

# Kajian eksperimental pengaruh gradien medan magnet terhadap laju perubahan panjang nyala api dan jarak lifted flame difusi bahan bakar LPG = Experimental study of magnetic field gradient effect to rate of change in the flame length and the lifted flame distance on diffusion of LPG fuel

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## Abstrak

[<b>ABSTRAK</b><br>

Pengaruh gradien medan magnet pada flame difusi pembakaran LPG

udara telah dipelajari secara sistematis interaksinya. Medan magnetik yang tidak seragam dihasilkan pada gap udara dari pembangkit medan magnet, LPG dan udara divariasikan kecepatan alirannya kemudian dikenai medan magnet tak seragam. Pengaruh kondisi operasi pada parameter penting dari flame difusi seperti struktur nyala, panjang nyala, temperatur dan jarak nyala terangkat didalam flame telah dipelajari dengan kondisi percobaan ini menggunakan pembangkit medan magnet sebesar 0,24T dan gradien medan magnet 22.9T/m.

Jarak nyala terangkat dan panjang nyala memendek dengan dikenakanya penurunan gradien medan magnet vertikal (gradien medan magnet negatif), juga temperatur di daerah nyala mengalami peningkatan dengan kenaikan temperatur sebesar 48.90C untuk laju alir LPG 55cc/min. Sebaliknya jika dikenai gradien medan magnet positif keduanya akan memanjang dan temperatur akan turun dengan penurunan temperatur sebesar 174.7 0C untuk laju alir LPG 45 cc/min.

Laju perubahan panjang nyala dan jarak nyala terangkat terhadap perbedaan kuat medan magnet menghasilkan nilai negatif dengan kehadiran gradien medan magnet negatif dan nilai positif untuk gradien medan magnet positif. Sedangkan luas nyala tidak berubah untuk semua kondisi gradient medan magnet;

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<b>ABSTRACT</b><br>

The effect of a gradient magnetic field on a diffusion flame LPG/air combustion has been systematically studied to comprehend their interaction. A non-uniform magnetic field was produced in the air gap of an magnet field generator and the LPG/air flame corresponding to various LPG and air flow velocities was subjected to the non-uniform field. The influence of the operating conditions on the fundamental parameter of the diffusion flame, such as the flame structure, flame length , temperature and the lifted flame distance in these flames have been thoroughly studied with conditions this experimentation used magnetic field generator 0,24 T dan magnetic field gradient 22.9 T/m. The lifted flame and the flame length decreased with the application of the vertically decreasing magnetic field gradient (negatif magnetic field gradient) , also the temperatures within the flame increased with an increase temperatures 48.90C for the flow velocity of 55 cc/min . Viceversa it would lengthen if subjected positif magnetic field gradient

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