

Survey of Natural Gas and Biogas Networks



VSR INSPECTRA® MK3

**Network Survey Vehicle
with Laser Methane Detection System**

- Total methane selectivity
- 0.5 ppm sensitivity (CH₄)
- Compact and modular equipment
- Survey traceability with dedicated software

The VSR INSPECTRA® MK3 from GAZOMAT™ makes it possible to monitor gas and biogas networks from a vehicle driven close to buried pipelines.

The VSR MK3 is based on the best available and proven technologies. Its methane selective laser measurement cell detects very small CH₄ concentrations, fast. Coupled with a dedicated software with mapping and geolocation capabilities, it provides accurate georeferenced data on any gas leak point detected.

Easy to use, the equipment meets all productivity, reliability, and traceability requirements of gas operators.

A robust system ensuring efficient detection

- Atmosphere samples taken in from the ground surface directly to the measurement cell for analysis
- The response time below 1.5s⁽¹⁾ allows for reducing the leak location perimeter
- The high-performance laser measurement cell with proven robustness ensures unequalled longevity of the VSR equipment. With regular maintenance, its observed operating life is well over 10 years.



Laser Spectroscopy: A unique detection system

- Methane selective thanks to a laser diode adjusted to the absorption wavelength of methane. Benefit: no false measurements due to the presence of hydrocarbons, exhaust gases or water vapours
- 0.5ppm sensitivity of the measurement cell
- Measurement stability
- Note : not suited for use on LPG, propane, butane or hydrogen pipeline networks.

Enhanced safety

- Self-tests of all functions
- Probe to protect the sampling circuit from any water intrusion
- Easy-to-access filters for routine maintenance.

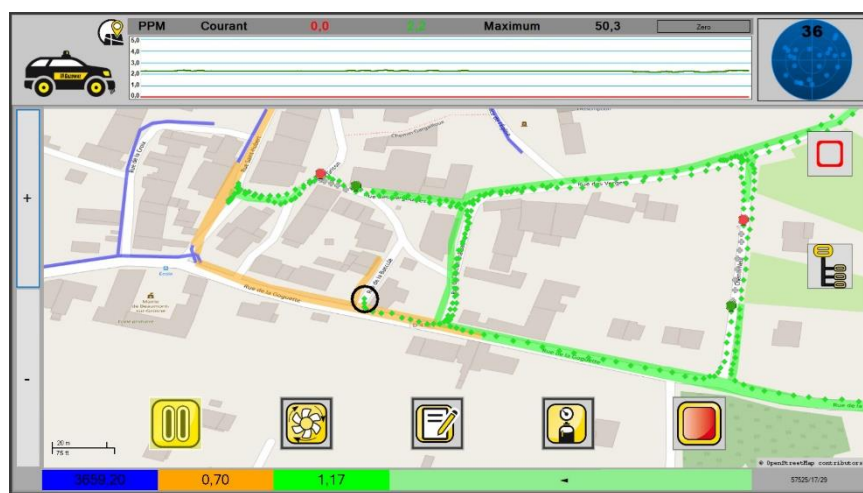


An intelligent software for efficient network monitoring

The new GAZOCONSOLE™ survey software developed by GAZOMAT provides real added value to monitoring operations. The software:

- Facilitates the work of technicians with a user-friendly interface and automated functions
- Guarantees the vehicle is driven as close as possible to the buried pipelines
- Ensures maximum inspection coverage of the network.

See GAZOCONSOLE brochure.



(1) Response time may vary depending on the vehicle model and on the installation configuration

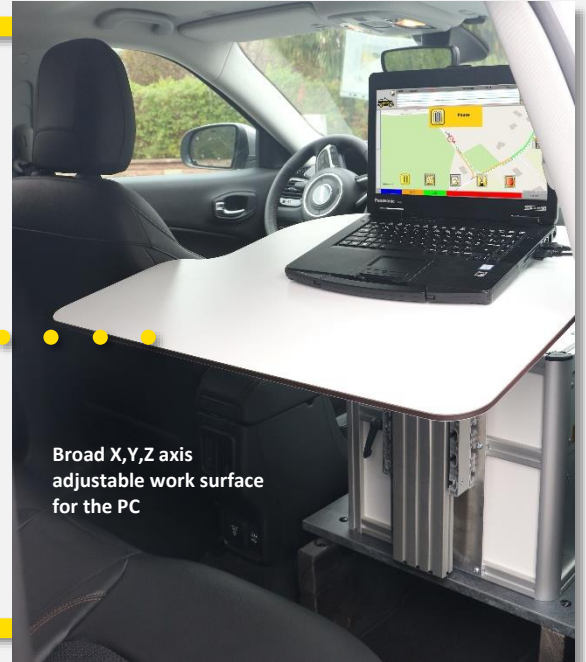
The new ultra-compact VSR MK3 instrumentation unit, which integrates laser measurement cell, suction pump and filters, allows for unique implementation solutions in vehicles of all sizes. Advantages:

- Ergonomics of the workstation with "à la carte" equipment, such as modular work surfaces, remote screen, wireless keyboard, etc.
- Optimisation of available space.

MK3 Instrumentation installed at the front (removal of the front passenger seat)



Front-mounted instrumentation unit



MK3 Instrumentation installed in the trunk with two variants



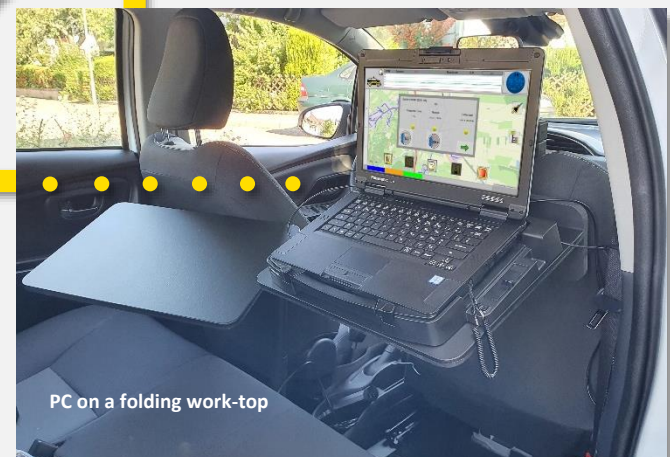
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No structural modification to vehicle



2



TECHNICAL SPECIFICATIONS

VSR INSPECTRA® MK3

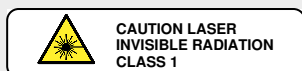
VSR MK3 instrumentation comprising:

- Suction rail with eight sample intakes
- Probe for detecting the presence of water in the sampling circuit with automatic triggering of nitrogen flushing
- Sensor test circuit using 50ppm CH₄ reference gas
- Compact aluminum instrumentation box for installation either in the trunk or at the front (removal of passenger seat) of the vehicle. The instrumentation box integrates:
 - INSPECTRA® analyser
 - Suction pump with a maximum flowrate of 800l/hr
 - Water-repellent and dust filters to protect the sampling circuit
 - Solenoid valves and flowmeter for the continuous monitoring of the reference gas and sampling flows
 - Nitrogen flushing circuit

Sizes of instrumentation box: L550 mm x W400 mm x H400 mm

Weight of instrumentation box: 27kg

On-board INSPECTRA® measurement system



- Measuring principle: laser spectroscopy – multi-pass cell
- Methane selective
- Measurement range as standard: 0 ppm to 190 ppm (device calibrated and adjusted to methane) – Wider measurement ranges upon request
- Detection threshold ≥ 0.5 ppm
- Operating temperature: -15°C to +40°C (+5°F to +104°F)
- Storage temperature: -20°C to +50°C (+4°F to +122°F)
- Relative humidity : < 80% HR

Patents Nr. 7352463 et 1647820

VSR MK3 system features

- Optimum survey conditions required to ensure a 4m detection radius around each of the eight sample intakes of the VSR suction rail:
 - Appropriate weather conditions :
 - Wind magnitude < 25 km/hr
 - Dry and frost-free ground
 - 25 km/hr survey speed, with a maximum survey speed of 40 km/hr never to be exceeded
- System's response time: < 1.5 second (variable depending on the vehicle model and the configuration of the installation)
- Installation of the system in vehicles of all sizes (ergonomics and configuration of the installation to be defined at the time of the order)

Gases for the system's functional testing

- 50 ppm CH₄ (methane) reference gas to test the measuring system and the detector
- Nitrogen to flush the sampling circuit

Power supply

- Required power supplied by the vehicle's battery: 12V 12Ah
- Power to laptop PC supplied by a 12V/220V 300W converter

Laptop PC or Tablet computer

- Rugged or semi-rugged model of the make recommended by GAZOMAT™ for its robustness and performances for network survey purposes

GAZOCONSOLE™ network survey software

- Compatible with Microsoft® Windows® 10 (see brochure)

GAZONAV™

(*) GNSS – Global Navigation Satellite System – is a satellite system that is used to pinpoint the geographical location of a user's receiver anywhere in the world.

- GNSS (*) receiver specifically dedicated to network survey in urban areas comprising a receiver and an antenna (see brochure)
- Communication protocol – NMEA - compatible with the satellite geolocation systems most used: Galileo + GLONASS + GPS

Note

The survey software is not part of the VSR MK3 equipment. It must be ordered separately from GAZOMAT. GAZOMAT does not supply the vehicle. The latter is to be selected and purchased directly by the customer.