

## **Design and simulation of fuzzy logic controller for boost converter in renewable energy application**

### **Abstract**

This paper presents the design and simulation of a DC-DC boost converter which uses wind energy as input source. Nowadays, wind is a type of renewable energy that is sustainable and clean compared to other alternative energy. Generally wind in Malaysia blows at variably low speed thus producing variably low input voltage as energy source. DC-DC boost converter can be used to increase the output voltage to a level suitable for domestic use. In this project, a closed-loop DC-DC boost converter circuit was designed and simulated using MATLAB SIMULINK based from a topological circuit. In the simulation, the circuit was tested with different low input voltage values to a setpoint of 240V. In order to improve the output voltage transient response, Fuzzy Logic Controller is designed and implemented at the circuit to set the duty cycle of the switching device for the boost converter. The result has indicated better performance for boost DC-DC converter with FLC controller.

**Keywords** — DC-DC boost converter, renewable energy, fuzzy logic controller, duty cycle.