



**Monthly Topic: Combustible Gas Sensor Technologies**

Detecting combustible gases below LEL levels is incredibly important in maintaining a safe work environment, not only for the workers directly exposed but also the area beyond. The two most prevalent types of sensors used for detection of combustible gases are catalytic bead and infrared.

- Catalytic Bead (Pellistors)** - Within the detector is a bead, used as a sensor, and an electrically heated platinum wire coil that is coated with suitable metal oxides. When a combustible gas passes over the detector, the temperature of the catalytic bead increases. This temperature change alters the resistance of the coil to equal the concentration of gas present, resulting in a temperature difference between the active and reference bead. This output change is linear, for most gases, up to and beyond 100% LEL. Response time is a few seconds to detect alarm levels, and at least 12% oxygen by volume is needed for the oxidation.
- Infrared (IR)** - Infrared gas detectors work based on the principle of infrared absorption. An infrared source illuminates a volume of gas that has entered inside the measurement space. The gas absorbs some of the infrared wavelengths as the light passes through it, while others pass through it completely unattenuated. The amount of absorption is related to the concentration of the gas and is measured by a set of optical detectors. The change in the intensity of the absorbed light is measured relative to the intensity of light at a non-absorbed wavelength. The microprocessor computes and reports the gas concentration from the absorption.

Catalytic Bead	Infrared
Short battery life	Low power consumption
Requires oxygen to operate	Can operate in inert atmospheres
3-5 year lifespan	10 year lifespan
Low initial cost	Lower long-term cost
Capable of detecting all combustible gases	Does not detect Hydrogen H <sub>2</sub> or Acetylene C <sub>2</sub> H <sub>2</sub>
Susceptible to poisoning	Immune to poisoning
Susceptible to signal drift (testing/calibration 1-90 day)	Minimal signal drift (testing/calibration 6+ months)
Non fail-safe	Fail-safe
Operate at a broader temperature range	Limited temperature range

Macurco Resources	Macurco Literature	Learn More
<ul style="list-style-type: none"> <li><a href="#">GD-6</a></li> <li><a href="#">EX Series</a></li> <li><a href="#">GS-1</a></li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Quick Reference</a></li> <li><a href="#">Product Brochure</a></li> <li><a href="#">Gas &amp; Product Training</a></li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Catalytic Bead (Pellistors)</a></li> <li><a href="#">Infrared (IR)</a></li> <li><a href="#">LEL &amp; UEL</a></li> </ul>

Common Applications		
<ul style="list-style-type: none"> <li>✓ Office Buildings</li> <li>✓ Factories</li> <li>✓ Oil &amp; Gas</li> <li>✓ Maintenance Facility</li> </ul>	<ul style="list-style-type: none"> <li>✓ Chemical Plants</li> <li>✓ Welding Shops</li> <li>✓ Battery Charging Stations</li> <li>✓ Manufacturing Plants</li> </ul>	<ul style="list-style-type: none"> <li>✓ Power Plants</li> <li>✓ Crude Petroleum</li> <li>✓ Wastewater Treatment</li> <li>✓ Boiler Rooms</li> </ul>

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