

SEKOLAH KEJURUTERAAN ELEKTRIK	
Nama Matapelajaran: Makmal Tahun 3	Semakan : 3
Kod Matapelajaran : SKEE 3742	Tarikh Keluaran : 2008
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**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

## SKEE 3742

SEKOLAH KEJURUTERAAN ELEKTRIK  
FAKULTI KEJURUTERAAN  
UNIVERSITI TEKNOLOGI MALAYSIA

### POWER ELECTRONICS LABORATORY

#### Single-Phase Square Wave Inverter

<p>Disediakan oleh:</p> <p>PM. Dr. Nik Rumzi Nik Idris PM. Dr. Naziha Ahmad Azli PM. Dr. Awang Jusoh PM. Dr. Junaidi Abdul Aziz PM. Dr. Shahrin Md. Ayob PM. Ir. Dr. Tan Chee Wei Dr. Mohd. Rodhi Sahid Dr. Norjulia Mohammad Nordin En. Nik Din Muhammad En. Zaki Daud</p> <p>Tarikh : 18 Julai 2019</p>	<p>Disahkan oleh:</p> <p>Pengarah Program Dr. Jasrul Jamani Jamian</p> <p>Tandatangan Cop</p> <p> <b>DR. JASRUL JAMANI BIN JAMIAN</b> Senior Lecturer Electrical Power Eng. Dept. (POWER) Faculty of Electrical Engineering Universiti Teknologi Malaysia 81310 UTM Johor Bahru Johor Darul Takzim</p> <p>Tarikh : 18 Julai 2019</p>
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### **Project Introduction:**

The inverter is circuit that converts a dc power into an ac power. Numerous topologies of inverter can be found in literature. The classic topology is the full bridge inverter. It is comprising of four transistors that operates as switches (on-off). The switching is controlled by several switching techniques. The most basic is the square wave technique. The output of the inverter is a alternating square wave. To obtain a pure sinusoidal output voltage, a low-pass L-C filter must be connected to the output.

### **Project tasks:**

The team is required to design and construct a square wave inverter. Measure its output voltage total harmonics distortion (THD) reading using power spectrum analyzer. Discuss its reading with the standard IEEE regulation of THD content in an ac voltage waveform. Connect the output inverter with a L-C filter. Design the filter so that the output is a pure sinusoidal voltage. Again, discuss the THD reading with IEEE standard.

The power inverter specifications are as follows:

<b>No.</b>	<b>Parameter</b>	<b>Value</b>
1.	DC input voltage	30 V
2.	Resistance load	100 $\Omega$
3.	Fundamental output voltage	24 V <sub>rms</sub>
4.	Output voltage frequency	400 Hz

An industrial report supported with the experimental results is expected to be produced at the end of project time. The collected data, analysis and plots of waveforms should be well presented and discussed in detail in the report.