

## PLC Controlling of High Power Motors

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**Abstract :** The goal of this paper is to think about and figure out how to control the three stage high power engine with the assistance of PLC, how to apply the insurance of the engine toward the beginning of the high present starter. The three stage engine is transformation to the delta association by programmable intelligent control. The PLC stepping stool graph is intended to control the engine and the encompassing temperature. This will make an entirely different area of the control managing the craftsmanship or study of applying logical learning to viable issues (innovation) for the specialists or agriculturists. These keep the engine from harm and guarantee its more extended operational life.

**Keywords :** Programmable Logic Controller, Three Phase Motor, Overload Arrangement.

### I. Introduction

The Electrical Motor is a gadget that changes over the electrical vitality into mechanical vitality. Mechanical vitality has various uses and has distinctive arrangements, for example, fans, siphon and so forth. Electric engines are utilized at home and in industry. It is assessed that electric engine bear about 70% of the electrical burdens. There are numerous sorts of electrical engines, you can pick the engine as indicated by the application on, similar to two-speed engines, or brake engines, or three-stage engines, or synchronous engines, or single stage and offbeat engines. Different parameters, for example, Speed, Voltage and Current are estimated under different testing conditions. The ideal attributes of the alternator are as of now encouraged in the PLC. In the event that the part fulfills the predefined criteria's it is emptied to the transport, else it is picked and set in the dismissal chamber for further alterations. This framework gives providing alternators fulfilling client prerequisites by checking its linearity, repeatability and dependability [1].

### II. The Programmable Logic Controller

Programmable Logic Controllers evolved as industries sought economical Ways to automate their production lines .PLC's operate by monitoring input signals from the INPUT DEVICES. When changes are detected in the signals, the PLC SYSTEM reacts through user programmed internal logic to produce output signals. These signals actuate the output devices. It works on 24V DC power supply [5]. It has analog as well as digital inputs and outputs. It has memory to store the data. Its programming can be changed any time according to the need of crop. The PLCs based the input devices such as sensors and switches etc. Input signals are processed and given a signal to output. The output signal is active the motor Contactors devices or lamp or valve etc [4].

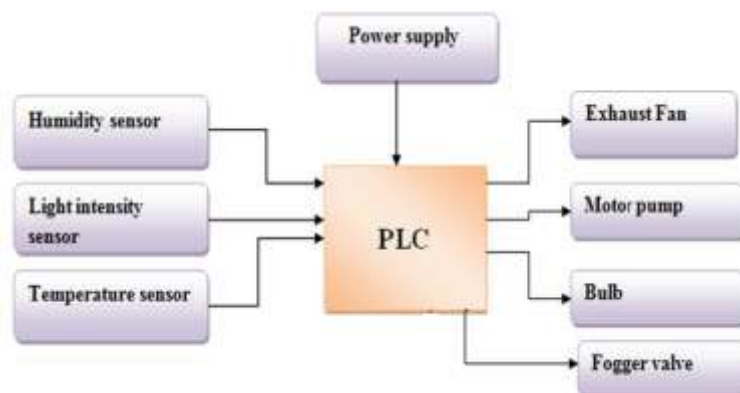


Fig 1.1 : PLC Controlling of Motor

Its programming can be changed whenever as per the need of yield. The PLCs based the information gadgets, for example, sensors and switches and so on. Info signals are handled and given a flag to yield. The yield flag is dynamic the engine Contactors gadgets or light or valve and so on. The processor (or the CPU), is resolved by the memory program being executed [2].

### III. Temperature

There are various sensors for temperature sensing available in the market, but according to our temperature range which is approximately 15-60 degree Celsius we chose LM35 IC or k type thermocouple. The temperature within the poly-house is one of the important parameter to control because it directly affects the crop and varies during the day and night. So when temperature is increases exhaust fan gets on to maintain the temperature [3].

### IV. Indentations And Equations

It is realized that when you began the engines turn pulls high current at times up to 6 Fold from typical current, for instance, 5 KW his present ordinary = 10A, yet when you begin dashing as of now = ~(70 to 100A). In the event that the engine intensity of 55 KW his present typical = 110A, however open current could be up to 600 amps and more this present effects to rehashed begins may consume the loop of the engine, high beginning current causes to harm contactors.

Voltage level: 480 V  
Recurrence: 50/60 Hz  
Supply: 3 $\phi$  supply  
Pinnacle current: 54.4 A  
Steady current: 34 A

### V. Figures And Tables

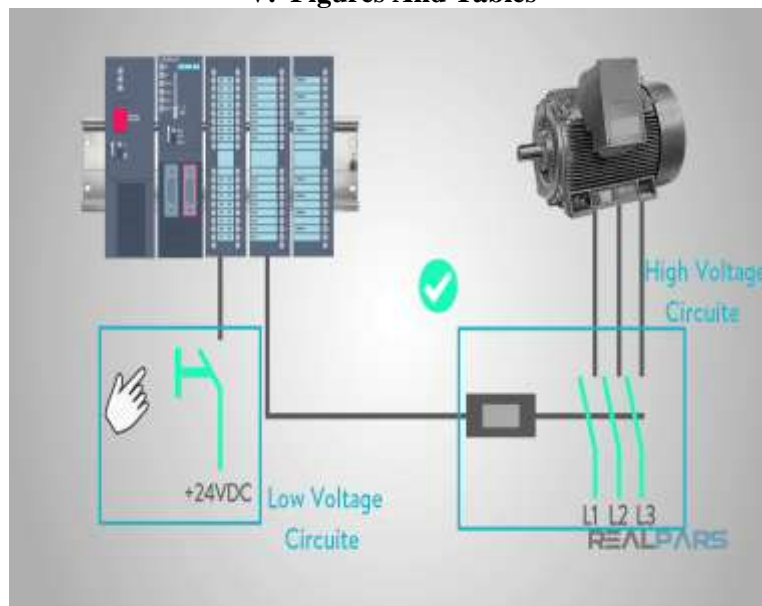


Fig 3.1: PLC Controlling of Moto

The real segment on the PLC Motor Control framework is the Allen-Bradley Micro820 programmable rationale controller highlighting installed 10V non-segregated 4 channel simple info and 1 channel simple yield for speed control and conveys by means of Ether Net/IP. This framework likewise incorporates a lead set, USB correspondence link, CCE programming DVD, intuitive sight and sound educational modules, establishment guide, and understudy reference direct. Amatrol gives true mechanical parts to face visit use and to best get ready students by rehearsing on segments that they'll really use in the work environment [4].

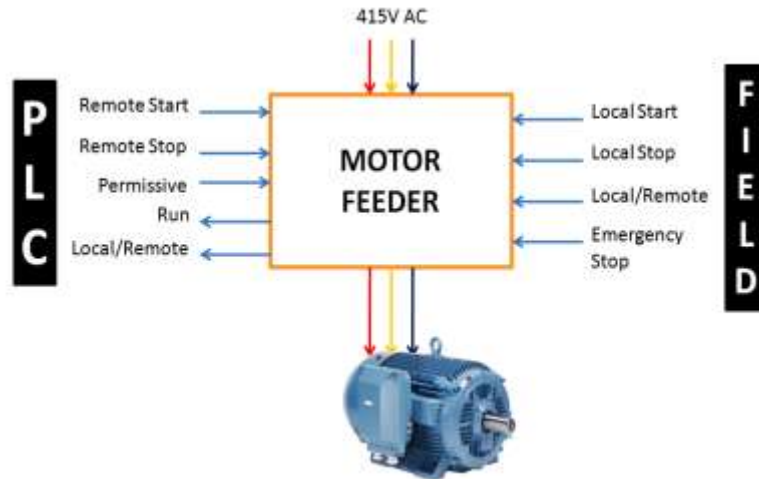


Fig 3.2 :PLC Controlling of Motor

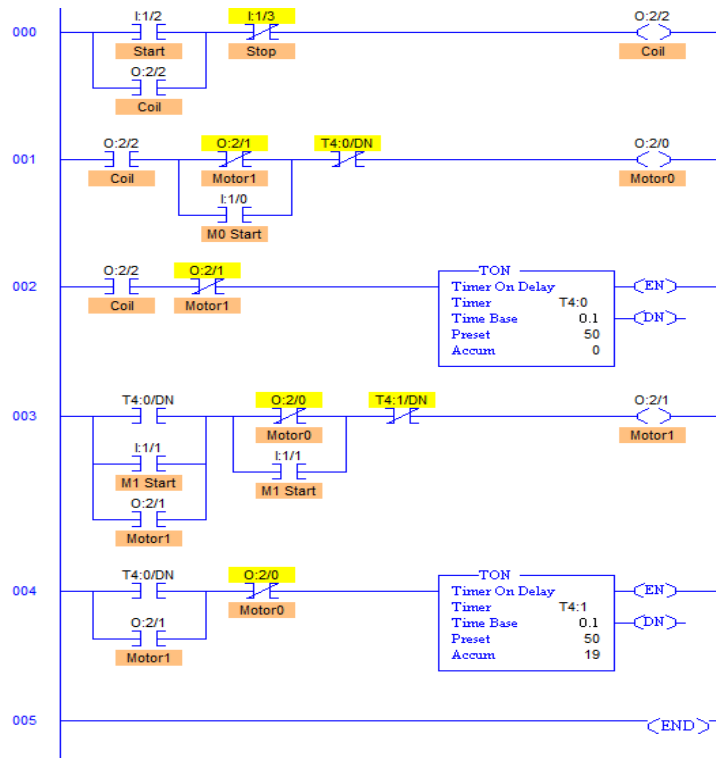


Fig 3.3 : PLC Ladder diagram for Controlling of Motor

### VI. Conclusion

The paper comprise of a PLC reproduction program is intended to control the activity of a powerful three stage engine utilized in industry. The paper principally manages the transformation from begin to delta contingent upon the task state of the framework where an on defer clock is used. A Sematic S7-300 reproduction PLC is utilized in the venture. The PLC stepping stool outline is intended to control the engine and the encompassing temperature. This will make an entirely different area of the order managing the workmanship or art of applying logical information to down to earth issues (innovation) for the specialists or agriculturists. This venture will result in incredibly productive for agriculturists and notwithstanding for the individuals who are not from the cultivating field because of the utilization of new methods. This will likewise build the learning of ranchers in regards to cultivating utilizing most recent framework.

### **References**

- [1]. B. A. Welchko, T.A. Lipo, T. M. Jahns, and S. E. Schulz, „Testing the alternator performance,,IEEE Trans. Power Electron., vol. 19, no. 4, pp. 1108–1116, Jul. 2004.
- [2]. K. Dimitropoulos, N. Grammalidis, D. Simitopoulos, N.P avlidou and M. Strintzis, „Alternator performance verification,, IEEE International Conference on Electronic Machines, Genova, Italy, pp. 594-597, September 2005.
- [3]. A. Rokade, „Assistance and Control System for Polyhouse Plantation, M. Des. Thesis, IDC IIT Bombay (2004).
- [4]. Thomas A. Hughes, „Programmable Controllers,, Third Edition, ISA - The Instrumentation, Systems, and Automation Society, 2001
- [5]. John R. Hackworth and Frederick D. Hackworth, „Programmable Logic Controllers: Programming Methods and Applications,, 2007.