

ABSTRAK

Methane Gas Detector adalah seperangkat alat instrumentasi yang dapat mendeteksi gas *Methane* di industri lingkungan kerja. Gas *Methane* merupakan rumus kimia CH_4 , *hidrokarbon* yang mengandung satu atom karbon (C) dan empat atom *hydrogen* (H) satuan ukur gas *Methane* adalah % LEL. Gas *Methane* merupakan zat reaktif sehingga mudah meledak jika bereaksi dengan api. Apabila terjadi kebocoran di area kilang dan *gas methane* tidak terdeteksi akan menimbulkan masalah *explosive* atau ledakan dan bahaya bagi manusia akan timbul gejala seperti sesak napas karena efek kekurangan *oxygen* (*asphyxia*). Adapun beberapa sensor yang digunakan sebagai *Methane Gas Detector* di *Maintenance Area* yaitu *Sensor Catalytic* dan *Sensor Infrared*.

Ada perbedaan dari *Sensor Catalytic* dan *Sensor Infrared* dari segi *Respon Time* dan Segi keandalan alat. *Respon Time* dari *Sensor Infrared* pada saat menangkap gas yang masuk ke sensor yaitu dengan jumlah nilai waktu rata-rata **1,075** detik. Nilai tersebut lebih cepat dibandingkan dengan *Sensor Catalytic* yang membutuhkan yaitu jumlah nilai rata-rata waktu **8,2** detik dan dari segi keandalan alat, *Sensor Infrared* lebih tinggi dengan nilai **1**, dibandingkan dengan sensor *catalytic* yang mempunyai keandalan **0.60653**. Sensor *infrared* mempunyai keunggulan mendeteksi gas selain gas *metahane* seperti *prophane*, *ethane*, *ethylene* dan *butane*. Keunggulan lain yaitu mampu mengadaptasi dengan temperatur tinggi dibandingkan *Sensor Catalytic* dengan temperature rendah.

Kata Kunci : *Methane Gas Detector, Gas Methane, Kesehatan, Keselamatan, Lingkungan, Keandalan Alat*

ABSTRACT

Methane Gas Detector is a set of instrumentation tools that can detect Methane gas in industrial work environments. Methane gas is the chemical formula CH₄, a hydrocarbon containing one carbon atom (C) and four hydrogen atoms (H). Methane gas measurement unit is % LEL. Methane gas is a reactive substance so it is easy to explode if it reacts with fire. And if there is a leak in the refinery area and methane gas is not detected, it will cause explosive problems and danger to humans will arise symptoms such as shortness of breath due to the effects of lack of oxygen (asphyxia). There are several sensors used as Methane Gas Detectors in the Area Maintenance 2 area, namely Catalytic Sensors and Infrared Sensors.

There are differences between Catalytic Sensors and Infrared Sensors in terms of Response Time and in terms of tool reliability. Response Time from the Infrared Sensor when capturing gas entering the sensor is the total time value of 1.075 seconds. This value is faster than the Catalytic Sensor which requires an average time value of 8.2 seconds and in terms of tool reliability, the Infrared Sensor is higher with a value of 1, compared to the catalytic sensor which has a reliability of 0.60653. Infrared sensors have the advantage of detecting gases other than methane gas such as propane, ethane, ethylene and butane. Another advantage is being able to adapt to high temperatures compared to Catalytic Sensors with low temperatures..

Keywords : Methane Gas Detector, Gas Methane, Health, Safety, Environment, Reliability.