

## DAFTAR ISI

LAPORAN TUGAS AKHIR .....	<b>Error! Bookmark not defined.</b>
LEMBAR PENGESAHAN.....	ii
HALAMAN PENGESAHAN .....	<b>Error! Bookmark not defined.</b> i
HALAMAN PERNYATAAN BEBAS PLAGIASI .....	<b>Error! Bookmark not defined.</b>
KATA PENGANTAR.....	<b>Error! Bookmark not defined.</b>
DAFTAR ISI .....	1
DAFTAR GAMBAR .....	<b>Error! Bookmark not defined.</b>
DAFTAR TABEL .....	<b>Error! Bookmark not defined.</b>
DAFTAR ISTILAH .....	<b>Error! Bookmark not defined.</b>
INTISARI.....	<b>Error! Bookmark not defined.</b>
ABSTRACT .....	<b>Error! Bookmark not defined.</b>
BAB I .....	<b>Error! Bookmark not defined.</b>
PENDAHULUAN.....	<b>Error! Bookmark not defined.</b>
1.1 Latar Belakang .....	<b>Error! Bookmark not defined.</b>
1.2 Rumusan Masalah .....	<b>Error! Bookmark not defined.</b>
1.3 Tujuan Penelitian.....	<b>Error! Bookmark not defined.</b>
1.4 Batasan Masalah.....	<b>Error! Bookmark not defined.</b>
1.5 Sistematika Penulisan.....	<b>Error! Bookmark not defined.</b>
BAB II .....	<b>Error! Bookmark not defined.</b>
LANDASAN TEORI .....	<b>Error! Bookmark not defined.</b>
2.1 Tinjauan Pustaka .....	<b>Error! Bookmark not defined.</b>
2.2 Dasar Teori .....	<b>Error! Bookmark not defined.</b>
2.2.1 Kereta Api.....	<b>Error! Bookmark not defined.</b>
2.2.2 Sistem Propulsi Kereta .....	<b>Error! Bookmark not defined.</b>
2.2.3 Sistem Kelistrikan Kereta .....	<b>Error! Bookmark not defined.</b>
2.2.3 Static Inverter (SIV) .....	<b>Error! Bookmark not defined.</b>
2.2.4 LC Filter.....	<b>Error! Bookmark not defined.</b>
2.2.5 THD ( <i>Total Harmonic Distortion</i> ) .....	<b>Error! Bookmark not defined.</b>
2.2.6 Inverter.....	<b>Error! Bookmark not defined.</b>
2.2.7 PWM (Pulse Width Modulation).....	<b>Error! Bookmark not defined.</b>
2.2.8 VVVF (Variable Voltage Variable Frequency).....	<b>Error! Bookmark not</b>

**defined.**

2.2.9 IGBT (Insulated Gate Bipolar Transistor) ....	<b>Error! Bookmark not defined.</b>
2.2.10 3 Phase ( $\Delta$ -Y) Transformator .....	<b>Error! Bookmark not defined.</b>
2.2.11 Kapasitor 3 Fasa .....	<b>Error! Bookmark not defined.</b>
2.2.12 Sistem Kontrol Inverter .....	<b>Error! Bookmark not defined.</b>
2.2.13 RMS (Root Mean Square) .....	<b>Error! Bookmark not defined.</b>
2.2.14 Unit Pendingin Pipa Panas IGBT Berdaya Tinggi .....	<b>Error! Bookmark not defined.</b>
2.3 Hipotesis Penelitian .....	<b>Error! Bookmark not defined.</b>
BAB III .....	<b>Error! Bookmark not defined.</b>
METODOLOGI PENELITIAN .....	<b>Error! Bookmark not defined.</b>
3.1 Waktu dan Tempat Penelitian .....	<b>Error! Bookmark not defined.</b>
3.1.1 Waktu Pelaksanaan .....	<b>Error! Bookmark not defined.</b>
3.1.2 Tempat Pelaksanaan .....	<b>Error! Bookmark not defined.</b>
3.2 Alat-Alat Penelitian .....	<b>Error! Bookmark not defined.</b>
3.3 Blok Diagram Inverter Dua Tingkat Dan Inverter Tiga Tingkat.....	<b>Error! Bookmark not defined.</b>
3.4 Studi Literatur .....	<b>Error! Bookmark not defined.</b>
3.5 Inverter Kereta Api .....	<b>Error! Bookmark not defined.</b>
3.6 Filter LC.....	<b>Error! Bookmark not defined.</b>
3.7 PWM.....	<b>Error! Bookmark not defined.</b>
3.8 Sistem Kontrol Inverter .....	<b>Error! Bookmark not defined.</b>
3.9 Menentukan Datasheet IGBT .....	<b>Error! Bookmark not defined.</b>
3.10 Nilai $R$ (Beban) .....	<b>Error! Bookmark not defined.</b>
3.11 Inverter Dua Tingkat Tiga Fasa Menggunakan Datasheet IGBT .....	<b>Error! Bookmark not defined.</b>
3.12 Inverter Tingkat Tiga Fasa Menggunakan Datasheet IGBT .....	<b>Error! Bookmark not defined.</b>
3.13 Pengujian dan Pengambilan Data .....	<b>Error! Bookmark not defined.</b>
3.14 Metode Analisis Data .....	<b>Error! Bookmark not defined.</b>
BAB IV .....	<b>Error! Bookmark not defined.</b>
HASIL DAN PEMBAHASAN .....	<b>Error! Bookmark not defined.</b>
4.1 Hasil Keluaran PWM .....	<b>Error! Bookmark not defined.</b>
4.2 Hasil Keluaran Inverter Sebelum Difilter.....	<b>Error! Bookmark not defined.</b>
4.3 Hasil Masukan dan Keluaran Gelombang Transformator Delta-Wye .....	<b>Error!</b>

**Bookmark not defined.**

4.4 Hasil Uji Coba Filter LC Tanpa Beban ..... **Error! Bookmark not defined.**

4.5 Hasil Gelombang Keluaran Transformasi ABC to DQ ..... **Error! Bookmark not defined.**

4.6 Hasil Sinyal Keluaran PI Kontrol ..... **Error! Bookmark not defined.**

4.7 Hasil Simulasi Inverter Dua Tingkat Menggunakan Datasheet IGBT ..... **Error! Bookmark not defined.**

4.8 Hasil Simulasi Inverter Tiga Tingkat Menggunakan Datasheet IGBT ..... **Error! Bookmark not defined.**

4.9 Hasil Desain 3D Heatsink ..... **Error! Bookmark not defined.**

4.10 Hasil Simulasi IGBT Heatsink Menggunakan ANSYS Inverter Dua Tingkat ..... **Error! Bookmark not defined.**

4.11 Hasil Simulasi IGBT Heatsink Menggunakan ANSYS Inverter Tiga Tingkat ..... **Error! Bookmark not defined.**

4.12 Tabel Perbandingan Inverter Dua Tingkat Dan Inverter Tiga Tingkat ..... **Error! Bookmark not defined.**

BAB V ..... **Error! Bookmark not defined.**

PENUTUP ..... **Error! Bookmark not defined.**

5.1 Kesimpulan ..... **Error! Bookmark not defined.**

5.2 Saran ..... **Error! Bookmark not defined.**

DAFTAR PUSTAKA ..... **Error! Bookmark not defined.**