

TUGAS AKHIR

OPTIMASI KINERJA *PROTOTYPE* APLIKATOR *FEEDER GREASE* UNTUK PENGAPLIKASIAN *SEMI SOLID LUBRICANT* PADA PROSES PEMESINAN

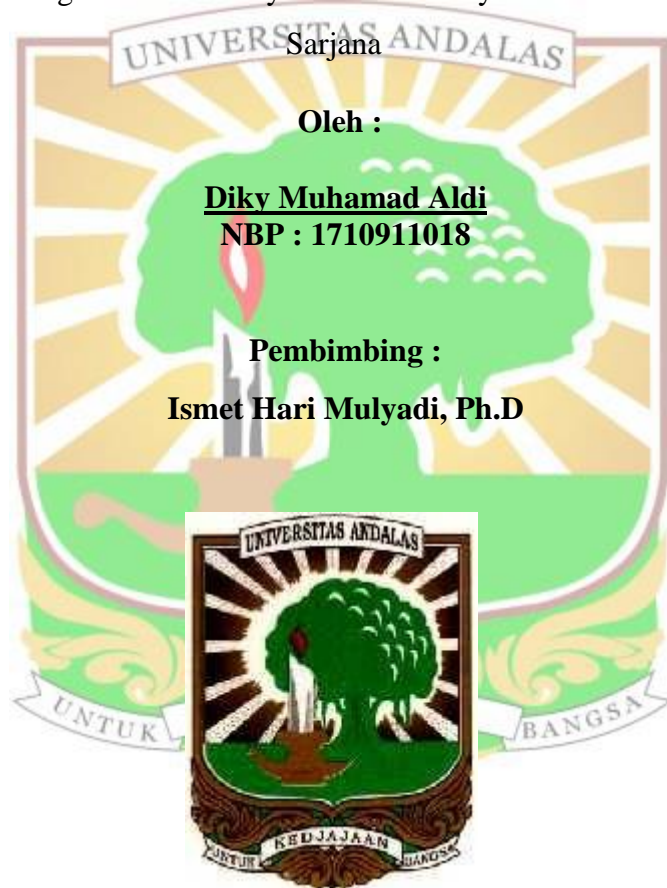
Diajukan Sebagai Salah Satu Syarat untuk Menyelesaikan Pendidikan Tahap
Sarjana

Oleh :

Diky Muhamad Aldi
NBP : 1710911018

Pembimbing :

Ismet Hari Mulyadi, Ph.D



DEPARTEMEN TEKNIK MESIN

FAKULTAS TEKNIK - UNIVERSITAS ANDALAS

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ABSTRAK

Telah dirancang aplikator *feeder grease* sebagai alat bantu penyaluran *grease* secara otomatis dalam melakukan pelumasan. Namun dalam pengujiannya masih ditemukan kelemahan pada performa *feeder* dalam mengurangi keausan tepi pahat. Maka dilakukan penelitian ini untuk mengetahui kinerja optimum dari *feeder grease* sehingga maksimal dalam mengurangi keausan tepi pahat. Dilakukan pembubutan menggunakan pahat HSS dengan benda kerja baja karbon rendah ST37. Kedalaman potong (a) = 1 mm, gerak makan (f) = 0,14 mm/r dan putaran spindel (n) = 370 m/menit untuk kondisi pemotongan pertama dan pemotongan kedua digunakan kedalaman potong (a) = 2,4 mm, gerak makan (f) = 0,22 mm/r dan putaran spindel (N) = 900 m/menit. Pelumas *grease* yang digunakan adalah *Molybdenum Disulfide Grease Merk Bulgari Extrim X*. Pada *feeder grease* diatur konfigurasi berupa tekanan *impact* (2,3,5 bar), jarak penembakan *grease* (15,30,60 mm), tekanan *grease* (0.2,0.6,0.8 bar) dan orientasi posisi *nozzle* (30,45,75 derajat). Hasil performa optimum aplikator *feeder grease* didapatkan menggunakan metoda Taguchi L27 dengan pendekatan *ratio signal to noise smaller is better* dan analisis statistik ANOVA ($P < 0,5$).

Didapatkan hasil performa optimum bahwa kombinasi parameter tekanan *impact* (3 bar), jarak tembak (15 mm), tekanan *grease* (0,6 bar) dan orientasi *nozzle* (75°). Secara keseluruhan parameter uji memiliki pengaruh yang signifikan dalam mempengaruhi performa aplikator *feeder grease*, akan tetapi didapatkan pengaruh yang kurang signifikan pada parameter orientasi *nozzle*.

Kata Kunci : *Grease, Feeder grease, Semi solid lubricant, Keausan pahat.*

ABSTRACT

A grease feeder applicator has been designed as a tool for automatic distribution of grease in carrying out lubrication. However, in its tests weaknesses were still found in the performance of the feeder in reducing flank wear. So this study was conducted to determine the optimum performance of the grease feeder so that it is maximized in reducing flank wear. Turning is carried out using HSS tool edge with a low carbon steel workpiece ST37. Depth of cut (a) = 1 mm, feeding motion (f) = 0.14 mm/r and spindle rotation (n) = 370 m/min for the first cutting condition and the second cutting is used cut depth (a) = 2.4 mm, feeding motion (f) = 0.22 mm/r and spindle rotation (N) = 900 m/min. The grease lubricant used is Molybdenum Disulfide Grease Brand Bulgari Extrim X. In the grease feeder, the configuration is set in the form of impact pressure (2.3.5 bar), grease firing distance (15.30.60 mm), grease pressure (0.2.0.6.0.8 bar) and nozzle position orientation (30.45.75 degrees). The optimum performance results of the feeder grease applicator were obtained using the taguchi L27 method with a ratio signal to noise smaller is better approach and ANOVA statistical analysis ($P < 0.5$).

Optimum performance results were obtained that the combination of the parameters of impact pressure (3 bar), firing range (15 mm), grease pressure (0.6 bar) and nozzle orientation (75°). Overall, the test parameters had a significant influence in influencing the performance of the grease feeder applicator, but a less significant influence was obtained on the nozzle orientation parameters.

Keywords : Grease, Feeder grease ,Semi solid lubricant, flank wear