

AXEL SEMRAU®



**International standard, recommended method for measuring odorants in gas**

# ODOR on-line

## **Extra safety**

**through odorization control and process monitoring**

International standard ISO 19739 (ISO 6326 T2) and the German standard DIN 51 855-7-GC describe this chromatographic method of measuring and determining odorants in gas. In Germany using ODOR on-line is the method expressly recommended by DVGW (German technical and scientific association for gas and water) in their worksheet G280.

Therefore using the ODOR on-line measurement system for odorization control provides the greatest possible safety and the best possible audit record.



**Axel Semrau®**

# Online monitoring

## Online measuring

In gas networks of a suitable type continuous, automatic measurement of the concentration of odorants is the safest, simplest method of maintaining an overview of odorant concentration in the network. In many cases, e.g. where the gas has already been odorized by the previous supplier or the gas is odorized centrally at only a few stations, the automatic measuring technology ensures the greatest safety by enabling remote transmission, checks on the alarm etc. The construction of the analyser as a fully automated gas monitoring system cuts the operational costs and the maintenance effort to the absolute minimum.



## Quality control

### Alkyl sulphides Mercaptans H<sub>2</sub>S, COS

The total sulphur content in unodorized natural gas for gas storage facilities is examined. The required parameters are concentrations of alkyl sulphides, mercaptans and H<sub>2</sub>S, and the concentration of carbonylsulfid (COS). ODOR on-line fulfils this requirement too.

The DIN 51624 standard deals with the total sulphur content in natural gas used as fuel at natural gas filling stations (CNG). Here too ODOR on-line can be used for taking the appropriate measurements.

Liquefied petroleum gas (LPG) used as a propellant for cosmetic products should be sulphur-free if possible, and is therefore subjected to quality control by means of ODOR on-line measuring devices.

## ODOR on-line

### All odorants

#### THT, TBM SCENTINEL® E SPOTLEAK® 1009 and others

Whichever odorant is used, the gas chromatograph ODOR on-line is suitable for monitoring all common odorants and odorant mixtures.

The required measuring time depends on the odorant used. A THT analysis takes approx. 5 minutes. Analysing a mercaptan mixture takes about 5 minutes using the quick method or approx. 10 minutes if the substance is separated into its individual components.

### All types of gas

#### Natural gas Coal gas Liquefied petroleum gas Biogas Gas-air mixtures

ODOR on-line can be used to control odorization in all types of gas: natural gas, liquefied petroleum gas (LPG), coal gas, biogas and gas-air mixtures.

In addition it can be used for special purposes, e.g. monitoring biogas plants, gas filling stations or chemical processes. All-important here is the fact that the measuring device is easy to operate and sturdily built.

# MOBILE measurement

## ODOR on-line in mobile use



### Gas sampling set



### Offline measuring

With ODOR on-line, gas samples taken from elsewhere in the network can be analysed at any time. This is fully in line with worksheet G 280 DVGW (German technical and scientific association for gas and water) which requires measurements to be taken close to the end-user from time to time. The samples are easy to collect by means of gas sampling bulbs.

The ODOR control software helps to measure the individual samples and manage data on the results obtained.

For taking individual operational measurements over a wide area the **ODOR handy** hand-held measuring device offers an outstanding addition to ODOR on-line systems.

### Mobile measuring

Installing ODOR on-line into measuring vehicles is straight forward. Many service companies have already equipped their vehicles with ODOR on-line systems for checking odorant levels on the spot.

Used in this way, the ODOR on-line provides mobile ISO reference analysis capability. The measuring process is recorded and verifiable down to the last calibration material. Every step can be checked by third parties. This meets all the prerequisites for validity in audits.

In addition measuring can be carried out straight from pump nozzles at natural gas filling stations by means of receptacle. This makes it possible to determine the total sulphur content according to German DIN 51624 as well.



**ODOR handy** plus to  
complement  
**ODOR on-line**

### Services

**Contract Measurements**  
**Training programmes**  
**Maintenance**

The acknowledged know-how of the specialists who work for Axel Semrau® is based on more than 30 years' experience in odorization control.

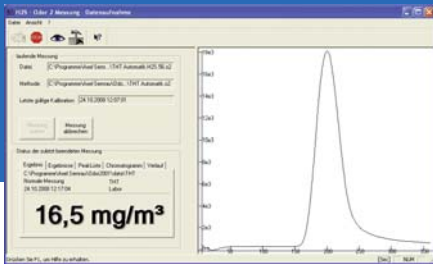
Well trained service technicians carry out contract measurements in customers' networks. Just one service a year or every six months provides court-proof evidence that the monitoring of odorant levels has been checked. Measuring odorant levels in the natural gas network is done on the spot at chosen points. Should a vehicle be unable to reach a measuring point, it is possible to collect a sample by hand with the gas sampling bulbs.

Axel Semrau® provides a service not only for THT and mercaptan mixtures in natural gas, but also a measuring service for LPG.

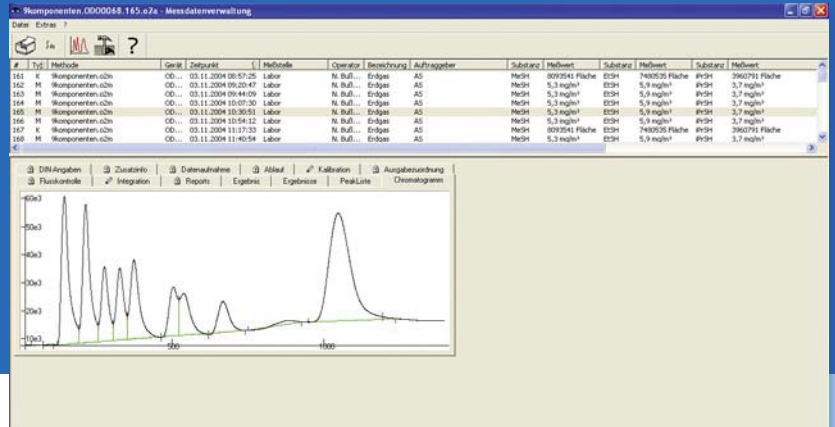
In addition, the company's range of services includes high-class training programmes and comprehensive maintenance packages for its products. Detailed information on training courses is available at [www.axel-semrau.de](http://www.axel-semrau.de).

# Control and data collection

## Software for control, data collection and measurement data management



Data acquisition



Measurement data management

## User-friendly

ODOR control, the name of the software specially developed to control ODOR on-line, is a 32-bit Windows® application.

The software is very easy to use and, needless to say, it can multitask. This means that it can perform all the functions such as evaluating the measurement data, even while measuring is in progress.

A status screen displays the chromatogram currently online at all times. An assessment of the sulphur components and composition of the gas can be made at a glance.

Important information such as the most recent valid calibration or the last measurement result are clearly displayed. Management of measurement data allows for the review of previous measurements. Here all measurements are archived in a database. A complete data record including a chromatogram for every measurement taken is stored. A filter system with numerous functions facilitates searches over long time periods.

# ODOR control

## Flexible

It is possible to export measurement data (e.g. into Microsoft Excel) for further processing.

The method development module makes it ideally adaptable to the measuring task in hand. Every system is delivered with a method which fulfils the specific requirements of the particular situation. Should these requirements change, customers can easily adjust the method themselves.

ODOR control supports measuring methods not only for automated measuring, but also for measuring tasks done by hand.

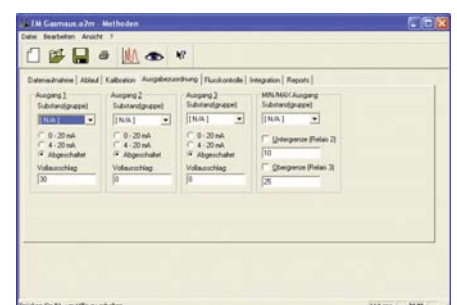
## Safe

Whether used for continuous monitoring or mobile measurement, ODOR on-line's data management system guarantees maximum data security.

Chromatograms are stored and evaluated automatically. An automated display of the measurement data in a format that conforms to the regulations providing proof at any time that the legal requirements for measuring have been met.



Method editor



Remote data transmission

# ODOR on-line technology

## System description

Chromatograph for analysing sulphur compounds according to the method conforming to ISO 19739 (ISO 6326 T2) and DIN 51 855-7-GC for hand-held or automated operation.

Components:

- 10 ml gas loop for sampling procedure
- Connections for sample gas, calibration gas, carrier gas and gas outlet, all 1/8" Swagelok®
- Fine needle valves and rotameters or mass flow controller to regulate the flow of gas.
- Group of solenoid valves (3 solenoid valves) for switching from sample gas to calibration gas and regulating sample injection (can be switched manually or programmed to switch automatically).
- Separation column and (isotherm) heating for separation column, injector for syringe injection of stock solution and gas samples.
- Electrochemical detector, electronic control of levels and regulation, supply tank 0.9 l.

All pipes carrying gas are made of selected adsorption-free materials.

A separate PC or laptop is used for control and evaluation. Communication between ODOR on-line and computer is via an RS 232 interface.



## Specifications

### ODOR on-line:

Measurement area: THT 0.1 mg/m<sup>3</sup> to approx. 100 mg/m<sup>3</sup>  
H<sub>2</sub>S 0.1 mg/m<sup>3</sup> to approx. 100 mg/m<sup>3</sup>  
Mercaptans 0.01 mg/m<sup>3</sup> to approx. 100 mg/m<sup>3</sup>

Note: Calibration gases and size of measuring loop adjusted to suit specific concentration range

Gas loop: 10 ml, smaller in special cases  
Connections: calibration gas, measuring gas, 1/8"(1 bar)  
carrier gas 1/8" (2 bar)  
extracted air 1/8"

Carrier gas: air or nitrogen (1 l/h to 30 l/h)

### Electronics

Signal amplifier: tunable: x1 to x10.000  
A/D converter: to 19 Bit, 1 Hz to 10 Hz variable  
Linearity: +/- 0.03% for 1/10 FS  
Drift: +/- 50 ppm FS/K

Outputs: four relay outputs (30 V switching voltage and 5 A switching current)  
three current interfaces (0 - 20 mA, 4 - 20 mA, galvanically decoupled)

Dimensions: W 56 cm x D 36 cm x H 36 cm

Weight: 14 kg

Power supply: 12 V DC, 110/120 V AC, 230/240 V AC

Protection class: IP51

Standards: conforms to CE, VDE, ISO 19739 (ISO 6326 T2), DIN 51 855-7-GC

You need a PC with the following minimum configuration:

Pentium, CD ROM Drive, Super-VGA Graphics Card 256 colours 800 x 600, an independent serial interface, Windows XP. See price list for installation of complete systems.

Specification and construction may be changed at any time and without prior notification.



**Axel Semrau®**

**Axel Semrau® is one of Germany's largest distributors of products and services in the field of analytical instruments.**

Since 1981 the steadily growing team of specialists working for Axel Semrau® have been selling and maintaining special solutions for chromatography and mass spectrometry. Since 2006 Axel Semrau® has been selling one of the most modern laboratory and information management systems on the market.

The **Natural Gas Analysis/Odorization Control** division of our business serves utility companies in the energy industry. Axel Semrau® is a leading manufacturer and professional consultant for odorization control and sulphur analysis in natural/liquid gas. The company offers a range of products and services from an advisory service and measuring technology to calibration gases, training programmes and measurement commissions as well as service and maintenance. The company sells these throughout the world via an international network of dealers.

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The company undergoes regular external monitoring. The last inspection related to the quality of its technical service to customers which achieved the mark 1.79 (1 = highest) in a survey conducted by the TÜV (German Technical Inspection Association) in the German state of Saarland.

Axel Semrau is certified by DEKRA in accordance with ISO 9001:2000 since May 2008.

80% of our workforce has completed training in science and technology. By continuous further employee training we guarantee a high level of advice and support.

We can adapt our solutions to specific customer requirements if desired.



**We sense good chemistry ...**



[www.axel-semrau.de](http://www.axel-semrau.de)