

A Major-Project report on
"Vector Control Of 3-Phase Induction Motor "
Submitted to
Jawaharlal Nehru Technological University, Hyderabad
In partial fulfilment of the academic requirements for
the award of Degree of
BACHELOR OF TECHNOLOGY

In
ELECTRICAL & ELECTRONICS ENGINEERING

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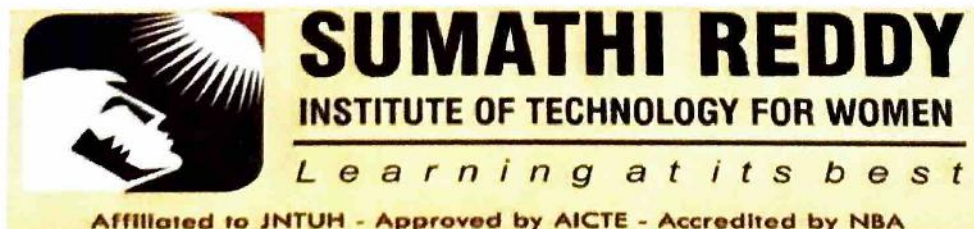
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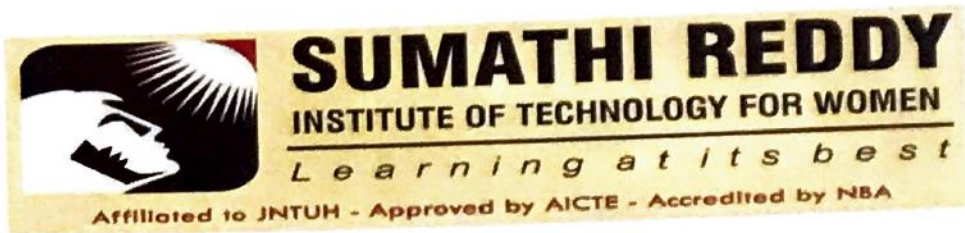
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CERTIFICATE

This is to certify that the major project entitled "**Vector Control Of 3-Phase Induction Motor**" submitted to JNTUH carried out by the following students of IV-B.Tech in the partial fulfillment for the award of the B.Tech Degree in **Electrical & Electronics Engineering** during the academic year 2022-23.

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ABSTRACT

Induction motor is the key point when it comes to industrial applications and when an electrical drives system is to be designed we can represent induction motor in both mathematical and graphical models. In vector control strategy its analysis can be done in either of the two methods i.e, symmetrical three-phase or unsymmetrical two phase version. As the induction motor is nonlinear we need to control in a linearized manner as a DC motor. The objective is to develop a new model to make it suitable for the vector control method. This control principle suggests that the d-q areas unified approach for all kinds of induction motors. Space vector modulation is a very effective tool in the modeling of symmetrical induction motors. Electrical motors analyzed and described considering various types of reference frames and state-space analysis with different types of mathematical modeling are explained. The vector control strategy is implemented practically by digital signal processors (DSP). By using these discrete models, a mathematical model of induction motor is implemented to obtain high-efficiency drives and stability is also analyzed. Widely used DC drives in industrial applications are less reliable and less efficient as compared to AC drives. FOC (Field Oriented Control) i.e, vector control is an innovative method of variable frequency control. The 3- phase AC motor output is controlled using FOC utilizing two controllable variable frequency drive with inverter output variables. Two controllable variable frequency drive inverter variables at the output (voltage and frequency) are used to control three-phase AC motor output is known as FOC or vector control. This can also be known as variable frequency drive control. In machines capable of good performances like a wide speed range, better torque-speed characteristics along with a very fast acceleration-deceleration property FOC control scheme is used. If we consider the volume and cost this technique is also the most reliable and efficient.



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