

Gas Sensors systems for Environment monitoring

Swachh Bharat Abhiyan (Clean India Mission) is a key focus area of government's initiatives to provide clean environment to the society. This is possible only if the correct estimate of the pollutants in environment is made. CSIR-CEERI has developed an Internet of things (IoT) enabled platform system for NH_3 , CO and H_2S sensing, which enables monitoring of gas levels at desired location. The systems include indigenously developed metal oxide based MEMS gas sensors, readout & control electronics and smart algorithms. This is one step towards the vision of smart cities. The baseline correction and detection algorithm are implemented and tested for the detection of three gases.



NH_3 , CO and H_2S gas detection systems

Major applications:

Individual systems have been developed to detect NH_3 , CO and H_2S . Ammonia sensor finds application in toilet cleanliness monitoring as well as in chemical industries, fertilizer industries, cement plants, refrigeration plants, etc. CO is considered as a silent killer hence, CO detector has indoor applications as well as outdoor applications. CO and H_2S detectors can also be used for manhole gas detection. These three detectors are also useful in outdoor air quality monitoring as these are identified as air pollutants.

NH_3 , CO and H_2S are hazardous gases and have severe health hazards, if inhaled above permissible exposure limit (PEL). Very high concentration of these gases can lead to severe health hazards or even death. The suitable usage of the gas sensor systems can save lives, as well as can help to reduce the air pollution, in the areas where the hazard of these gases exists.

Salient Features:

- Response time is < 1 min.
- Sensor Power consumption < 200mW
- Overall system power consumption: System with sniffer mechanism 2.5 watt and System without sniffer (small) 1 watt
- Systems enabled with IoT can detect ammonia and log data at central server
- Industry friendly 4-20mA interface
- Easy sensor replacement and
- Flexibility to tune the alarm threshold as per the need.

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