



PHOTOACOUSTIC MULTI-GAS ANALYZER

GASERA ONE SHED



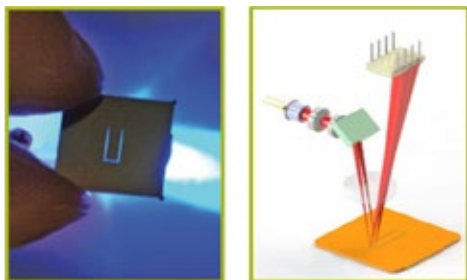
Evaporative emissions testing



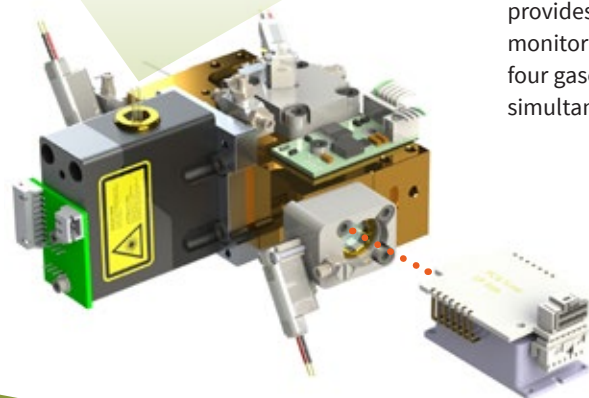
Measurement need

Evaporative losses from the fuel system have to be tested and quantified for vehicle certification. GASERA ONE SHED allows direct monitoring of evaporative emissions as part of the qualification testing procedures for vehicles.

Ethanol evaporates from the fuel system and methanol from the windshield washer fluid. New evaporative emissions testing requirements create a demand for ultimate sensitivity and selectivity. In addition to ethanol and methanol, GASERA ONE SHED can monitor refrigerant leakage simultaneously and without cross-interference.



Ultra-sensitive patented optical cantilever microphone



Easy-to-use solution

Contrary to measurement methods requiring impinger benches and remote laboratory analysis, GASERA ONE SHED performs direct monitoring inside the chamber. GASERA ONE SHED provides the user with a simple and intuitive interface with a high resolution display and a single rotating knob.



Technology

GASERA ONE SHED analyzer is based on combining ultra-sensitive cantilever enhanced photoacoustic detection with a widely scanning external cavity quantum cascade laser source operating in the Mid-IR fundamental spectral absorption range. This combination provides unmatched sensitivity for ppb-level monitoring. Due to the wide scanning range four gases can be measured selectively and simultaneously.

Benefits

- Photoacoustic technique is approved in the US by the Environmental Protection Agency (EPA) and the California Air Resources Board (CARB)
- Standalone system with built-in gas exchange unit
- Requires no consumables or wet chemistry
- Short optical path, which provides industry-leading dynamic range with single point calibration
- Drift-free operation due to direct absorption measurement
- Highly selective against ambient background gases and other VOCs

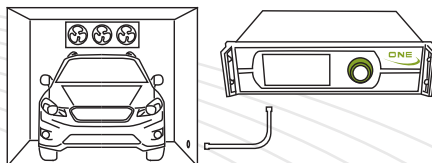
Features

- Selective simultaneous monitoring of ethanol, methanol, R-134a and HFO-1234yf
- Sensitivity in the ppb-region for all measured gases
- Response time user configurable
- Wide dynamic range
- No consumables or carrier gas
- Intuitive user interface

Applications

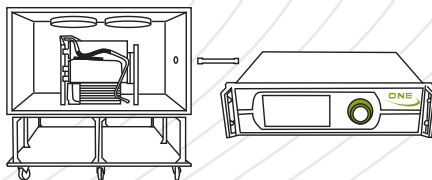
Sealed House Evaporative Determination (SHED)

The photoacoustic method is accredited by EPA and CARB for the direct measurement of ethanol in SHED evaporative tests. AK communication protocol enables seamless integration to the measurement automation systems.



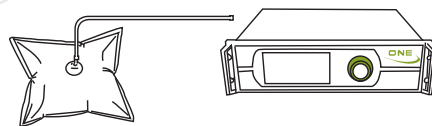
Refrigerant emissions

Quantitative leakage testing on mobile A/C equipment for verifying compliance with international standards. The photoacoustic technique provides an accurate and rapid result with a high rate of repeatability, even at very low emission rates, such as those that occur at low to moderate temperatures.



Tail pipe testing

The GASERA ONE SHED can be configured for exhaust gas analysis through bag sampling allowing direct quantitative measurements of trace pollutants in exhaust.



Technology

- Principle of operation: photoacoustic infrared spectroscopy (PAS)
- Patented ultra-sensitive optical microphone based on MEMS cantilever sensor coupled with a laser interferometer to measure microscopic movement of the cantilever
- Light source configuration: External Cavity Quantum Cascade Laser (EC-QCL)
- Gas cell stabilized up to 50°C temperature

General

- 19" 3U (unit) housing for both table top and rack mount operation
- Dimensions: 48,4 cm W x 13,9 cm H x 44 cm D (19.1 in W x 5.5 in H x 17.3 in D)
- Weight: approx 13 kg
- Built-in computer with a 7" WSVGA display
- Data storage capacity sufficient for at least 1 year of continuous monitoring with the shortest sampling interval
- Total internal volume: 30 ml
- 4 gas connections in the rear including 2 sample input connections equipped with user changeable filters for dust and small particles
- Electrical connections:
Input voltage: 110-240 VAC, 50-60 Hz
Input power: less than 100 W
Interface: Ethernet, USB
- GASERA ONE SHED can be remotely operated via smartphone, tablet or PC computer
- Communications: AK protocol

Environment

- Operational conditions:
Temperature range: 0 °C – +40 °C
Humidity: below 90% RH, non-condensing
Pressure range: ambient level
Dust/water resistance: IP20 (IEC 529)
- Storage conditions:
Temperature range: -20 °C – +60 °C
- Sample gas conditions:
Temperature: 0 – +49 °C
Humidity: non-condensing
Pressure: 750 mbar – 1100 mbar
Gas flow: approx 1 liters/minute
Particulates < 1 µm

Measurement specifications

- Response time: dependent on user configurable channel integration time (C.I.T.) and gas exchange routine. From approx. 40 seconds to few minutes.
- Detection limit: gas dependent, typically in the ppb-region
- Dynamic range: over 5 orders of magnitude (i.e. 100 000 times the detection limit)
- Repeatability: less than 1 % of measured value in operational conditions at the calibration concentration
- Accuracy: Better than 1% at the calibration concentration. Limited by the calibration gas accuracy.
- Temperature stability: ambient temperature change within the operational temperature range will not cause drift
- Pressure stability: Sample gas pressure change within the pressure range will not cause drift

Standards

- Complies with the Low Voltage Directive 2014/35/EU, EMC Directive 2004/108/EC and ROHS 2 directive 2011/65/EU

Gasera Ltd. reserves the right to change specifications without notice.