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Voltage based control of Induction Motor using Advanced Voice Recognition and Command System

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ABSTRACT

It is difficult to work in dangerous environment in numerous of the businesses. Human can survive as it were certain sum of temperature, weight etc. To work in environment over a run will cause risk to human life. Thus the framework is planned to diminish hazard of human life as well is more precise and computerized to alter itself to commanded parameters. The framework has highlight of voice command-based control of IM Drive for mechanical purposes through strategy of voltage variety. Moreover, it has essential highlights of drive assurance based on warm and over current security of drives. Gadget is having closed input circle framework based on tachometer speed sensor to alter speed precisely and keep up it indeed in the event that stack shifts. The voice acknowledgment gadget utilized is Alexa by Amazon and it communicates to custom planned drive control through wi-fi utilizing Hub MCU

Keywords— 3 Phase Induction Motor, Voice Controlled Induction Motor, Voice Recognition Module, Microcontroller, Speed Control, AC Motor, Alexa Echo Device, Voice Reorganization and Command System, Variable Frequency and Variable Voltage Drive (VFD)

1. INTRODUCTION

As we all know the numbers of accidents are more in Electrical Industries. While people takes proper precautions but sometimes an industrial accident claimed the lifes of a employing operators. As per analysis of electrical accidents the cases are reduced upto 40% now but still the safety measures of every worker, employer and operator is concernable. Automation in electrical industry is more now a days and it helps reduce the need for human intervention. Automation and control systems enable safe and efficient operation of industrial plants by minimizing risks.

But to create an alternative to work in hazardous environment voice control was developed. voice control is used mainly to reduce the manual operation. Here voice communication plays a major part in this project. We are utilizing voice communication totally different areas for different purposes. Engine speed can

be shifted by diverse speed control plans at rotor side and stator side of the engine. In stator side we have voltage control, recurrence control. voice technique we are going to control speed of IM using voltage variation. Speed control of AC/DC motor is used for various applications. the designed system utilizes device named Alexa Echo Dot by Company AMAZON in AI Devices Section this device will be used to recognize voice. the main unit utilizes a NODE MCU which receives the digital data via wi-fi communication. (no need of Internet, hotspot technology). On-board present AT-Mega 328p Microcontroller will process digital data and send signal (PWM in nature) to the servo actuator to rotates the dimmer shaft as per speed requirement. The PWM values are generated with control circuits that have timer features 8bit or more. So it can be analogized that the value of 0 means stop and the maximum value of 255 means full deflection. The system is designed to control speed of induction motors in various steps as well as it provides thermal and over current protection to IM. A tachometer feedback system will be attached to Drive for accurate and automatic speed control.

2. MAIN COMPONENTS OF PROJECT

- Alexa Echo Dot.
- Node MCU.
- Servo motor.
- Variable Voltage Frequency Drive.
- 3Phase Induction Motor.
- Tachometer feedback.

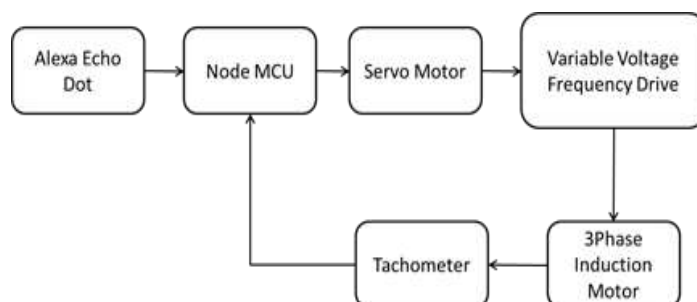


Fig. 1: Main Components of Project

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