**Tabel 1.** Daftar Kebutuhan *(List of Requirement)* Gergaji Mesin

|  |  |  |
| --- | --- | --- |
| **No** | **Uraian Kebutuhan** | **Keterangan** |
| 1 | Spesifikasi dan Geometri | * Dimensi Gergaji Mesinsesuai standart * Bentuk Gergaji Mesin sesuai standart |
| 2 | Aman dan Nyaman | * kuat menahan beban sebesar 100 kg * Nyaman dalam pengoperasian pemotongan |
| 3 | Material dan Komponen | * Besi siku dengan ukuran 4x4 * Komponen alat banyak tersedia di pasaran |
| 4 | Fungsi | * Berfungsi sebagai pemotongan kayu sudut |
| 5 | Pemeliharaan | * Semua komponen mudah untuk di *assembly* * Setiap *part* mudah untuk dibersihkan |
| 6 | Manufaktur | * Semua *part* bisa di manufaktur dengan proses permesinan konvensional dan non konvensional |

**Tabel 2.** Pemilihan Material

|  |  |  |  |
| --- | --- | --- | --- |
| No | Option | Konsep A | Konsep B |
| 1 | Badan Meja | Kayu | Plat |
| 2 | Rangka Meja | Besi Siku L | Besi Holo |
| 3 | Mata Potong | Circular saw 8” | Circular saw 6” |
| 4 | Alas Meja | Plat besi | Triplek |
| 5 | Penggerak | Dynamo 600 watt | Dynamo 1200 watt |
| 6 | Saklar | Saklar tombol | *Rotary Switch* |

**Tabel 3.** Kelebihan Dan Kekurangan Desain A Dan B

|  |  |  |
| --- | --- | --- |
|  | Kelebihan | Kekurangan |
| Konsep A | - Kemudahan dalam pengoperasian pemotongan  - Lebih efisien dalam perakitan  - Komponen lebih sedikit | - Alas kurang lebar |
| Konsep B | - Kemudahan dalam pengoperasian  - Alas pemotongan lebih Lebar | - Komponen lebih banyak  - Kurangnya efisien dalam perakitan |

**Tabel 4.** Spesifikasi Material Baja JIS G 3101 SS 400

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Nama Material** | ***Young’s Modulus*** | ***Yield Strength*** | ***Tensile Strength*** | ***Mass Density*** |
| JIS G 3101 SS 400 | 190 GPa | 205 Mpa | 360 MPa | 7860 kg/m3 |

**Tabel 5.** Perhitungan *Desain For Assembly* Gergaji Mesin

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| *Part ID No* | *Name Of Assembly* | *Number Of Time The Operation*  *Is Carried Out Consecutivity* | *Manual Handling Code* | *Manual Handling Time Per Part* | *Manual Insertion Code* | *Manual Insertion Time Per Part* | *Operation Time,Second* = [(5) + (7)] | *Operation Cost* (Rp) x (8) | *Figures For Estimation 0f*  *Theoritical Minimum Part* |
| 1 | Meja Gergaji | 1 | 8.3 | 5.6 | 9.6 | 12 | 17.6 |  | 0 |
| 2 | Rangka Kaki Gergaji | 1 | 8.3 | 5.6 | 9.6 | 12 | 17.6 |  | 0 |
| 3 | Jalur Pembuangan Serbuk | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 0 |
| 4 | Dinamo | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 1 |
| 5 | Dudukan Dinamo dan Mata Gergaji | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 1 |
| 6 | Tombol ON OFF | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 1 |
| 7 | Meja Geser | 1 | 0.3 | 1.69 | 0.0 | 1.5 | 3.19 |  | 1 |
| 8 | Baut | 10 | 0.3 | 1.69 | 0.0 | 1.5 | 31.9 |  | 1 |
| 9 | Kunci Pengaturan Sudut | 2 | 0.3 | 1.69 | 0.0 | 1.5 | 3.19 |  | 1 |
| 10 | Mata Gergaji | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 1 |
| 11 | Cover Pisau Gergaji | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 1 |
| Total |  | 20 |  |  |  |  | 113.69 |  | 8 |
|  | | | | | | | TM | CM | NM |

**Tabel 6.** Perhitungan *Desain For Assembly* Gergaji Mesin

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| *Part ID No* | *Name Of Assembly* | *Number Of Time The Operation*  *Is Carried Out Consecutivity* | *Manual Handling Code* | *Manual Handling Time Per Part* | *Manual Insertion Code* | *Manual Insertion Time Per Part* | *Operation Time,Second* = [(5) + (7)] | *Operation Cost* (Rp) x (8) | *Figures For Estimation 0f Theoritical*  *Minimum Part* |
| 1 | Meja Gergaji | 1 | 8.3 | 5.6 | 9.6 | 12 | 17.6 |  | 0 |
| 2 | Rangka Kaki Gergaji | 1 | 8.3 | 5.6 | 9.6 | 12 | 17.6 |  | 0 |
| 3 | Jalur Pembuangan Serbuk | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 0 |
| 4 | Dinamo | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 1 |
| 5 | Dudukan Dinamo dan Mata Gergaji | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 1 |
| 6 | Tombol ON OFF | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 1 |
| 7 | Meja Lipat | 3 | 0.3 | 1.69 | 0.0 | 1.5 | 9.57 |  | 1 |
| 8 | Baut | 10 | 0.3 | 1.69 | 0.0 | 1.5 | 31.9 |  | 1 |
| 9 | Kunci Pengaturan Sudut | 2 | 0.3 | 1.69 | 0.0 | 1.5 | 3.19 |  | 1 |
| 10 | Mata Gergaji | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 1 |
| 11 | Cover Pisau Gergaji | 1 | 0.3 | 1.69 | 9.2 | 5 | 6.69 |  | 1 |
| 12 | Engsel Meja | 6 | 0.3 | 1.69 | 9.2 | 5 | 40.14 |  | 1 |
| Total |  | 20 |  |  |  |  | 160,14 |  | 9 |
|  | | | | | | | TM | CM | NM |