Speed Control Of Induction Motor Using Dsp I C

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Abstract- *A three phase induction motor with adjustable speed drive control is implemented with hardware setup and software program in C code. One chip and re-programming ROM replaces the conventional complicated circuit solution. This brings low cost ,small size and flexibility to damage the control algorithm without change in hardware .In this project we are using dsp IC33EP256MC202.This DSP IC has accurate control on 3- phase induction motor.DSP has signal for different firing angle in inverter that's why speed control of 3- phase induction motor can be handled accurately and obtain the smoother control.*

Keywords- Induction motor, c programming, ROM, Control algorithm, DSP IC33EP256MC202,Firing Angle.

I. INTRODUCTION

The application of VLSI in motor control are getting more and more important and popular. Recently, In 1980s and 1990s microprocessors such as Intel's 8080,8031,8098 and Motorola's 68000 were mostly used in motor control. Recently microcontroller and DSP both are widely used in industry ; because of real time control algorithms that must be processed, the majority of these applications are driven by microcontrollers. This is partially due to engineers comfort with microcontrollers and lack of familiarity with DSP programming. Motor control applications are used in many of things like from washing machine to fans , handheld power tools and automotive window lift and traction control systems. Digital control of motors permits much more efficient operation of motor, resulting in longer life, lower power dissipation and a lower overall system cost. SPIM is used for most of the heating, ventilation, air conditioning(HVAC) applications. Normally it has two windings: main and auxiliary while auxiliary has more number of turns than main winding.

II. Objective

- Study of dspIC.
- Design of inverter.
- Testing of single phase inverter
- DSP Programming.
- Speed Control of Induction Motor in close loop..

III. WORKING

- Circuit is supplied by an AC source.
- This Supply is given to rectifier which converts AC to DC.
- The obtain DC supply is given to inverter(H bridge) which converts DC to controlled AC .This controlled AC supply is given to induction motor .
- Rotor speed of motor is measured by tacho meter in rpm and data is given to DSP processor.
- Error between measure speed and desired speed is measured and feedback in the form of gate pulse is given to inverter.
- Hence controlled AC is given to induction motor to obtain the desire speed.

IV. METHODOLOGY:

IV.A. BLOCK DIAGRAM

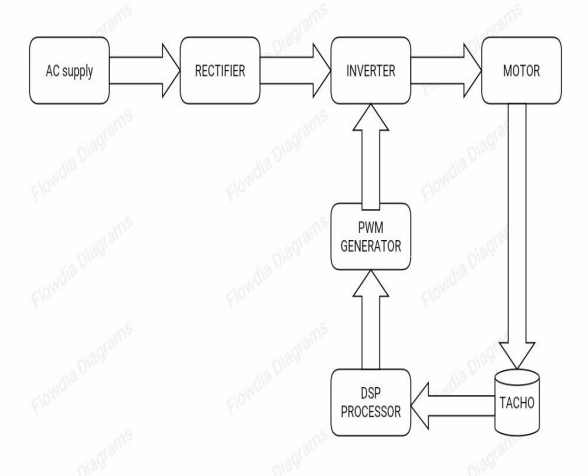

FIG 1: BLOCK DIAGRAM OF SPEED CONTROL OF INDUCTION MOTOR

V. CONCLUSION

In this project, DSP IC has been used for 3-phase induction motor with adjustable speed control. By hardware implementation and program, the two approaches get the same experiments results. The controller board designed cannot only used for this project but also for other research.

VI. ACKNOWLEDGEMENT

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