Novel laser analyzers for measurements and mapping of natural gas leaks while driving

J. Brian Leen, John Savee, Manish, Douglas Baer, ABB, San Jose, USA;

Michael Kleimann, ABB Automation GmbH, Frankfurt, Germany

We present a new laser-based system for measuring, mapping and reporting natural gas leaks while driving. Compared with traditional methods based primarily on walking, the system dramatically reduces the time and cost of leak surveying of gas wells, storage tanks, pipelines, and other natural gas services. The system is a fully automated and complete mobile leak detection system that enables fast leak surveying at up to 88 kilometers per hour. Due to the use of a very sensitive, near-infrared cavity enhanced laser absorption spectroscopy, the system is capable of detecting leaks up to 0.2 km away. The system simultaneously detects both methane and ethane to avoid false positives due to other methane sources (e.g., sewers, biogenic decay, landfills). The results are recorded, mapped onto Google Maps, and sent wirelessly to a Cloud-based server in real time for remote access.

Keywords

natural gas leak detection; laser absorption; methane; ethane; mobile monitoring