

## ABSTRAK

### **PENGARUH KECEPATAN UDARA PEMBAKARAN DAN *SOLID FUEL FEED RATE* (BIOPELET SEKAM PADI) TERHADAP EFISIENSI PEMBAKARAN BURNER BIOMASSA TIPE *ROCKET***

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**(Riski Apriansyah, 2026 : 81 Halaman, 22 Tabel, 20 Gambar, 3 Lampiran)**

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Biopellet sekam padi merupakan salah satu bahan bakar biomassa yang berpotensi dimanfaatkan sebagai sumber energi alternatif pada burner biomassa tipe *rocket*. Kinerja pembakaran dipengaruhi oleh kecepatan udara pembakaran dan *solid fuel feed rate*. Penelitian ini bertujuan untuk menganalisis pengaruh kedua parameter tersebut terhadap temperatur lidah api, panjang lidah api, dan efisiensi pembakaran. Penelitian dilakukan secara eksperimen dengan variasi *solid fuel feed rate* sebesar 2,5 kg/jam, 3 kg/jam, dan 3,5 kg/jam, serta kecepatan udara 6 m/s, 8 m/s, 10 m/s, 12 m/s, dan 14 m/s. Parameter yang diamati meliputi temperatur lidah api, dan efisiensi pembakaran. Hasil penelitian menunjukkan bahwa temperatur lidah api tertinggi diperoleh pada laju alir bahan bakar 3 kg/jam dan kecepatan udara 8 m/s, yaitu 943,44°C dan efisiensi pembakaran tertinggi diperoleh pada laju alir bahan bakar 2,5 kg/jam dan kecepatan udara 10 m/s, yaitu sebesar 75,07%. Hasil penelitian menunjukkan bahwa keseimbangan antara kecepatan udara pembakaran dan *solid fuel feed rate* berpengaruh terhadap karakteristik pembakaran dan efisiensi burner biomassa tipe *rocket*.

**Kata Kunci :** biopellet sekam padi, burner biomassa tipe *rocket*, kecepatan udara, efisiensi pembakaran

## ABSTRACT

### ***EFFECT OF COMBUSTION AIR VELOCITY AND SOLID FUEL FEED RATE (RICE HUSK PELLETS) ON THE COMBUSTION EFFICIENCY OF A ROCKET – TYPE BIOMASS BURNER***

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**(Riski Apriansyah, 2026 : 81 Pages, 22 Tables, 20 Figures, 3 Attachments)**

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*Rice husk pellets are one of the promising biomass fuels that can be utilized as an alternative energy source in a rocket-type biomass burner. The combustion performance is influenced by combustion air velocity and solid fuel feed rate. This study aims to analyze the effect of combustion air velocity and solid fuel feed rate on flame temperature, flame length, and combustion efficiency. The study was conducted experimentally using solid fuel feed rates of 2.5 kg/jam, 3.0 kg/jam, and 3.5 kg/jam, with combustion air velocities of 6, 8, 10, 12, and 14 m/s. The observed parameters included flame temperature, flame length, and combustion efficiency. The results showed that the highest flame temperature of 943.44°C was achieved at a solid fuel feed rate of 3.0 kg/jam and an air velocity of 8 m/s, and The highest combustion efficiency, 75.07%, was achieved at a solid fuel feed rate of 2.5 kg/jam and an air velocity of 10 m/s. These findings indicate that an appropriate balance between combustion air velocity and solid fuel feed rate significantly affects the combustion characteristics and efficiency of the rocket-type biomass burner.*

**Keywords :** *rice husk pellets, rocket – type biomass burner, combustion air velocity, combustions efficiency.*