

## ABSTRAK

*CNC Milling* sangat cocok digunakan di perusahaan manufaktur karena ketelitian yang akurat dan waktu yang dibutuhkan pabrikasi lebih cepat. *Cast Iron FC200* atau bisa disebut besi cor kelabu dengan kandungan karbon (C) 2,5-5% dan silikon (Si) 0,8-3% komponen mesin yang dicor dengan material tersebut diantaranya, *cylinder blok, crank case, crank shaft*. Karena kualitas permukaan yang lebih baik dan biaya yang tidak begitu mahal, grafit dalam *Cast Iron FC200* menghasilkan material yang memiliki ketahanan abrasi dan kekerasan yang tinggi.. Tujuan dari penelitian ini untuk mengetahui pengaruh parameter terhadap *surface roughness dan toleransi bidang* hasil pemesinan *CNC Milling Vertical Machining Centre* Wele AA1165 BT40 dengan material *Cast Iron FC200* ukuran panjang 90mm x lebar 90mm x tebal 6mm. Variasi parameter pada penelitian ini adalah *Spindle Speed* 1000 Rpm, 1100 Rpm dan 1200 Rpm. *Feed rate* 45 mm/min, 95 mm/min 155 mm/min dan *Depth of Cut* 0,5 mm, 0,7 mm dan 0,9 mm. Spesimen dibuat dengan menggunakan jenis proses pemotongan *face mill cutter* diameter 100mm type OAKU-060508SR-R50-CTPK220 dengan jumlah mata *insert* 10 *flute*. Rekomendasi parameter berdasarkan *surface roughness* yaitu *spindle (spindle speed)* 1200 Rpm, kecepatan pemakanan (*feed rate*) 45 mm/min, dan kedalaman potong (*depth of cut*) 0,5mm. Kemudian rekomendasi parameter berdasarkan *toleransi bidang* yaitu *spindle (spindle speed)* 1100 Rpm, kecepatan pemakanan (*feed rate*) 45 mm/min, dan kedalaman potong (*depth of cut*) 0,9mm.

**Kata Kunci :** *Spindle Speed, Feed Rate, Depth of Cut, Cutting Tools, Facemill Surface Rougness, Toleransi Bidang, CNC Milling.*

## ABSTRACT

*CNC Milling is very suitable for use in manufacturing companies because of its accurate accuracy and faster manufacturing time. Cast Iron FC200 or can be called gray cast iron with carbon content (C) 2.5-5% and silicon (Si) 0.8-3% engine*

*components are casted with these materials, including cylinder block, crank case, crank shaft. Due to its better surface quality and lower cost, the graphite in Cast Iron FC200 produces a material that has high abrasion resistance and hardness. The purpose of this study was to determine the effect of parameters on surface roughness and flatness of CNC Milling Vertical Machining Center Wele machining results. AA1165 BT40 with Cast Iron FC200 material, length 90mm x width 90mm x 6mm thickness. Parameter variations in this study are Spindle Speed 1000 Rpm, 1100 Rpm and 1200 Rpm. Feed rates are 45 mm/min, 95 mm/min 155 mm/min and Depth of Cut 0.5 mm, 0.7 mm and 0.9 mm. Specimens were made using a 100mm diameter face mill cutter type OAKU-060508SR-R50-CTPK220 with 10 flutes of inserts. Parameter recommendations based on surface roughness are spindle (spindle speed) 1200 Rpm, feed rate (feed rate) 45 mm/min, and depth of cut (depth of cut) 0.5mm. Then the recommended parameters based on flatness are spindle (spindle speed) 1100 Rpm, feed rate (feed rate) 45 mm/min, and depth of cut (depth of cut) 0.9mm.*

**Keyword :** *Spindle Speed, Feed Rate, Depth of Cut, Cutting Tools, Facemill Surface Rougness, Flatness, CNC Milling.*