Speed Control of Single Phase Induction Motor Using Cycloconveter

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Abstract

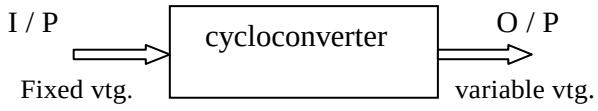
Induction motor is a constant speed machine but it requires variable speed in some applications. So it is necessary to vary the speed of motor. The speed of motor is depends on supply frequency and no of poles but after construction of motor speed can't changed by changing no of poles. This paper examines the use of cycloconverter to vary the speed of motor. the cycloconverter device which is work on relation between speed and frequency. The microcontroller used in this project is the brain of our project which is programmed to change the speed with some steps instructions by the operator. Microcontroller sends the instructions to triggering circuit according to choice of operator. As frequency changes speed also changes.

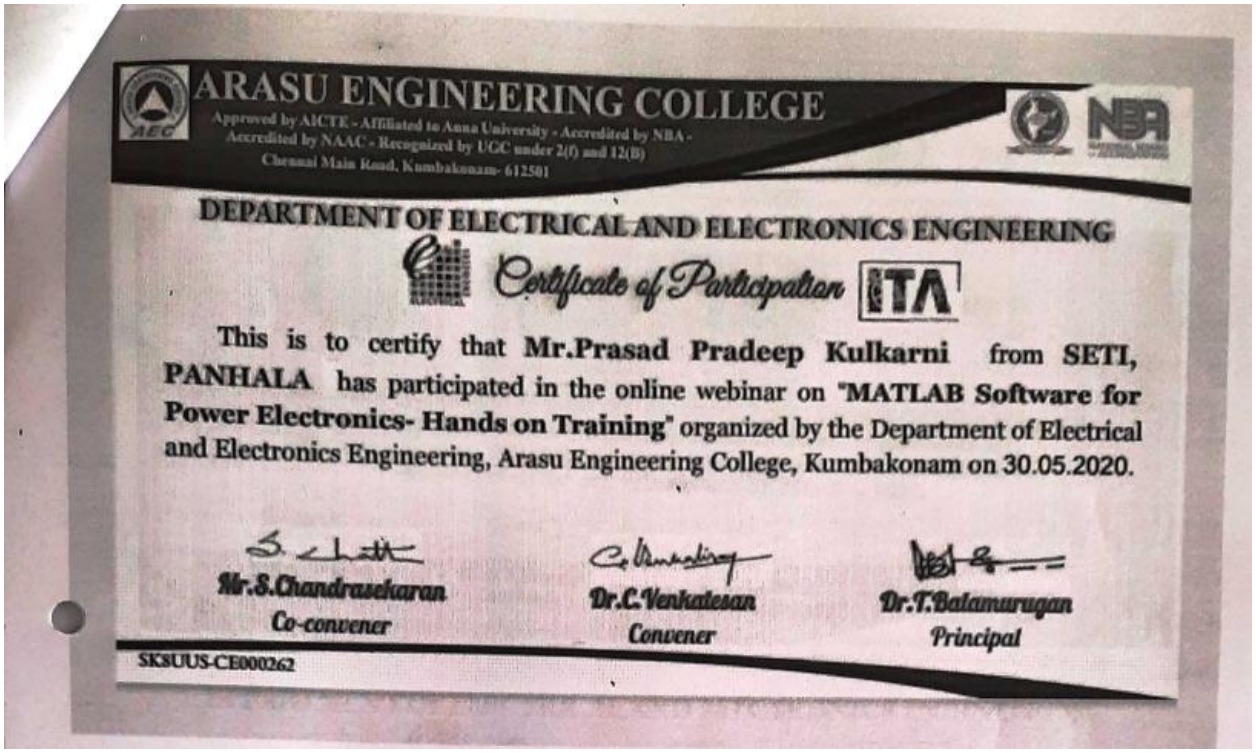
Keywords- Cycloconverter, Single Phase Induction Motor, Frequency, Motor Speed.

1. INTRODUCTION

Speed control of induction motor is necessary in various applications. There are several methods for the speed control of induction motor. But cyclo-converters are used in very large variable frequency drives with ratings. A cycloconverter is controlled through the timing of its firing pulses, so that it produces an alternating output voltage. The development of the semiconductor devices has made it possible to control the frequency of the cycloconverter according to the requirement and deliver a controlled power with the help of semiconductor switching devices like Thyristors, MOSFET's in order to get alternating output of variable frequency. The quality of the output waveform improves if more switching devices are used. Single phase induction motors are widely used in many applications. Improvements in its performance mean a great saving in electrical energy consumption. Thus, a cycloconverter has the facility for continuous and independent control over both its output frequency and voltage.

2. CYCLOCONVERTER





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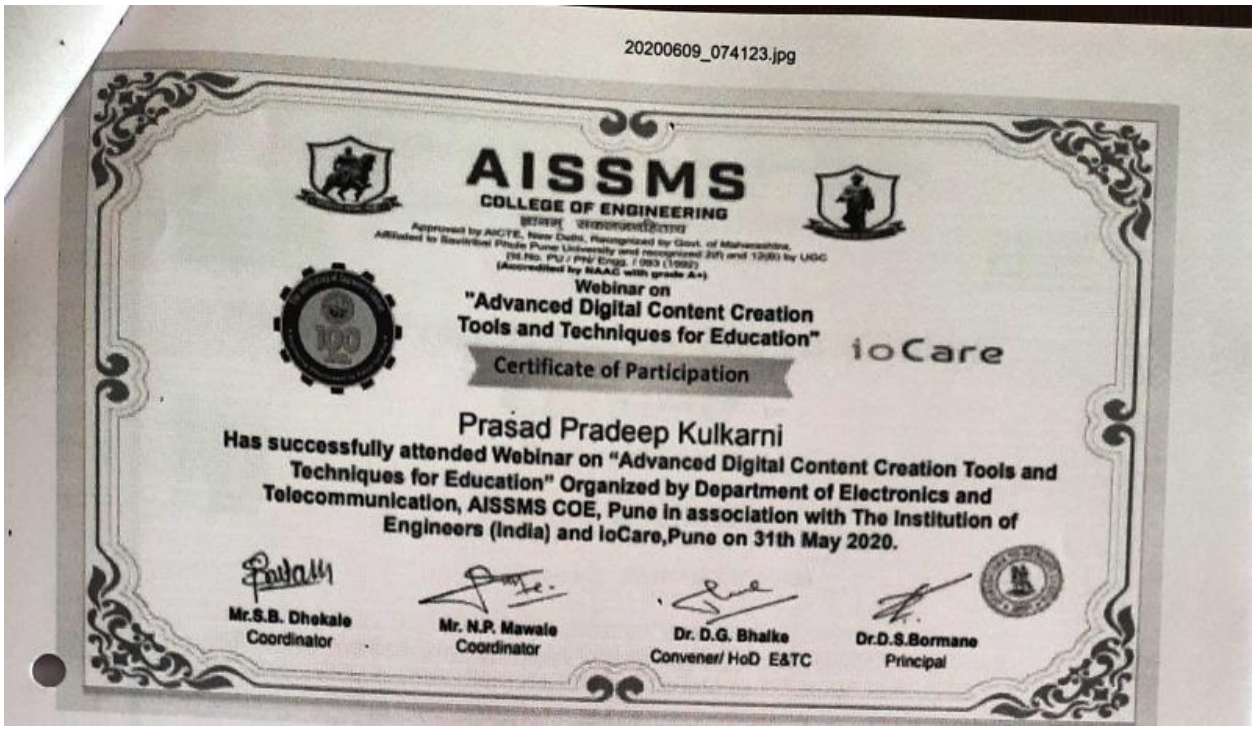

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