

Trisensor: An Industrial Gas Sensor



A novel, highly rugged, wireless sensor node capable of simultaneous sensing of methane, hydrogen sulphide and carbon monoxide, designed specifically for the oil and gas industry.

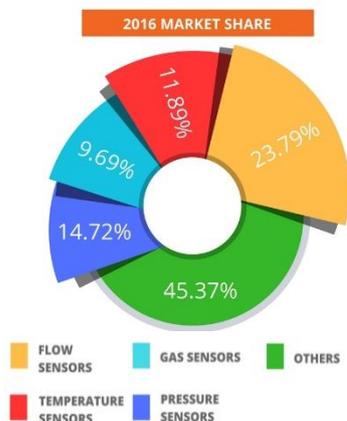
The Invention

Trisensor is a custom built wireless sensor node aimed at oil and gas, and environmental monitoring applications. Salient features of this device include the following:

- Based on the open source ZigBee architecture, making it interoperable with existing sensor installations.
- Heat, dust and shock proof casing enables deployment in outdoor and extreme conditions.
- Energy efficient algorithm ensures tested operating life exceeding 60 days under continuous sensing and transmission.

Market Need

Unintentional and accidental gas leakage is a global menace and results in annual financial losses amounting to nearly USD 30 Billion in the US only. In a bid to tap into this wasted revenue, gas production firms resort to the installation of wireless gas leakage systems. Trisensor is aimed at the wireless gas sensing market which accounts to 9.69% of the global wireless sensor market.



In addition to gas sensing in industry, trisensor also finds its application in environmental monitoring systems. Methane is a highly potent greenhouse gas. With the rugged hardware design coupled with the highly energy efficient operating protocols, trisensor finds itself to be highly suited for autonomous environmental monitoring applications as well.

Applications

Trisensor is best suited for the following applications:

- Gas leakage detection in gas production, distribution and processing facilities.
- Environmental greenhouse gas monitoring for safer, cleaner and healthier environment.

Competitive Advantage

The existing wireless gas sensing solution, although diverse, suffer from the following two limitations:

- Limited sensing abilities i.e., sensing multiple gases requires installing multiple sensing devices.
- Operate propriety software architecture making it challenging to program, configure and customize.

Trisensor is based on an open source architecture with a rich programmer base. All modules of the device are

completely customizable according to the customer needs. Additionally, the sensor node can sense and report three different gases simultaneously with the ability to replace with other gas sensors if required.

Project Status

Trisensor has been fabricated and tested in the lab to prove the integrity of the wireless gas sensing network. A fully functional sensor node exists with tested lab scale operation.



Looking for a Development Partner

The technology in its current stage has been proved in the lab, in order to advance the trisensor for field deployments, the following needs to be done:

- Fabricating on extremely low static PCBs to avoid any safety issues when sensing highly volatile gases.

Help from an interested development partner is required since KFUPM does not have the desired fabrication facilities.

Patent Protection

A patent application 15/284618 (2015-142) has been filed and is currently pending with the US patent office. KFUPM would like to talk to companies as described above that are interested in developing this technology.

About KFUPM

King Fahd University of Petroleum & Minerals is a leading educational organization for science and technology. KFUPM Innovation & Industrial Relations is the IP management and technology licensing office tasked with taking innovation from lab to market place.

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