

ABSTRACT

The use of induction motors are widely applied in various industrial sectors. Induction motor has the characteristics of a solid, relatively inexpensive and easy to maintain. In addition, the induction motor also has a weakness that is difficult in the controlling. To overcome this, the control technique used three phase induction motor that is more popular is the control voltage and frequency control, or better known as Volt/Hertz. The control method is able to maintain the performance of the system, ie keeping the amount of flux to remain constant. With the control method, the magnitude of the voltage and frequency control performed simultaneously and proportionally, thus the value of the maximum torque value always remains constant.

Motor control system embedded in the STM32F100 microcontroller to regulate the generation of pulses on IGBT in inverter with space vector modulation method which is based on the switching sequence is based on the three-phase switching Voltage Source Inverters (VSI). PWM pulses carried on providing variable time setting determines the pulse width of each PWM pulse. Controls performed open-loop system without feedback. Open loop is done by varying the speed set point value is set at the same frequency values set voltage value corresponding modulation index value.

The use of scalar control Volt/Hertz able to withstand inrush current when the motor first running directly and the motor initial current of 3,12 A can be reduced to \approx 2,9 A. The average value of the measurement error in testing the speed of the motor according to the value of the slip factor is equal to 6%. The resulting value of the motor speed has linear relationship with given frequency value. The smaller the value of the inverter output voltage, the greater the value THD and the greater the harmonics produced by the motor causes the motor can not work optimally. Implementation of an open control system gives an average value of 1.935% error.

Keywords: *Induction motor, Volt/Hertz Control, Microcontroller STM32F100, Inverter, Space Vector Modulation*