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Redesign, Construction and Validation of a Sensor Testing Apparatus

Currently world wide, prolonged exposure to undetected gas leaks from low quality fuels, traffic, power, and agricultural emissions is one of the lead causes of premature death. Research published in Environmental Health Perspectives; documented that any amount of air pollution particles were linked to a 3% increase in all deaths and an estimated 10% increase in the risk of death due to heart disease in the United States. Unfortunately, the commercially available gas detection devices used today are unable to detect harmful gases at low concentrations resulting in chemical particles infiltrating the body's immune system entering deep into the lungs and bloodstream. In this research project, a gas sensing apparatus was redesigned to ensure that the detected gas and the balance gas is well mixed and enters the testing chamber. The gas molecules absorbed through a semi conductor sensing material illicit a measurable response and the deviation in resistance is recorded. This was achieved through a cost effective design implemented by attaching a T-junction and cross junction gas tight piping sections which allowed less friction to build up in the pipes and prevented any back pressure from occurring.