

## **Modelling and simulation of PLC-based PWM Driven variable speed drive via state-space approach**

### **Abstract**

Intelligent control has contributed great benefits to industry in terms of increasing efficiency and productivity of industrial processes. Programmable Logic Controller (PLC) - based controller is one of the control device used in industrial automation drive applications, the important aspect is to control speed of an induction motor in the presence of variable load. The plant model in this project is developed using MATLAB/Simulink and the aim is to simulate and analyze the appropriate control technique suitable for implementation onto the PLC to perform real-time implementation of the VSD (variable speed drive) control. This paper presents the work conducted in analyzing, evaluating and improving a PLCbased intelligent controller for a Pulse Width Modulation Driven Variable Speed Drive (PWM Driven VSD) of an induction motor by using state space control method, focusing at the wide range of speed response. The results show that it is possible to archive a consistent control from low till high speed range.

**Keywords** — variable speed drive, PLC-Based controller, induction motor, state space