GENERATION OF HIGH AC VOLTAGE USING SOLID STATE TESLA COIL TECHNIQUE

Thesis presented in partial fulfilment for the award of the
Advanced Diploma in Electrical Engineering of
INSTITUT TEKNOLOGI MARA

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DECEMBER 1995

ACKNOWLEDGEMENT

It has been a great pleasure working hand in hand with lecturers and other students. They all influence my work and me personally somehow. Nevertheless I would like to say 'thank you' especially to my project supervisor En.Ismail Musirin for his advice, guidance and perseverance. I thank him for his countless time of prove-reading and editing my reports. Special thanks also goes to lecturers in the Power Lab, En. Mustaffar Kamal, Pn.Pauziah, En. Ngah Ramzi, En. Maliki, technicians and not forgetting my friends at the Impulse Power Lab. Fond memories are always with me during my stay with all of you in completing my project.

Thank you.

ABSTRACT

High voltage power supply is considered as a prime apparatus in most high application and testing including the characterization of EMI radiation, transformer testing and even in the application of laser system.

This paper describes the generation of high voltage ac using solid state Tesla coil technique. The system is confined of rectifier circuit, switching circuit and high voltage transformer .

The work has successfully achieved 8.86kV with frequency of 33.2kHz. This development is possible to be incorporated with the Cockroft-Walton stack for the generation of high voltage dc output.

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CHAPTER 1

1.0 INTRODUCTION

Science and technology have had a great impact on our society especially in the electrical and electronic field. The fast and vast technology expansion had caused the demand for electrical energy to increase rapidly. The demand for high voltage supply increase not only for the factories but also for the benefit of other consumers like testing the insulation of power apparatus required high a.c voltage of up to million of Volts, depending on their normal operating voltage. Simulation of over voltage that occur in power system requires high impulse voltages of very short and longer durations. This high voltage, high frequency output energy can light up lamps without wires and perform many otherwise impossible feats.

One of the devices which can be used to generate high voltage with rating of up to several kilovolts with high frequency is Tesla coil. There are two types of Tesla coil; one is classical Tesla coil and the other is solid state Tesla coil.