**A French natural gas distribution company tests a unique methane sniffing bike equipped with the INSPECTRA® laser-based detection system to monitor gas leaks in difficult-to-access city centres**

**Abstract :**

**R-GDS, a Strasbourg region gas distribution company in the North East of France, is testing an innovative methane sniffing bike powered by hydrogen to monitor natural gas leaks in the narrow streets of Strasbourg historic city center. Fully equipped with GAZOMAT’s INSPECTRA® laser-based methane detection instrument and leak survey traceability system, R-GDS hydrogen bike turns out to be a very cost-efficient and flexible solution, while maintaining the same level of gas leak detection performance and reliability as more conventional survey tools using GAZOMAT equipment.**

**CHALLENGE**

Leaks are a major issue for gas utilities managing the supply of natural gas or biogas through their pipeline networks. Methane contained in natural gas represents not only an environmental threat with regards to global warming, but also a safety hazard in the presence of oxygen.

This is the reason why gas leak detection and network monitoring are part of the Maintenance and Safety policy of gas utilities and governed by strict national, European and international regulations.

R-GDS, Strasbourg region gas distribution company in the North East of France is aware of the challenge and constantly surveys its network ensuring that the 4bar pressure pipelines are fully inspected every 3 years and the 21mbar low pressure network is monitored twice a year. To do so, R-GDS uses a number of tools such a Network Survey Vehicle (VSR) fully equipped with GAZOMAT’s methane leak detection system dedicated to high-speed inspections as well as hand-held methane laser INSPECTRA® detectors designed for on-foot inspections.

Despite it all, the monitoring of Strasbourg city historic center with its narrow pedestrian streets still remained an issue, as the driving of the VSR in the center proves difficult, if not impossible in some areas, while the on-foot inspection, though adapted, takes more time.

**SOLUTION**

Pascal WALTER, in charge of R-GDS Field Operations, reflected on the problem. Looking for a more suitable solution, he considered GAZOMAT’s electric tricycle-based proposal and finally came up with the idea of turning one of the R-GDS hydrogen bicycles, used for short trips inside the company, into a new detection tool.

As a result, a prototype bicycle was fully equipped with all that is needed to detect very low levels of methane gas. A sampling circuit with a pump and two sampling probes mounted at ground level sucks in air that is then fed into an INSPECTRA® detector installed in the bike’s rear case. The INSPECTRA® is a hand-held methane laser instrument capable of detecting and measuring methane in the air, instantly, at concentrations down to 0.5PPM.

But Pascal Walter also wanted leak survey traceability with very precise GPS positioning and recording. So GAZOMAT’s full Network Survey kit was also added to the bicycle: a powerful GPS system and a rugged PC tablet installed on the handlebar. Running the dedicated survey software, the tablet displays the network’s maps, the survey route followed and any gas leak detected, all within sight and reach of the survey technician on the bike.

So from an already unconventional bike with its hydrogen fuel cells and tank powering an electric motor, the two-wheeler was converted into a full-fledged SNIFFER bike, ready to sniff methane leaks along Strasbourg’s pipeline network. The project is now in its ’field’ testing phase in order to validate the solution and make it a new detection tool for R-GDS. “The first trials in the city are really promising”, explains Pascal Walter. “Despite its 50 kg weight, the bicycle is maneuverable, with an operating range of 100km. In leak detection mode, it is VERY efficient. It can travel the streets of Strasbourg at 12km/h - half as fast as a survey car equipped with eight air samples, but it can thread its way easily through the narrow streets of Strasbourg center, without getting in the way or making any noise.” This was not the case with the survey quad bike used previously by R-GDS to monitor the city centre: “An all-terrain vehicle that remains cumbersome, much too noisy and difficult to maneuver on the sidewalks and not at all environment-friendly”, adds Pascal Walter.

**OUTCOME**

The methane SNIFFER bike ‘smells’ like a very good idea indeed. Compared to the VSR survey vehicle, Pascal WALTER observed significant advantages. “Monitoring all the city center’s streets takes us two days whether it is with the bike or the VSR, with the same leak detection performance level and reliability. But the bike makes things far easier and cost-efficient. Especially when only one field technician instead of two is required and when you no longer have to schedule inspections at the earliest time of the day in order to avoid the inner city traffic.” But, according to Pascal WALTER, the true benefit of the bike solution lies “in the unequalled operating flexibility and smoothness it offers in the field”.

“At R-GDS, we are already considering turning other hydrogen bikes into methane SNIFFERS, using the same GAZOMAT methane detection and monitoring traceability equipment that proved so effective in this two-wheel configuration”, concludes a satisfied Pascal Walter.

A true meeting of technical innovations and expertise, the R-GDS project driven by Pascal Walter is leading a new survey solution addressing issues such as field mobility or tool suitability-to-purpose.

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