



## **GSM based monitoring and controlling of motor**

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### **ABSTRACT**

In General, most of the mechanical systems are driven by motors. In several industry sectors, motor parameter measurements can identify equipment failure, which makes their monitoring essential in order to avoid disasters in critical production processes. Apart from monitoring, the controlling of the motors is also of great importance. There are various methods and tools for monitoring and controlling the mechanical devices like motors. But they are manual process. Our project aim is to reduce or replace the manual work and to control the motor automatically.

the motor and control the speed of motor by using GSM.

### **PROJECT DESCRIPTION**

### **BLOCK DIAGRAM**

### **INTRODUCTION**

The environment contains various kinds of motors. For various applications we have to control its parameters like speed, temperature and also we have to keep watch on environment where they are working. This paper presents various techniques to access the motor parameters remotely with the help of GSM. Using GSM we can send and receive information's. which can be connected to the motors and we can monitor the motor parameters like speed, temperature from the remote location. The main aim of the project is to sense the temperature of

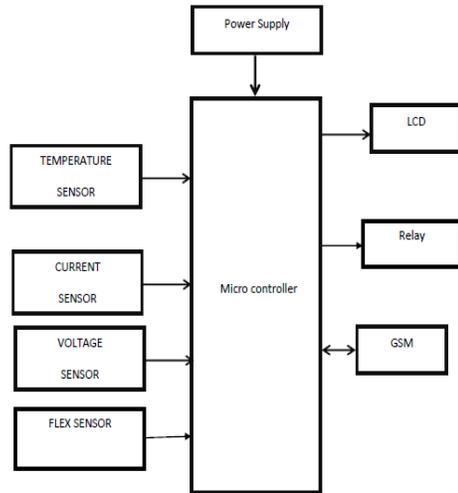


FIG.1Block diagram

In this paper we use GSM to control and monitor the motor. Microcontroller is used to process the information. Power supply is fed to the microcontroller and the temperature sensor, speed sensor are fed as input to the controller. LCD display is attached to view the information. GSM is used as an interface between controller and user. The user can monitor the status of the motor through GSM; the user can control the motor through GSM.

**CIRCUIT DIAGRAM**

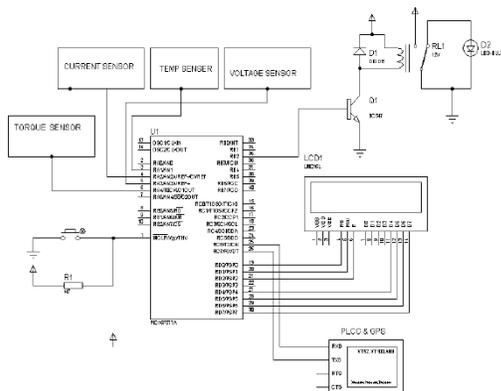


FIG.2 Circuit diagram

**HARDWARE USED**

- PIC Microcontroller
- LCD Display
- Power supply
- GSM
- Temperature sensor
- Torque sensor
- Voltage sensor
- Current sensor

**SOFTWARE USED**

- Embedded C
- PCW Compiler

**WORKING**

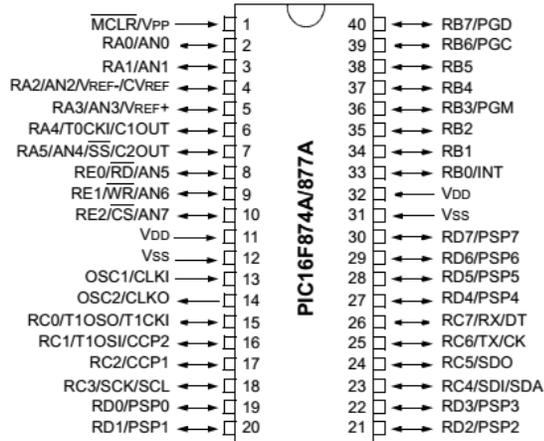
In this project, when the power supply is given to the circuit the rectifier unit converts ac supply into dc supply. The regulator unit is used to regulate the flow of supply voltage. From here, all the components are get energized.

Various sensors like temperature sensor, torque sensor, voltage sensor and current sensor are used to sense the analog outputs which are given as an analog input to the microcontroller analog input pins. When the motor is in ON position, the sensed parameters are sent to the corresponding mobile number or continuously stored in cloud each and every cycle with the use of GSM. By varying the parameters such as voltage, current, torque and temperature speed of the motor can be changed. If the current value increases beyond the limited value, the microcontroller sends control signal to the relay. As the relay gets turned ON, the motor goes to OFF position. At that time we receive the message, “motor off” through sms.

In addition to this, by sending message to the GSM we can control the ON and OFF operation of the motor.

**PIC MICROCONTROLLER**

Various microcontrollers offer different kinds of memories. EEPROM, EPROM, FLASH etc. are some of the memories of which FLASH is the most recently developed. Technology that is used in pic16F877 is flash technology, so that data is retained even when the power is switched off. Easy Programming and Erasing are other features of PIC 16F877. The features in this PIC microcontroller are Operating speed is DC - 20 MHz clock input and DC - 200 ns instruction cycle, Wide operating voltage range of 2.5V to 5.5V and High-performance RISC CPU.



## LCD DISPLAY

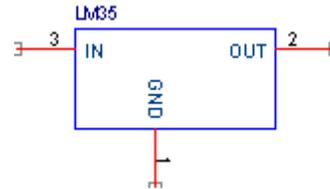
A liquid-crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock.

## GSM

The GSM modem used for this system is SIM 800. SIM800 has 68 SMT pads, and provides all hardware interfaces between the module and customers' boards. SIM800 is designed with power saving technique so that the current consumption is as low as 1.2mA in sleep mode.

## TEMPERATURE SENSOR

The LM35 series are precision integrated circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in Kelvin as the user is not required to subtract a large constant voltage from its output to obtain centigrade scaling. It is suitable for remote application and it operates from 4 to 30volts.



## CURRENT SENSOR

The current sensor consists of a precise, low-temperature drift linear hall sensor IC with temperature compensation circuit and a current path with 0.4 mΩ typical internal conductor resistance. This extremely low resistance can effectively reduce power loss, operating temperature and increase the reliability greatly. Applied current flowing through this conduction path generates a magnetic field which is sensed by the integrated Hall IC and converted into a proportional voltage. The terminals of the conductive path are electrically isolated from the sensor leads. This allows the current sensor to be used in applications requiring electrical isolation without the use of opto-isolators or other costly isolation techniques and make system more cost.

## TORQUE SENSOR

A torque sensor or torque transducer or torque meter is a device for measuring and recording the torque on a rotating system, such as an engine, crankshaft, gearbox, transmission, rotor, a bicycle crank or cap torque tester. With this method, a means to power the strain gauge bridge is necessary, as well as a means to receive the signal from the rotating shaft. This can be accomplished using slip rings, wireless telemetry, or rotary transformers. Newer types of torque transducers add conditioning electronics and an A/D converter to the rotating shaft. Stator electronics then read the digital signals and

convert those signals to a high-level analog output signal, such as +/-10VDC.

### **VOLTAGE SENSOR**

Potentiometer is used as a Voltage sensor. A potentiometer is an instrument for variable potential (voltage) in a circuit. Before the introduction of the moving coil and digital volt meters, potentiometers were used in measuring voltage. In this arrangement, a fraction of a known voltage from a resistive slide wire is compared with an unknown voltage by means of a galvanometer. The sliding contact or wiper of the potentiometer is adjusted and the galvanometer briefly connected between the sliding contact and the unknown voltage. The deflection of the galvanometer is observed and the sliding tap adjusted until the galvanometer no longer deflects from zero. At that point the galvanometer draws no current from the unknown source, and the magnitude of voltage can be calculated from the current from the unknown source, and the magnitude of voltage can be calculated from the position of the sliding contact.

### **CONCLUSION**

In General, most of the mechanical systems are driven by motors. There are various methods and tools for monitoring and controlling the mechanical devices like motors. But they are manual process. It will consume more time while doing manually.

In this paper we use GSM to control and monitor the motor. Microcontroller is used to process the information. Power supply is fed to the microcontroller and the temperature sensor, speed sensor are fed as input to the controller. LCD display is attached to view the information. GSM is used as an interface between controller and user.

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