A REVIEW ON THREE PHASE INDUCTION MOTOR WITH AUTO MOBILE STARTER

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ABSTRACT:- Agriculture is one of the key enable for the economic development of india that account for one third of nations income. Due to the problems that agriculture industry is facing, there is a need to introduce automation in agriculture that improves the efficiency. This paper presents the implementation of Automated Motor Starter Unit for smart farming applicable to indian scenario. In addition, current technologies and attempts in smart farming are reviewed and discussed. More than 90% of indian farmers have been using motors for their farm fields which are controlled by single phase or three phase power supplies. The automated motor started unit has been designed to turn on/off motor in the farm field using mobile phone having cellular network from any place. The automated motor started unit is selected to increase the operation efficiency by minimizing the manual operation of motors for which farmer need to go to the farm field.

I INTRODUCTION

Agriculture is the main source of food grains and plays an important role in the economic development of agricultural countries. India is a agriculture country with 70% of population depending on agriculture or related fields. Income generated from agriculture accounts for the one third of nation's capital. However, this is one side of the coin, the other side contain several problems that decreases the production yield due to inadequate rainfalls, uncertainty in power supply, and traditional methods followed by farmers. The primary requirement for any crop growth is the sufficient and uninterrupted water supply. In many parts of the country, due to inadequate rainfalls the irrigation systems were developed that stores the water during heavy rainfall and releases to the farm field for the crop growth whenever required using single phase

or three phase motors that need to be operated manually by farmer. Usually the distance from farm field to water source ranges in few kilometers and farmer need to walk all the way in order to operate the motor. In some cases, due to insufficient water present in well, motor runs in dry state and leads to complete failure. Integration of modern technologies with agricultural methods will reduce the burden on farmer and improves overall efficiency.

II. COMPONENTS REQUIRED

2.1 DOL Starter :-

The induction motor draws a huge amount of current at startup. This starting current can damage the motor windings. In order to avoid any damage, we use differents techniques to reduce the starting current using motor startor. These technique depend on the motor rating and the load connected to motor. Apart from this, the motor starter also protects the motor from overcurrent. The direct online or DOL Starter employs full voltage or across the line starting technique where the motor is directly connected to full voltage through MCCB or circuit breaker and relay for overload protection.

2.2 Mobile auto :-

Mobile auto is most unique and specially designed for farmers, agriculturists and industries to operates and monitor remotely located submersible pumps and motor. They can switch ON and switch OFF the motor pump from their homes or anywhere by using SMS/CALL/Android Application.

2.3 Fuse :-

Fuses are widely used for protection of electric motor circuit; for small overload, the motor protection circuit will open the controlling contactor automatically, and the fuse will only operate for short circuits or extreme overload.
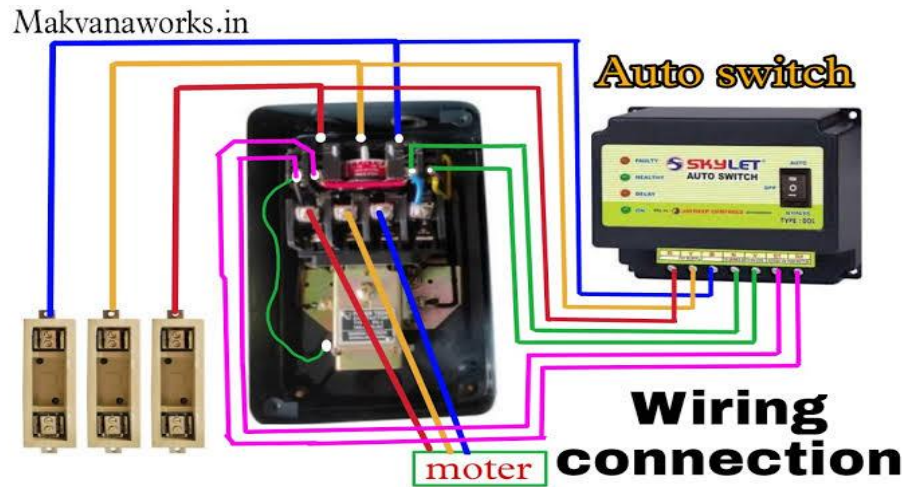
III. BASIC FUNCTION DIAGRAM

fig. 1 - Basic function diagram

3.1 Working

Whenever the mobile call is made, it is automatically received after two rings by the receiver GSM module. Now it is possible to use the mobile transmitter in hand as a remote. The key 1 is assigned for starting of the motor. When key 1 is pressed, a DTMF signal is received by GSM module. When DTMF signal is received by GSM, it gives output at the pins .The relay is like a switch. The relay is a switch connected to microcontroller. After receiving signal at the microcontroller, microcontroller checks the input voltage and phase of the electricity if and only if voltage is sufficient and phase is the phase then and only then load is start and it continuous check the current, voltages and phase if they are false then load will off. Key 2 is assigned for second load. After receiving signal at the microcontroller. Microcontroller checks the input voltage and phase of the electricity if and only if voltage is sufficient and phase is three phase then and only then second load is start and it continuously check the current, voltages and phase if they are false then load will off. Key 2 is assigned to check the status of whole device and load. Key 3 is assigned to turn off first load.

3.2 Advantages

- Save time by avoiding travelling to motor room every time to switch on and off motor.
- Protect the motor from dry run.
- Flexible wiring kit in modular way help to make easy wiring and handling.
- Protect motor from phase in balance and low voltage.

IV. CONCLUSION

In this paper, we present a automated motor start unit used to remotely control the motor in the farm field using mobile. Such system reduse the burden on farmer for going to farm field for turning motor ON/OFF. Throught this automated motor start unit,farmers are able to utilize highly detailed analytics to acceleted productivity and in more access to opportunities in the future. A discussion of current available wireless communication protocols for agricultural applications has also been given in this paper.