Nalaiya Thiran Project

Literature Survey

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Paper Title	Citation	Description
Gas Leakage Detection and Monitoring system	F. I. M. Ali, F. Awwad, Y. E. Greish and S. T. Mahmoud, "Hydrogen Sulfide (H2S) Gas Sensor: A Review," in IEEE Sensors Journal, vol. 19, no. 7, pp. 2394-2407, 1 April1, 2019.doi: 10.1109/JSEN.2018.2886131. Khera, N., Sharma, P., Shukla, D., & Dar, I. G. (2017). Development of a web based gas monitoring system using LabVIEW. 2017 Recent Developments in Control, Automation & Power Engineering (RDCAPE). doi: 10.1109/rdcape.2017.8358311.	This primary gas leakage system can only be used for leakage monitoring inside a building as laying the path and detection of gas leaks outside can be very troublesome for this design. As the rover moves on ground, the high pipelines outside the plants makes the gas sensing really inaccurate.Thus indoors are preferred for monitoring.

Development of Wireless Sensor Network for Hazardous Gas Leakage Detection	Tissot, J., Trouilleau, C., Fieque, B., Crastes, A., & Legras, O. (2006).Uncooled microbolometer detector: recent developments at ULIS. Opto-Electronics Review, 14(1). doi: 10.2478/s11772-006-0004-2. Adegboye, M. A., Fung, W.-K., & Karnik, A. (2019). Recent Advances in Pipelines Monitoring and il Leakage Detection Technologies: Principles and Approaches.doi:10.20944/preprints201905.0041.v1.	Here the disposal for support in the field of gas leakage detection, reduction of losses and checks of internal gas installations. Natural Gas distribution companies which have a digital maps of their pipeline network and are using GI systems can benefit greatly by using our devices with GPS modules integrated. In addition to basic gas detection devices for gas utilities, our product portfolio consists of work area inspection devices and detection of poisonous, flamable and dangerous gasses.
Gas Leakage Detection Using RF Robots Based on IoT	Meer Shadman Saeed, Nusrat Alim, "Design and Implementation of a Dual Mode Autonomous Gas Leakage Detecting Robot", RoboticsElectrical and Signal Processing Techniques (ICREST) 2019 International Conference on, pp. 79-84, 2019. Adekitan, A. I., Matthews, V. O., & Olasunkanmi, O. (2018). A microcontroller based gas leakage detection and evacuation system. IOP Conference Series: Materials Science and Engineering, 413, 012008.doi:10.1088/1757-899x/413/1/012008.	Different advancements in pipeline leakage detection were put forward. This includes acoustic emission, optic fiber sensor, ground penetrating radar, Vapour sampling and infrared thermography. Gas pipe leakage detection Insect Robot of any leakage to the operator. A system with sensors are connected to arduino for data collection and it uses LabVIEW as the GUI (graphical user interface).
Gas leakage detection and alert system using IOT	Sayali Joshi, Shital Munjal, Prof. Uma B. Karanje,"Gas Leakage Detection and Alert System using IoT",International Journal of Scientific Research inScience and technologyOnline ISSN :http://ijsr6 Issue 2, pp. 445-450, March-April 2019. Available at doi : https://doi.org/10.32628/IJSRST196256 Journal URL : st.com/IJSRST196256	The Internet of Things (IOT) is a significant topic in technology industry, policy, and engineering circles and has become front-page news in both the specially press and the popular media. This technology is embodied in a wide spectrum of networked products, systems and sensors, which take the advantages of development in computing power, electronics miniaturization, and network interconnection to offer new abilities not previously possible.

Gas Leakage Monitoring system	Khera, N., Sharma, P., Shukla, D., & Dar, I. G. (2017). Development of a web based gas monitoring system using LabVIEW. 2017 Recent Developments in Control, Automation & Power Engineering (RDCAPE). doi: 10.M. Chintoanu et al., "Methane and Carbon Monoxide Gas Detection system based on semiconductor sensor," 2006 IEEE International Conference on Automation, Quality and Testing, Robotics, Cluj- Napoca, 2006, pp. 208-211.doi: 10.1109/AQTR.2006.2546331109/rdcape.2017.8358311.	The monitoring f gases in the plant is done by three gas sensors namely MQ136, MQ135 and MQ2 for hydrogen sulphide, methane and carbon monoxide respectively. The MQ series of sensors have a wide detecting scope so that the sensing element of these sensors also has affinity to other common gases present in the petroleum industries. The operating voltage of the MQ136 gas sensor is 5V and its sensing material is tin oxide. Its electrode material and electrode lining material is gold and platinum respectively, thus making it one of the expensive MQ series sensors. The MQ2 gas sensor is used specifically for the detection of gases like methane, butane, LPG, smoke, etc. Its digital pin helps us to use this sensor even without a microcontroller. These gas sensors are mounted on the top of the rover body and they sense the gas as the rover moves its prescribed path. The gas concentrations are displayed in the 16*2 display in millivolts(mv) continuously and when a threshold is crossed an alarm is activated. The monitored gas values are also continuously sent to a local server.

Home monitoring system	Pravalika, V., & Rajendra Prasad, C. Internet of things based , home monitoring and device control using Esp32. International Journal of Recent Technology and Engineering2019; 8(1 Special Issue 4):58–62.	Systems based on ultrasonic flow meters can also be used for gas leak detection. Such systems were designed by Controlotron (Controlotron Corporation, 2005, 2006) and then overtaken by Siemens Industry Automation division (Siemens Industry Inc., 2011a). The system offered by this company works by considering that the pipeline is comprised of a series of segments. Each segment is bounded by two so-called Site Stations which consist of a clamp-on flow meter, a temperature sensor,and a processing unit. Each Site Station will measure or compute volumetric flow rates, gas and ambient air temperature, sonic propagation velocity and site diagnostic conditions. All data obtained on Site Stations are collected by a Master Station which computes the volume balance by comparing the difference in the gas volume entering and leaving each pipeline segment. Short integration periods show large leaks very quickly while longer integration periods detect smaller leaks (Bloom, 2004; Siemens Industry Inc., 2011b). This technology can locate the leak with an accuracy of 150 meters. Another advantage is offered by the non-intrusive character of the electronic devices utilized. On the downside, retrofitting to buried pipelines would be difficult.