

## INTISARI

Gaya dorong yang dihasilkan motor roket *propellant* padat tergantung dari ketepatan komposisi campuran antara serbuk gula, *Potassium Nitrate*, diameter *core hole*, dan ukuran diameter nosel. Untuk dapat mengetahui gaya dorong yang dihasilkan motor roket *propellant* padat dari pengaruh variasi ukuran *nozzle throat* maka perlu dilakukan pengujian terhadap benda uji yaitu pada motor roket berbahan bakar padat.

Pengambilan data dilakukan dengan memposisikan motor roket agar mengarah pada alat pengukur gaya. Penekanan alat pengukur gaya terjadi setelah propelan padat terbakar dan menghasilkan gas pembakaran yang keluar dari nosel. Perubahan gaya yang terjadi akan terbaca pada alat ukur selanjutnya direkam menggunakan alat perekam.

Dari hasil pengujian motor roket *propellant* padat ( $\text{KNO}_3$  dan gula) dengan variasi diameter *nozzle throat* 8, 10, dan 12,5 mm, gaya dorong tertinggi dicapai variasi diameter *nozzle throat* 8 mm sebesar 175,599 kgf lebih tinggi dari pada variasi diameter *nozzle throat* 10, dan 12,5 mm. Diameter *nozzle throat* 10 mm menghasilkan gaya dorong sebesar 102,678 kgf dan gaya dorong terendah pada variasi diameter *nozzle throat* 12,5 mm yaitu sebesar 62,13 kgf. Terdapat perbedaan waktu gaya dorong tertinggi yang dicapai dari ukuran diameter *nozzle throat* 8, 10, dan 12,5 mm.

**Kata Kunci :** *Propellant*, *nozzle throat* dan *core hole*.

## **ABSTRACT**

*Thrust that is produced by solid propellant rocket motor depends on the accuracy of mixture composition between sugar powder, Potassium Nitrate, core hole diameter and the size of nozzle diameter. To know the thrust that is produced by solid propellant rocket motor from the influence of size variation of nozzle throat, it is important to test the object that is on the solid-fuel rocket motor.*

*Data collection was performed by positioning the rocket motor that leads to a force gauge. Emphasis force gauges occurred after the burning solid propellant and produces combustion gases coming out of the nozzle. Force changes that occur will be read at the next measuring instruments recorded using a video recorder.*

*From the results of the testing of solid propellant rocket motor ( $KNO_3$  and sugar) with the variation of the nozzle throat diameter of 8, 10, and 12.5 mm, the highest thrust is achieved by the variation of nozzle throat diameter of 8 mm at 175.599 kgf, it is higher than the variation of nozzle throat of 10 and 12.5 mm. Nozzle throat diameter of 10 mm produces thrust of 102.678 kgf and the lowest thrust at the variation of nozzle throat diameter of 12.5 mm that is 62.13 kgf. There is a time difference of the highest thrust that is achieved from the size of nozzle throat diameter of 8, 10, and 12.5 mm.*

**Key Words :** *Propellant, nozzle throat and core hole.*