ABSTRAK

Global emisi dari industri penerbangan menyumbang sebanyak 2,4% global emisi CO_2 dari total global emisi,menurut *International Council on Clean Transportation* (ICCT), global emisi CO_2 dari penerbangan komersial berjumlah 707 juta ton pada tahun 2012. Pada tahun 2019 nilai ini mencapai 920 juta ton,meningkat sekitar 30% dalam enam tahun. Tujuan dilakukannya penelitian ini adalah untuk mengetahui 3 *case* emisi dari *jet propellant 8 (JP-8)* jika dicampur dengan *greenhouse gasses* CO_2 dan CH_4 pada variasi *equivalent ratio* 0,5 sampai 2,0 dan variasi persentase 50%/50% sampai 90%/10%. Metode penelitian yang digunakan adalah Simulasi untuk pembakaran *jet fuel* dan *greenhouse gasses.* Percampuran *jet fuel* dan *greehouse gasses* yang digunakan yaitu *Case* 1 murni 100% dodecane ($C_{12}H_{26}$), *Case* 2 ($C_{12}H_{26}$) + metana (CH_4), *Case 3* ($C_{12}H_{26}$) + karbon dioksida (CO_2). Pembakaran tersebut menghasilkan nilai *mass fraction,flamespeed,*temperatur dan *net reaction*. *Mass fraction* menghasilkan 5 produk yaitu *CO,*CO_2, N_2,*O,*O_2. N_2 memiliki nilai emisi terendah dari 3 *case* tersebut Pada *case* 1 produk N_2 memiliki nilai terendah 547715,1 pada *Equivalent ratio* 2,0. Pada case 2 Produk N_2 Pada *Equivalent ratio* 1,5 memiliki nilai terendah 91647,82 dengan persentase 70% N_2/30% CH_4. Pada case 3 Produk N_2 Pada *Equivalent ratio* 1,5 memiliki nilai terendah 91647,82 dengan persentase 70% N_2/30% CO_2.

Kata kunci : Emisi,*Greenhouse Gasses,chemkin*

ABSTRACT

Globally, aviation produced 2.4 percent of total CO_2 emissions,according to the International Council on Clean Transportation (ICCT), global CO_2 from commercial aviation was 707 million tons in 2013. In 2019 that value reached 920 million tons, having increased approximately 30 percent in 6 years. The purpose of this research is to investigate the emissions of three cases involving jet propellant 8 (JP-8) when mixed with greenhouse gases CO_2 and CH_4 at equivalent ratio variations ranging from 0.5 to 2.0 and percentage variations from 50%/50% to 90%/10%. The research method utilized simulation for the combustion of jet fuel and greenhouse gases. The mixing of jet fuel and greenhouse gases includes Case 1 with 100% pure dodecane ($C_{12}H_{26}$), Case 2 with a mixture of $C_{12}H_{26}$ and methane (CH_4), and Case 3 with a combination of $C_{12}H_{26}$ and carbon dioxide (CO_2). The combustion process resulted in mass fraction, flame speed, temperature, and net reaction values. The mass fraction produced 5 products: CO,CO_2,N_2,O and O2. Among these, N_2 had the lowest emission values across the three cases. In Case 1, the N_2 product had the lowest value of 547715.1 at an equivalent ratio of 2.0. In Case 2, the N_2 product at an equivalent ratio of 1.5 had the lowest value of 91647.82 with a percentage of 70% N_2/30% CH_4. In Case 3, the N2 product at an equivalent ratio of 1.5 had the lowest value of 91647.82 with a percentage of 70% N_2/30% CO_2.

Keywords **:** *Emission,Greenhouse Gasses,chemkin*