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VOICE OPERATED CONTROL OF AC MOTOR

VOICE OPERATED SPEED AND VOLTAGE CONTROL OF AC MOTOR

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Abstract— *Communication plays a major role in day today's life and can be used as a better tool in control systems. It deals with wire communication and is used to control the motor operation like turn on/off, speed and voltage control. Out of all mechanisms, microcontroller hardware description language proves to be efficient than all other mechanisms. By means of the voice process the machine can be controlled depending upon the application wired or in order to transmit the signal the wireless communication can be used. By this way electrical technology is combined with communication technology and computer science. An Induction motor speed control is achieved by varying poles, frequency. This deals with wire communication, in this paper the speed of the AC Motor is controlled by voice using Microcontroller mechanism.*

I. INTRODUCTION (HEADING 1)

Nowadays many industries are using various technologies for speed control of the motor. Our project deals with reduction of manual operation by combining various technologies such as electric drives wireless communication and embedded technology. Here voice communication plays a major role in this project. We are using voice communication in different fields for various purposes. Motor speed can be varied by different speed control schemes at rotor side and stator side of the motor. In stator side we have voltage control, frequency control and pole changing method. In rotor side we have resistance control, slip power recovery method, PWM technique, etc. PWM technique is a new one which mostly used for speed control. Now we are going to control the speed of the motor by voice recognition method. Small scale industries (SSI) play a vital role in shaping the economy of the country. This has special significance with reference to developing nations like India with contributes in terms of large scale employment generation and high labour to capital ratio. It is a means for making the best use of surplus human resource available in the country. They ensure the optimum utilization of locally available resources and cater to the needs of the local market.

II. METHODOLOGY

1. VOICE RECOGNITION METHOD

Voice recognition is a technology in which the spoken words can be translated into a text format. In this some of the recognition system uses a training to convert an individual speakers section of text into the voice recognition system. This system observes the specific voice of the person and that voice is tuned by means of recognition, which results in accurate transcription. Speaker dependent system uses a training concept. Speaker independent system does not use a training concept. These concepts mainly concentrate on who is speaking rather than what they are speaking "Voice recognition" means "recognizing by voice", something humans do all the time over the phone. As soon as someone familiar says "hello" the listener can identify them by the sound of their voice alone. The project is designed with microphone, microcontroller, amplifier, pulse shaping circuit and driver circuit with relay. The voice signal is given as input to the microphone and its output is amplified using an amplifier. The amplified signal is given to the pulse shaping circuit. The pulse shaping circuit generates square pulses which are given to the microcontroller. The pulse waveform for switching ON & OFF of the different electrical appliances used, are stored in the microcontroller. The microcontroller is programmed to compare the received pulse with the stored values and to activate the corresponding relay driver circuits of the electrical appliances.

2. CONCEPT OF VOICE RECOGNITION

When the power supply is switched ON the LCD displays "VOICE BASED ELECTRICAL APPLIANCE". After few seconds they will disappear. The input voice command signal is given through microphone to voice recognition circuit. The input voice command signal is given through microphone to voice reorganization circuit. This circuit consists of an inverting amplifier, differential amplifier and voltage follower. The command signal from voice reorganization circuit is given to the pulse shaping circuit to convert the voice signal into pulses. The converted pulses are given to the microcontroller. The microcontroller receives the pulse and is counted by the microcontroller in built counter and the corresponding count value is displayed in the LCD display. When the voice command signal is applied, the

corresponding counted value is compared with the stored value. If it is matched the microcontroller sends the command signal to any one of the relay driver circuits and the corresponding relay driver circuit converts the received signal to energize or de-energize the relay coil The energize or de-energize of the relay coil turns ON or OFF the corresponding appliance connected through it. Now the LCD display displays the corresponding changes that had happened to the appliance connected to the relay. Until the next voice command signal is given the LCD display displays the corresponding changes.

The speed can be varied in steps though voice control for example when said A .The motor will run at one speed, when said B it will run at different speed similarly the voltage can be controlled. The voice from the user is analyzed by micro phone and micro controller

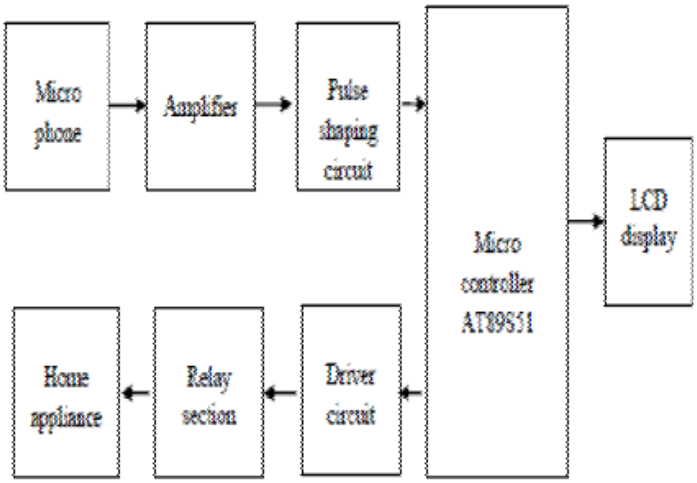

Fig 1. Block diagram of voice recognition control

III. MODULE DESCRIPTION

For voice controlled operation circuit is divided into two as follows.

1. Transmitting circuit.
2. Receiving circuit.

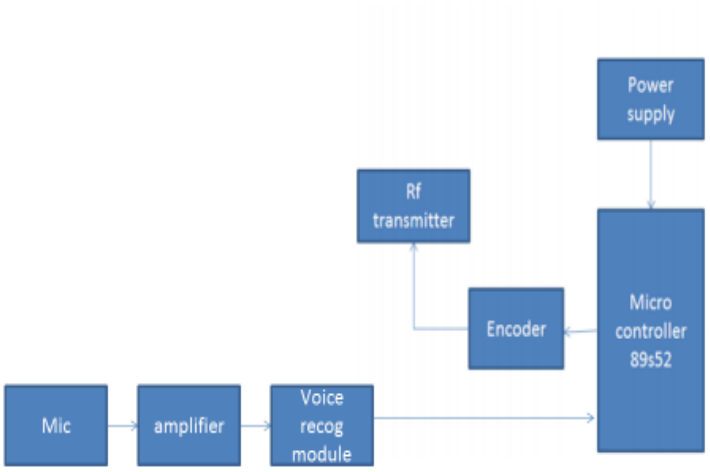

Fig.2 Transmitter Circuit.

An encoder is a device, algorithm, circuit transducer software program, or person that converts information or code from one form into another. UART is used for serial communications over a computer or peripheral device serial port because

it is integrated circuit. MICRO CONTROLLER AT89S51 is a low-power, high performance CMOS 8-bit Microcomputer with 4K bytes of Flash programmable and erasable read only memory (PEROM).

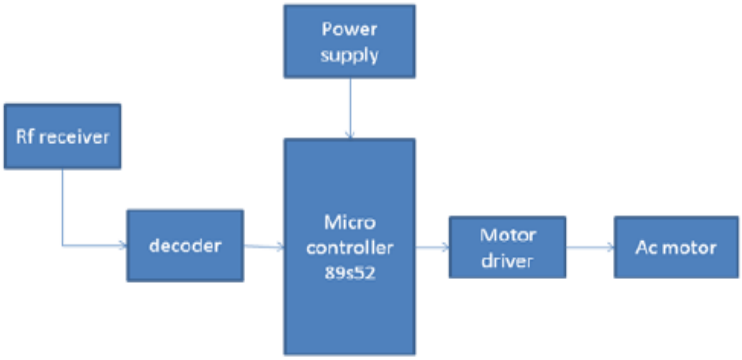

Fig 3.Receiver block diagram

A decoder is a device which does the reverse operation of an encoder, undoing the encoding so that the original information can be retrieved.

IV. ADVANTAGES

1. By voice variation the speed and the voltage control in steps can be achieved.
2. It is robust and easy to use system.
3. This project can provide facility of monitoring all the appliances within the communication range .
4. It reduces the manual error and manual operation.

V. CONCLUSION

In speed control process dc motor is easier than ac motor since driver circuit design is very simple. But due to the availability of ac supply and considering the cost of the motor ac motor is used. In this work shaded pole induction motor is used. The speed of the motor is controlled for five stages only. In future we can implement for maximum number of speeds by increasing the coding in microcontroller.

VI. ACKNOWLEDGMENT

It gives us immense pleasure to present our research paper titled “VOICE OPERATED CONTROL OF AC MOTOR” . We are thankful to our project guide Asst. Professor B.Kumuda dept. of electrical and electronics engineering, RYM Engineering College Ballari, for the support and encouragement.

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