

Thesis Title	The Construction a Tesla Transformer Using Power Electronic Switches
Thesis Credits	12
Candidate	Mr. Montian Pongpaew
Thesis Advisor	Asst. Prof. Dr. Supakit Chotigo
Program	Master of Engineering
Field of Study	Electrical Engineering
Department	Electrical Engineering
Faculty	Engineering
Academy Year	2013

### Abstract

This paper proposes a development of a high-frequency high-voltage source called as Tesla transformer by integrating solid state circuit to the transformer. The spark gap in the old-type Tesla transformer was replaced by a power electronic circuit which controls the operation of the transformer. Hence, a more compact Tesla transformer can be achieved. This enables the transformer to be transportd and used in limited space. The proposed circuit is based on a full-bridge inverter. In the control circuit, commercial ICs ware used to generate a high frequency and to control the operation of IGBTs in the power stage. As can be seen from the test results, the highest output frequency and voltage at 142 kHz and 130.6 kV<sub>p</sub> can be obtained respectively. Furthermore, the resonant frequency could be adjusted up to the size of the test insulator.

Keyword: Tesla Transformer / High Frequency Transformer / Air Core Transformer / Resonance