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IoT Based Project for Submersible Motor controlling , monitoring, & Updating Parameters to Central Server with Free Rtos

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Abstract – *The main objective of this project work i.e., design the electronic hardware using the ATMEGA Microcontroller existing Submersible pump and update the parameters to the central server. Monitoring of parameters includes like Alternating voltage, Alternating current, temperature , Control system also integrates with controlling feature for dryness, short circuit, overload, advance sensing water tank controller and makes the motor to run in healthy mode. Which saves the motor from burn out during the short circuit condition*

Keywords: **MICRO-CONTROL-SYSTEM,REAL-TIME-SENSORSPARAMETERS,CENTRALSERVER,NETWORKMODULE ETC**

1. INTRODUCTION

Using the one controller for hardware module preparation. The controller s using the ATMEL controller which is ATMEGA-2560 series which can ported with RTOS for advanced hardware module up gradation. System is failed safe with watch dog features from external interfacing or internal on chip. Power on reset the controller on initial start-up. Power supply module is designed with output short circuit protection. Upon the shortcut the power supply input Pwm switching pulses stop for dc-dc converter. Which in turn safe the main controller and other hardware modules.
Sensors are advanced monitoring to know whether sensor is malfunction or wrong connected. By knowing the output of the sensor. Suppose if sensor is short circuit then more current flows then normal reading range current. So we can display fault to user that sensor is short circuit or malfunction. On every power on controlling system are initialized with power on self-test algorithm to test it internal modules weather working normal or not. If any abnormality is found, power on self-test become fail and module is shutdown in fail safe condition.

1.1 Classification of Control system

i. MOTOR monitoring system

ii MOTOR controlling system

1.2 Central server

It maintains the Real time sensor received data of all motor controlling parameters and sends the message alert if it parameters in danger zone limit. We can create our own server and HTML pages to user for realistic .

2. MOTOR controlling system

Electronic motor control system module is designed used At mega controller with safety controlled logic algorithm. It collects the data from all real time sensors mounted on various location on system, updates the data to user panel Lcd display, Central Server using Network Module. If any sensor crosses it restricted parameter zone value then its alerts the user using the Lcd display and fault is logged in internal memory .

3. MOTOR monitoring system

Electronic monitoring Module is designed used arm controller. Where it monitors the AC voltage and AC current driving through motor. And transfer data to controlling system. Where it maintains the table with motor normal running parameters . shows conditions of motor whether healthy , overload , short circuit and dry run.

Working: MOTOR Control System monitors the real time data of voltage, current, temperature , update data on user display and update data to central server which will be use full for motor healthy running and fault diagnosis. Upon the user start on . system runs its self-test. And monitors the current and voltage driving through motor .
where normal healthy running parameters are stored in prom. It monitors with real time running parameters. If it crosses above its value so motor is running with over load parameters. And if its value is running with normal parameters then system treats as dry run . and above more than normal parameters than treats as short circuit condition. In any condition, system shutdown the motor. Other than normal condition. Where system is ported with RTOS we can run many task in time critical manner . In future up gradation system can connected to Ethernet device such that system can switch on and switch off from anywhere in country.

System is also interfaced with water level sensing algorithm . where if user tank is filled full shut down automatically.

For which a advance sensing algorithm is implemented . where a float switch is implemented in tank. When tanks gets above to filled completely then a float pressure switch is kept which blocks the water inlet pressure. Which in turn system monitors the pressure running through motor outlet. If it is block above the tank inlet then it pressure increase motor outlet. Systems comes to know that tank is filled and shutdowns the motor.

Chart -1: controlling system Temperature

Motor Control system continues monitories the controlling system temperature and updates to the central server and if temperature crosses the danger parameter value alert the user and shutdown the motor.

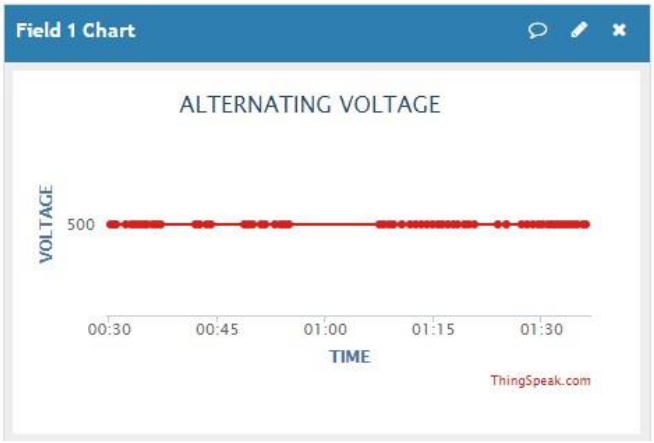

Chart -2: Alternating Voltage

Motor control system continues monitories the Alternator voltage and updates to the central server and if sensor parameter value crosses the danger zone alerts the user and shutdown the motor.

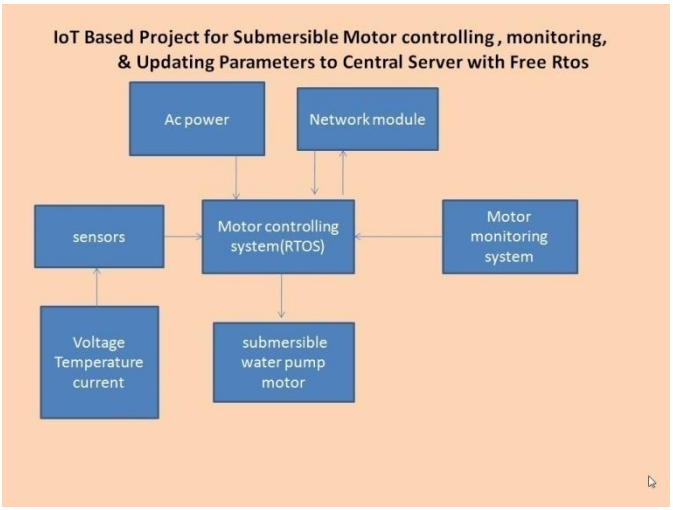

Fig -1: IoT Based project for motor monitoring & controlling system and updating parameters to central server.

Fig -2: Electronic unit hardware module of system.

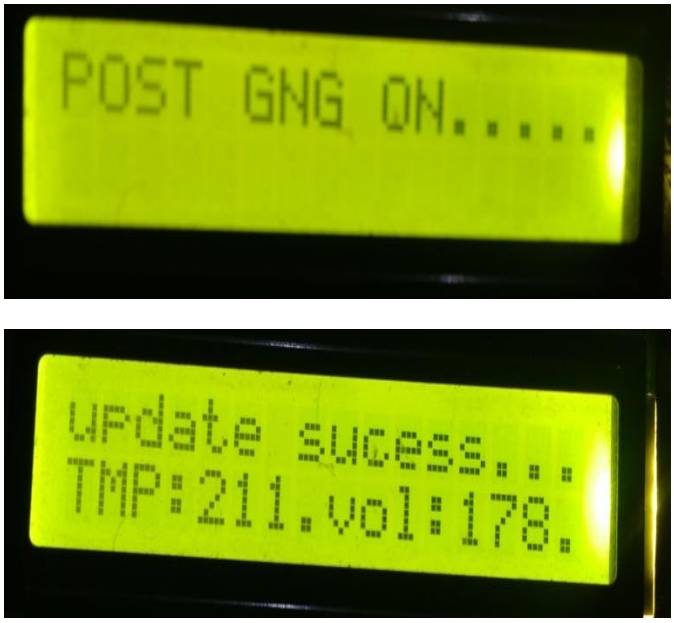

Fig -3: user control panel display.

Fig -4: Alternating voltage user panel display.

Fig -5: Alternating current user panel display.

3. CONCLUSIONS

After completion of project, IoT based motor monitoring & controlling system helps in getting real time parameters values from live motor running and helps to operated via internet , which protects the motor from dry run, over load and short circuit. Systems also helps in advance water level sensors in motor outlet. Without installing sensor in water tank . which increases life span of motor.

REFERENCES

[1] Application Note: Choosing a Microcontroller for Embedded Sys-tems Applications Mel Tsai http://www.mtsai.net/documents/

[2] appnote/appnote.html.

[3] Cengage.Embedded.C.2nd.Edition.Jun.2006.ISBN.1418 039594.

[4] Mandrioli D and Ghezzi,C. , Theoretical Foundations of Computer Science(John Wiley & Sons , NY, 1987).

[5] https://www.sparkfun.com/datasheets/LCD/HD44780.

[6] http://www.cs.ucr.edu/content/esd/slide index.html

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