

SeCURI[®] SAT

Gas Detection without a Guide

- Seamless documentation for gas network monitoring
- Reduced costs of preparation and analysis
- Economic use of existing GIS data



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SeCuRi® SAT

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The situation

The optimisation of processes, increases in efficiency in day-to-day work and rigorous exploitation of major investments present a continuous challenge to gas industry enterprises.

Most gas supply companies have already invested large sums, especially in the digitisation of maps and plans. However, the resulting potential is often not exploited to best advantage. When checking gas pipe networks, enormous cost is incurred, for example, in copying and folding plans and in the employment of a guide. This cost does not apply when using digital site maps based on a mobile Geographic Information System (GIS) and the patented SeCuRi® SAT method developed by Hermann Sewerin GmbH. This makes all network-related information available on site at any time and leads to improved procedures

The solutions

Satellites show the way – Gas detection without a guide

The display of digital maps and plans on a field computer forms the basis for pipe network monitoring. The system is connected via an interface both to the gas detection device and to a satellite receiver. It is immaterial, whether the vehicle-based or the personal SeCuRi® SAT solution is chosen. The position of the gas detection device is determined in real-time using DGPS (Differential Global Positioning System) techniques, thus enabling the current map/plan window to be displayed. The orientation of the displayed image can be adjusted to the direction of travel of the operator. All steps needed for the seamless documentation of the pipe network check are carried out simultaneously. Thus no guide is required.

One measurement per second

The gas detection device is connected to the mobile computer via an interface and is remotely controlled by this computer. The measurements from the gas detection device are stored once per second, with a time stamp georeferenced to the current GPS position on the site map. Measurements in areas, where

DGPS does not provide reliable position values (e.g. where the view to the satellites is obstructed) can be assigned interactively to a specific stretch of the route covered by the gas detection device.

Seamless documentation

From the display of identified leak locations, by way of the listing of uninspected premises connections and pipe sections covered by buildings or vegetation, to the evaluation of work done: any discrepancies found between the pipe network and the maps and plans can be recorded and transmitted to the target system.

Compatible with almost all data formats

SeCuRi SAT is system independent and is able to process almost all current GIS data formats

- Smallworld GIS
 - ESRI Shape
 - Topobase
 - Bentley MicroStation
 - Integraph Geomedia
 - AutoCAD
 - Grips
 - Sisnet
- and many more



The Components

The SeCuRi® SAT method involves the following components:

Gas detection device with serial interface to the mobile GIS

Connection to the field computer to display the measurement results and to control the gas detection device.

Mobile GIS software for digitised pipe network plans

The user-friendly software for the pipe network monitor (gas detector) enables site maps with a wide range of sources and data formats to be easily displayed. Details of the data exchange are individually agreed with the supply company on each occasion.

GPS satellite receivers with combined antenna for both the gas detector position and the reference data.

DGPS provides high-precision position determination in real time and so yields precise data directly on site. The system can thus guide itself. This also applies to the use of a simple GPS for map position queries on site.

Field computer for data evaluation, documentation and archiving

The central control unit is a robust notebook computer, which continuously displays all information on the pipe network, the current position, the gas detector measurement data and the availability of satellites.

Carrying system

The convenient carrying pack holds all technical components needed to use the equipment.



The Components - Overview

Gas detection device

- above-ground gas detection with detection sensitivity in the ppm range
- serial data interface (RS232)
- flame ionisation or semiconductor sensor
- probes for paved and unpaved surfaces
- conforms to DVGW G 465-4 standard

Satellite receiver

- simple GPS for positioning queries
- differential GPS for high-precision documentation
- reference data, e.g. via ALF or Omnistar

Notebook

- robust field pen computer with IP54 protection
- excellent legibility even in direct sunlight
- operation with active pen system
- ports for gas detection device, GPS, digital camera, etc.

Navigation

- use of a vehicle navigation system
- coupling of the navigation system with the GIS
- import of utility reference point coordinates for navigation purposes

Software

- mobile queries, maintenance and damage classification
- direct link to the Geographic Information System (GIS)
- damage sketch, test reports, documentation
- analysis and display of the pipe network check
- avoidance of duplication of work
- upgradable with SAP (software) interface, servicing and maintenance planning, pipe network assessment in accordance with GW 401, fleet management (e.g. emergency and fault repair services), internet solution



The Advantages ...

... of SeCuRi® SAT are obvious:

- Economic use of existing GIS (vector or raster) data
- Reduced cost of preparation and evaluation for pipe network monitoring
- Seamless documentation for pipe network monitoring
- Quick and complete information on the condition of the entire pipe network
- Cost reduction through avoiding the need for a guide
- Automatic proof of the check on the sensitivity of the gas detection device
- Use of standard systems
- For pipe network monitoring alone, an internal cost reduction of approx. 15-30% can be achieved relative to the total cost (100%, consisting of internal and external costs).

Cooperation

Hermann Sewerin GmbH based in Gütersloh and Mettenmeier GmbH based in Paderborn offer innovative products and high quality services to public utility companies in the gas, water, electricity and district heating sectors. Hermann Sewerin GmbH is regarded as a complete network service provider. As a system vendor, Mettenmeier GmbH focuses its activities on the field of network information. Our knowledge of everyday practical needs, together with our expertise in the development of tailor-made systems, forms the basis for a range of excellent solutions covering all aspects of network management.



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