Table 1. Constants and pre-selected parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Number of phases (m) | 3 | PWM method | Sinusoidal |
| Number of modules (n) | 4 | Input circuit | 3 phase bridge rectifier |
| Series connected modules (ns) | 2 | Supply | 3 phase – 400V – 50 Hz |
| Parallel connected modules (np) | 2 | DC Link pre-filter | LC filter |
| Modulation index (ma) | 0.85 | Winding configuration | FSCW, 2-layer, all-teeth |
| Total output power (Pout) | 8 kW | Slot fill factor (kcu) | 0.6 |
| DC Link voltage (Vdc) | 540 V | Magnetic loading (Bg-p) | 0.9 T |
| Synchronous speed (Ns) | 600 rpm | Electrical loading (Arms) | 50 kA/m |
| Slot/phase/module (ws) | 2 | Current density (J) | 4 A/mm2 |
| Pole number (p) | 10 x w |  |  |

Table 2. Estimated & calculated parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Motor efficiency (ηm) | 94 % | Tangential stress (σ) | 45 kPa |
| Drive efficiency (ηd) | 98 % | Rated torque (Tr) | 127.3 Nm |
| Motor power factor | 0.9 |  |  |
| Winding factor (kw) | 0.933 |  |  |

**Design:**

|  |  |
| --- | --- |
|  | (1) |
|  |  |
|  | (2) |
|  | (3) |
|  | (4) |
|  | (5) |
|  |  |
|  | (6) |
|  | (7) |
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|  |  |
|  | (9) |
|  | (10) |
|  | (11) |
|  | (12) |
|  |  |



