Project Planning Tool

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Team ID	PNT2022TMID17245
Project Name	Project - IoT based Gas Leakage Monitoring and Alerting System for Industries
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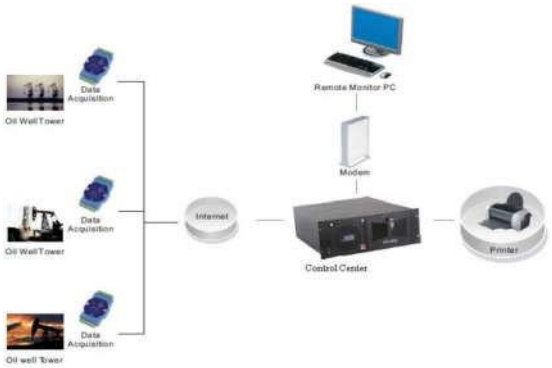
In our system, we use several components like,

1. Arduino UNO R3
2. Breadboard
3. LED
4. Resistor
5. Piezo

Wireless Sensor:

The paper provides a study on the use of Wireless Sensor Networks (WSNs) in refineries, petrochemicals, underwater development facilities, gas platforms. The work focuses on networks that monitor the production process, to either prevent or detect health and safety issues or to enhance production. WSN applications offer great opportunities for production optimization where the use of wired counterparts may prove to be prohibitive. They can be used to remotely monitor pipelines, natural gas leaks, corrosion, H2S, equipment condition, and real-time reservoir status. Data gathered by such devices enables new insights into plant operation and innovative solutions that aids the oil, gas and resources industries in improving platform safety, optimizing operations, preventing problems, tolerating errors, and reducing operating

costs. In this paper, we survey a number of WSN applications in oil, gas and resources industry operations.



Adaptive Multimodal Wireless Sensor Network for Energy-Efficient Gas Monitoring

We proposed a wireless sensor network (WSN) for monitoring indoor air quality, which is crucial for people's com-fort, health, and safety because they spend a large percentage of time in indoor environments. A major concern in such networks is energy efficiency because gas sensors are power-hungry, and the sensor node must operate unattended for several years on a battery power supply. A system with aggressive energy management at the sensor level, node level, and network level is presented. The node is designed with very low sleep current consumption (only 8 μA), and it contains a metal oxide semiconductor gas sensor and a pyroelectric infrared (PIR) sensor. Furthermore, the network is multimodal; it exploits information from auxiliary sensors, such as PIR sensors about the presence of people and from the neighbour nodes about gas concentration to modify the behaviour of the node and the measuring frequency of the gas concentration. In this way, we reduce the nodes' activity and energy requirements, while simultaneously providing a reliable service. To evaluate our approach and the benefits of the context-aware adaptive sampling, we simulate an application scenario which demonstrates a significant lifetime extension (several years) compared to the continuously-driven gas sensor. In March 2012, we deployed the WSN with

36 nodes in a four-story building and by now the performance has confirmed models and expectations.

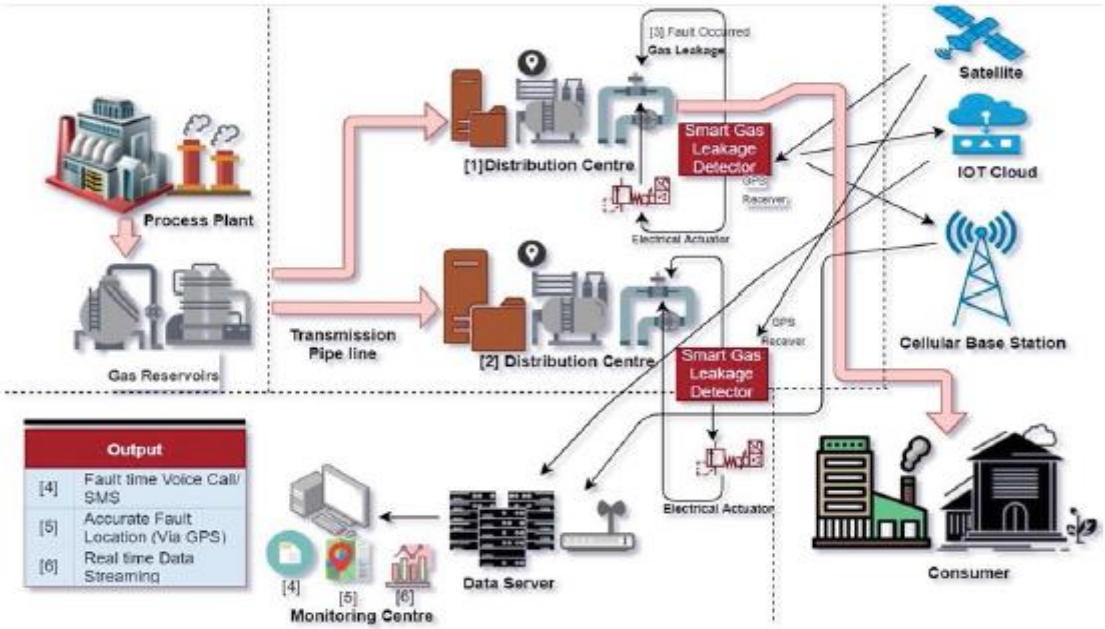


Figure 6. System and control diagram of outdoor gas leakage detection.