



WASSON·ECE
INSTRUMENTATION
Engineered Solutions, Guaranteed Results.

Natural Gas Analyzers

Natural gas is a naturally-occurring mixture composed primarily of methane. Common impurities include simple hydrocarbons, carbon dioxide, nitrogen, oxygen, and hydrogen sulfide. The selling price of natural gas feedstocks is determined by the energy content, which is calculated from the composition of the product. Because of this, natural gas must be thoroughly tested for calorific value and purity.

In order to meet the challenges of analyzing natural gas and natural gas liquids, Wasson-ECE has pioneered a suite of Agilent 8890 Natural Gas Analyzers (NGAs). These gas chromatographs (GCs) are compliant with various ASTM and GPA standardized methods. These GCs come pre-configured with turn-key application that includes the installation of necessary valves, selection and installation of the analytical columns, and complete method development. Wasson-ECE NGAs also incorporate our specially designed auxiliary oven which holds up to five valves and six columns thus extending the analysis capabilities of our GC systems.

At Wasson-ECE we strive to produce innovative and state-of-the-art solutions to help our clients overcome their analytical challenges. The flexibility of our NGA systems can ease bench space issues by combining multiple standardized methods into a single instrument while maintaining a GC that is easy to service with minimal downtime.



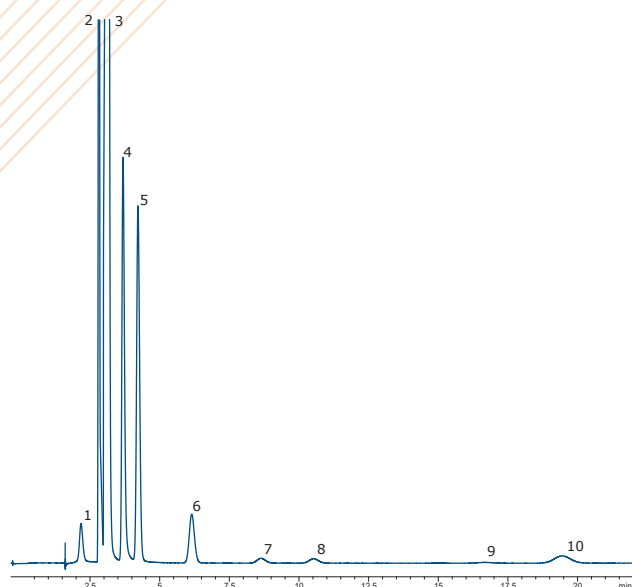


NGA Features

- **Complete range of analyzers** for natural gas and other petroleum gases and liquids
- **Includes method development, selection of valves, and columns** in all configurations
- **Ability to configure with multiple backflush options**
- **Wasson-ECE Auxiliary Oven** which provides a second thermal zone
- **Customized reports** including calculations for mole %, weight %, or volume %, and calorific value available
- **Optional liquid sampling valves** expand the analytical capabilities to liquefied gases
- **Optional second TCD** for the analysis of Hydrogen and Helium

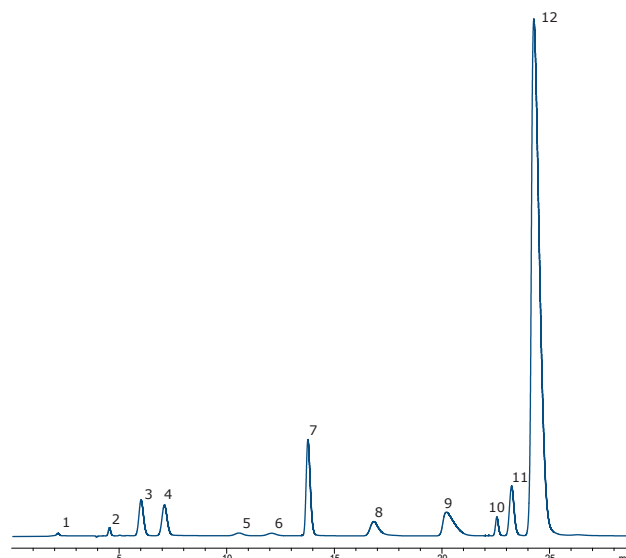


125-Natural Gas Analysis



- | | |
|-------------------------------|---------------|
| 1. C ₆ + Backflush | 6. Propane |
| 2. Air composite | 7. Isobutane |
| 3. Methane | 8. n-Butane |
| 4. Carbon dioxide | 9. Isopentane |
| 5. Ethane | 10. n-Pentane |

326-Extended NG Analysis by TCD



- | | |
|-------------------------------|----------------------------|
| 1. C ₆ + Backflush | 7. Ethane |
| 2. Carbon dioxide | 8. Hydrogen sulfide |
| 3. Isobutane | 9. Propane |
| 4. n-Butane | 10. Oxygen/Argon composite |
| 5. Isopentane | 11. Nitrogen |
| 6. n-Pentane | 12. Methane |

Attention to Detail

Our commitment to quality is not only evident in the analytical performance of our instruments but also in our superior fit and finish. Our production team takes extra care to ensure tubing runs are neat and components are easily accessible. This superior level of quality is not only aesthetically pleasing but also much easier to maintain.

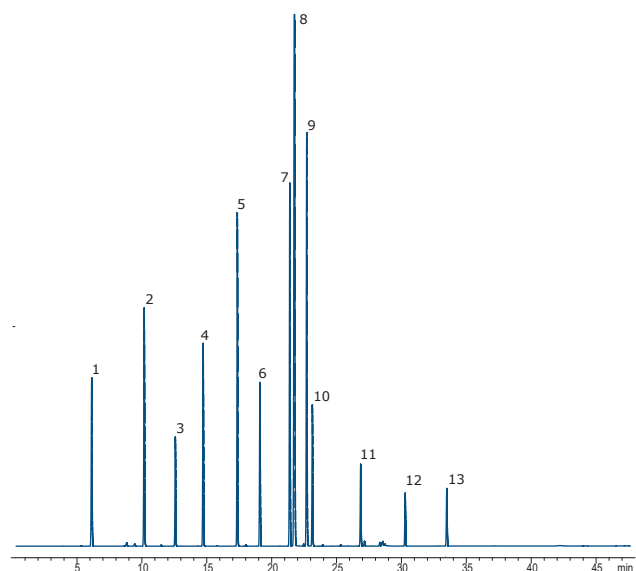
Wasson-ECE Report Generator Software

Wasson-ECE Report Generator software interfaces with Agilent Technologies OpenLAB ChemStation or EZ-Chrom to export component peak data and automatically perform thermodynamic calculations. The software is customizable to components of interest. Calculations are output into a convenient, easy to interpret Excel spreadsheet.

The Wasson-ECE Turn-key Process

- **Sales**
 - o Application designed to customer's requirements
- **Factory Application**
 - o Method development and application setup
 - o Customer samples are run to verify performance
 - o Chromatograms are sent for client approval
 - o Factory acceptance training if desired
- **Installation**
 - o Experienced Wasson Field Service Technician
 - o Analysis of client's real world samples
 - o Calibration and familiarization
- **Customer Satisfaction**
 - o Follow up after installation
 - o Knowledgeable and responsive service team
 - o Optional preventative maintenance visits or service contracts

326-Extended NG Analysis by FID



- | | |
|-----------------|-------------------------|
| 1. n-Pentane | 8. m/p-Xylene composite |
| 2. n-Hexane | 9. o-Xylene |
| 3. Benzene | 10. n-Nonane |
| 4. n-Heptane | 11. n-Decane |
| 5. Toluene | 12. n-Undecane |
| 6. n-Octane | 13. n-Dodecane |
| 7. Ethylbenzene | |

Report Generator Software Output

Client:			
Sample:	Natural Gas Blend		
Lab. No.:			Method File: NAT_GAS.M
Operator:	SYSTEM		
Sample Info.:			
Peak Name	Mol%	Liq. Vol%	SPG _{liq}
Methane	2.5274	1.7302	0.0052
Ethane	0.0000	0.0000	0.0000
Propane	0.0000	0.0000	0.0000
Isobutane	0.0000	0.0000	0.0000
n-Butane	0.0000	0.0000	0.0000
Isopentane	0.0000	0.0000	0.0000
n-Pentane	0.0000	0.0000	0.0000
Carbon dioxide	0.0000	0.0000	0.0000
Oxygen	25.5133	9.1453	0.1045
Nitrogen	0.0000	0.0000	0.0000
Hexanes Plus	34.4859	57.2699	0.3862
	100.0000	100.0000	0.6978
SPG _{liq}	0.6978		
RVP	86.5119	psia	
API Gravity	462634.6886		

Wasson-ECE NGA Configuration Options

Application Number	125	192	217	325	326	325-LIQ	326-LIQ
Description	Fast Nat Gas (NG)	NG Analysis	Nat Gas Liquids (NGL)	Extended NG	Extended NG with Air Speciated	Extended NG and NGL	Extended NG and NGL with Air Speciated
Runtime (min.)	15	20	20	35	35	35	35
Detector(s)	TCD	TCD	TCD	FID/TCD	FID/TCD	FID/TCD	FID/TCD
<i>Natural Gas Analyses</i>							
Air Composite (O ₂ /Ar/N ₂)	●		●	●		●	●*
CO ₂	●	●	●	●	●	●	●
O ₂ /Ar Composite		●			●		●
N ₂		●			●		●
C ₁ -C ₅	●	●	●	●	●	●	●
H ₂ S		●			●		●
User selected backflush (C ₆₊ or C ₇₊)**	●	●	●	●	●	●	●
C ₅ -C ₁₂				●	●	●	●
<i>Optional Analytical Upgrades</i>							
Additional TCD for H _e /H ₂	●	●	●	●	●	●	●
<i>Standard Method Compliance (depending upon final configuration)</i>							
ASTM D1945		●			●		●
GPA 2177			●			●	●
GPA 2186						●	●
GPA 2261	●			●	●	●	●
GPA 2286				●	●	●	●

*Air will be a composite peak for LSV analyses

**If n-hexane needs to be quantified the runtime will be extended to 70 minutes

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