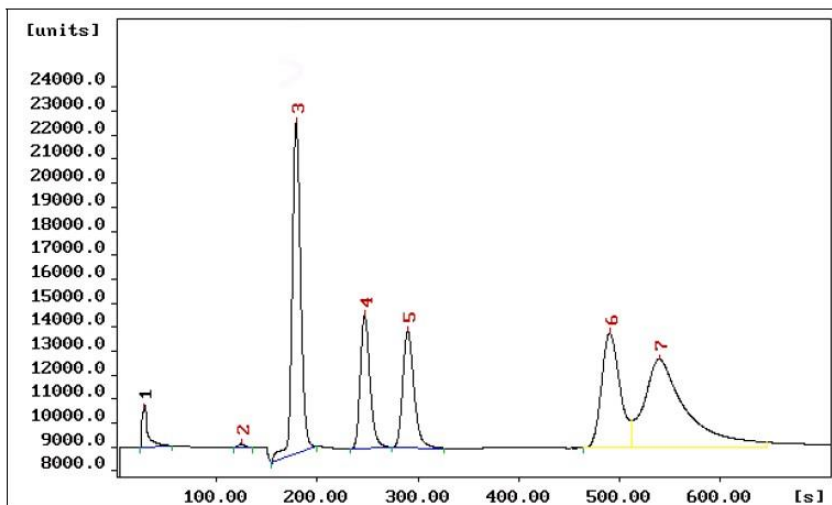
chromaTCD application H₂/N₂/O₂



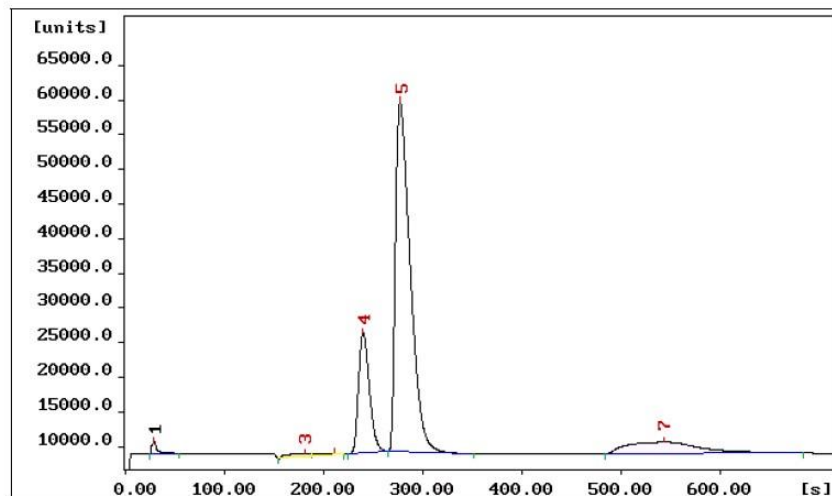
chromaTCD application C1-C4⁺ in natural gas



chromaTCD other application



Analysis of standards



Analysis of ambient air

Analysis of standards :

N° of peak	Compound	Retention time (in s)	Area (in counts)	Concentration % (v/v)	Detection limit (in ppm) High amplification
2	H2	124,80	1282	5,04	290
3	CO2	179,20	135387	9,93	6
4	Ar	247,00	61304	5,19	6
5	N2	289,80	62740	5,57	6
6	CH4	490,20	100221	10,20	8
7	H2O	539,40	177272		<u>Loop 1000 µl</u>

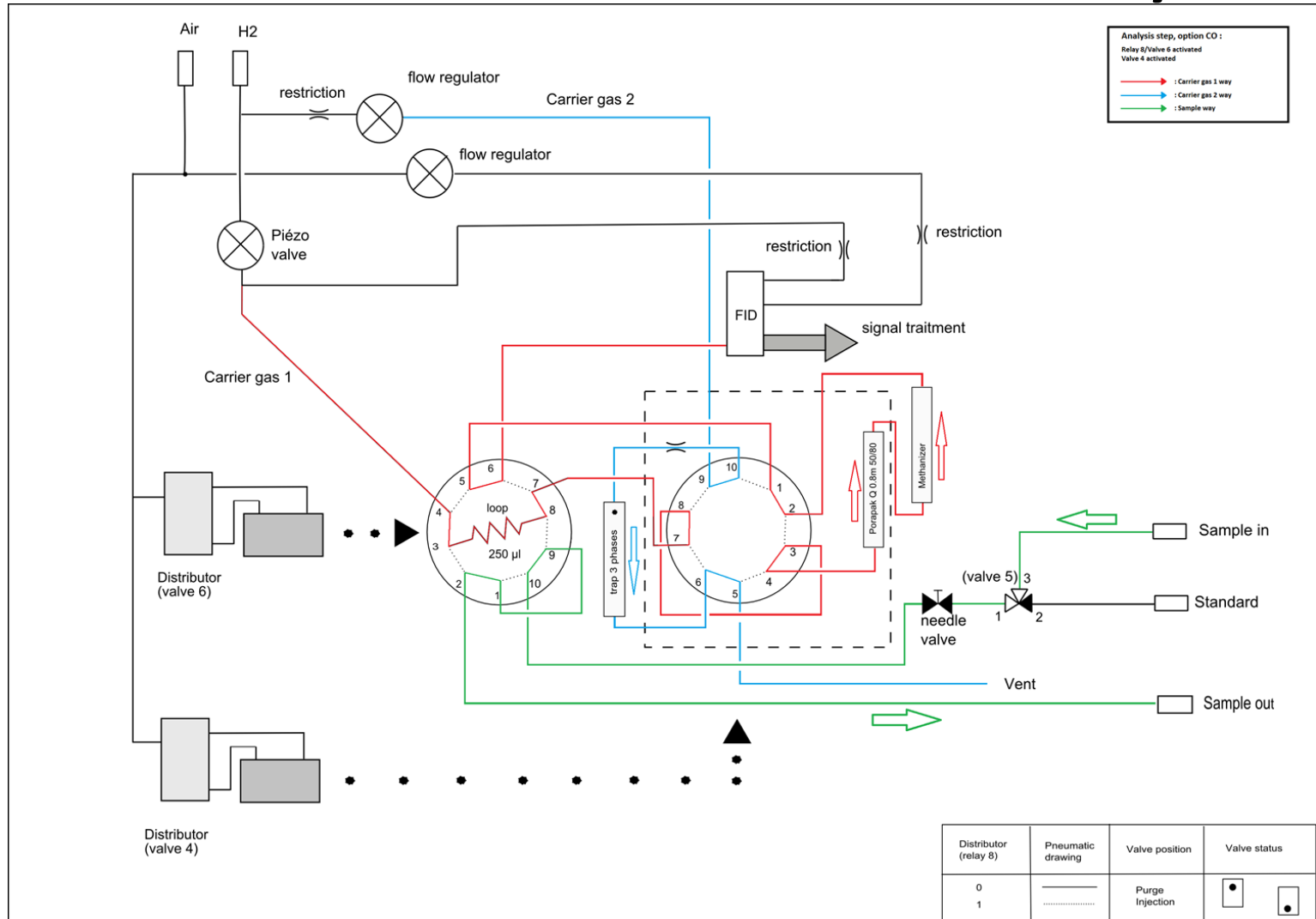
Products – Pure gases

- Impurities in Pure gases
 - chromaDID-He
 - Discharge (or Helium) Ionisation Detector (DID or HID)
 - Carrier gas: Helium
 - Sampling loop
 - Sensibility: low ppb
 - Possible gases to be analysed:
 - Ne / H₂ / N₂ / Ar + O₂ / CO₂ / CO / CH₄

Products – Pure gases

- chromaCO:
 - CO / CH₄ / CO₂ / HCHO
 - Methanizer
 - FID detector
 - Option NMTHC (NMTHC) and CH₄ (high concentration)

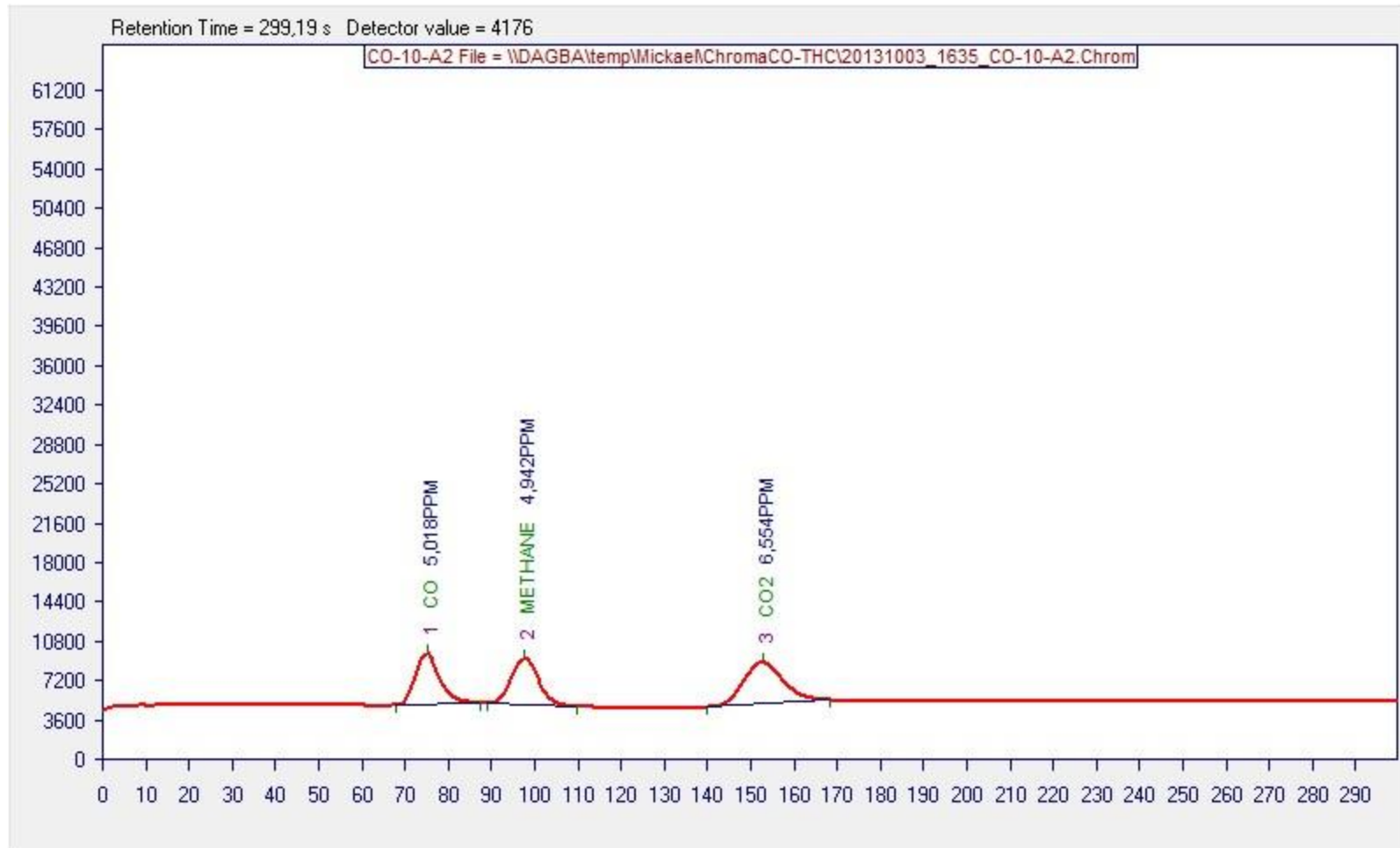
Pneumatic scheme: CO analysis



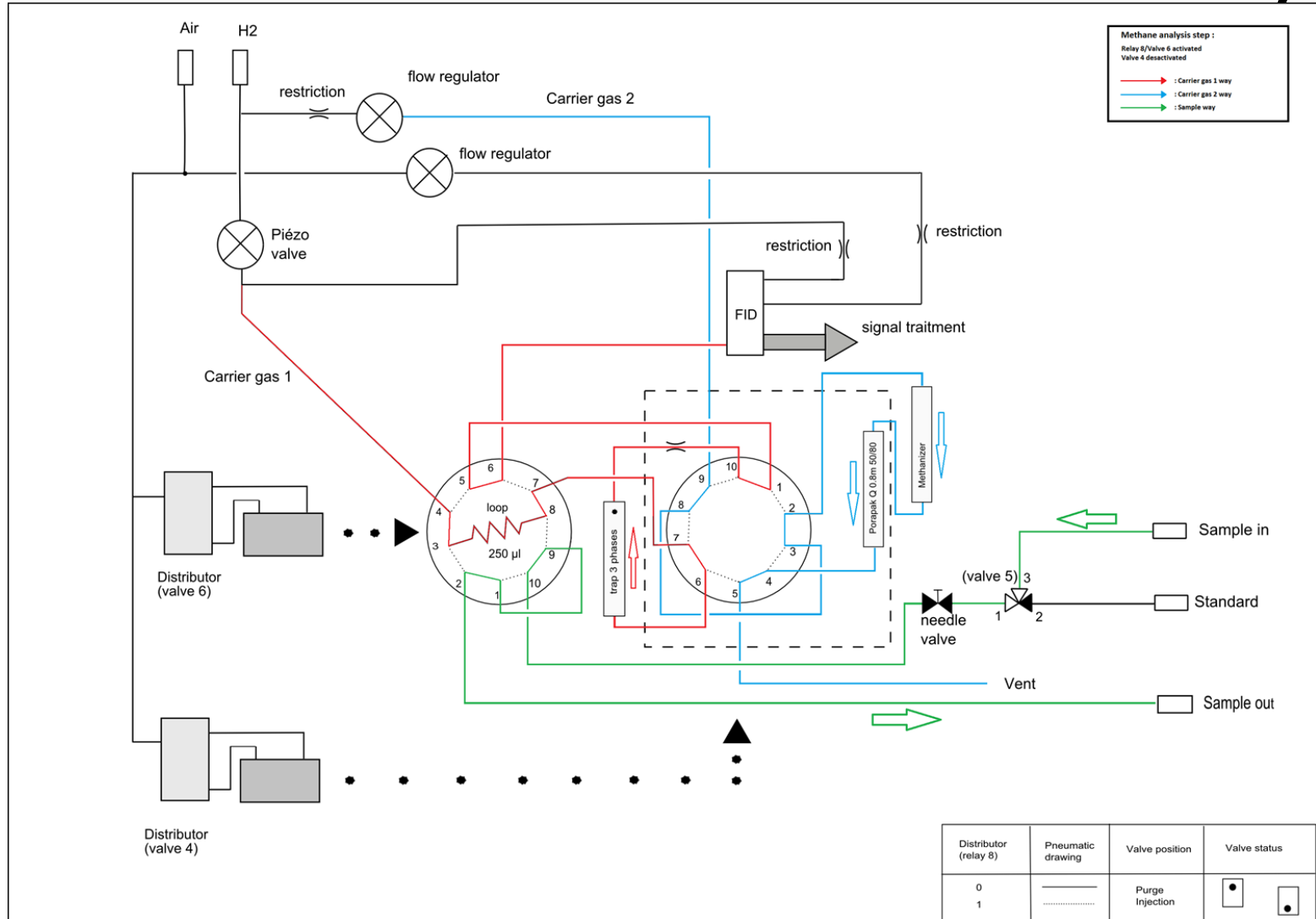


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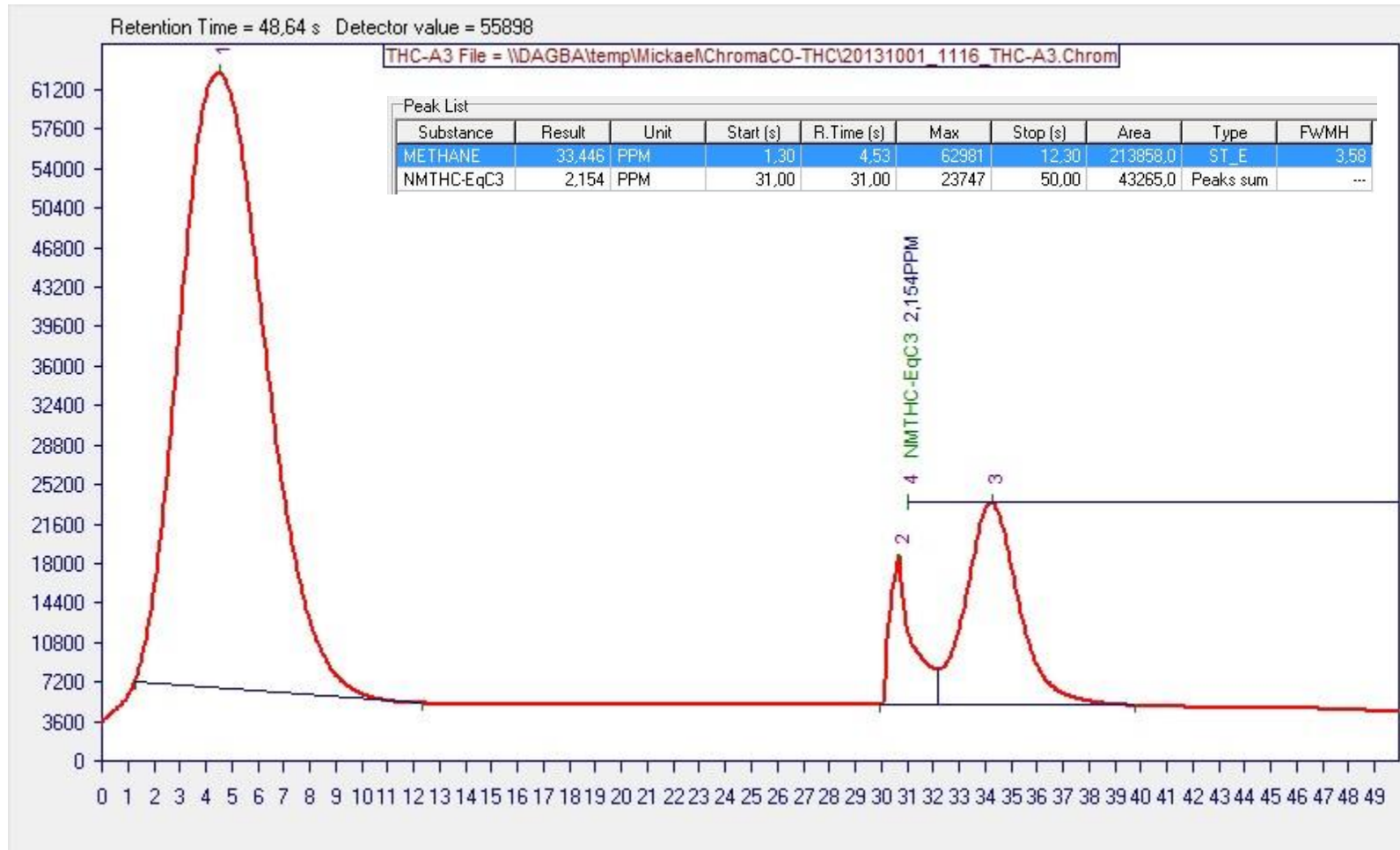
chroma CO application



Pneumatic scheme: NMTHC analysis



chroma CO application NMTHC



Conclusion

- Possibility to analyse a big range of pure gases
- Concentration range from low ppb to %
- No interference between Ne/H₂ and O₂/Ar
- Different carrier gas depending on application



Thank you for your attention !