

Petrochemical Level Indicator and Controller for Automation of cotton purification process in spinning mills

The project aims in designing a system which is capable of indicating the petrochemical level used for purification of cotton in spinning mills and also controlling the petrochemical level automatically. In spinning mills Petrochemical based cleaning solutions are used for cleaning of raw cotton. This petrochemical liquid is pumped from tank to the process container by using an AC motor. The process container is the capacity of 2000 liters. The motor takes more than one hour to fill the process container. An operator has to pay attention to the container to switch off the motor to avoid overflow of petrochemical. During the process 390C temperature has to be maintained.

If a system is developed for automation of pump for filling the container, no operator is required for supervising the system. If the maximum level is reached, the microcontroller switches off the motor. If the liquid reaches the lower level, the controller drives the driver circuit and switches on the motor.

The microcontroller compares the temperature with a ref constant and if the temperature increases beyond set temperature, the controller drives the buzzer circuit to alert the operator.

This project is specially designed for spinning / cotton process Industries. Direct contact of level probes with the content / liquid is completely avoided in this project. Temperature sensor is used to get the temperature of the motor. The level of the content and its temperature is monitored by the microcontroller and displayed on LCD.

Relay driver circuit can be activated by sensing “Level Full” and “Low Level” indicators and operates the motor automatically. Buzzer driver circuit would be activated by temperature sensor.

Features:

1. Can be operable without human presence.
2. Self monitoring and controlling.
3. Temperature cut-off values can be change.
4. Chemical level indication through LED.
5. Audible indicator through Buzzer.

The project provides the following Learning's:

1. Temperature sensor.
2. Relay working.
3. LCD displays.
4. Conversion of AC supply to DC supply.
5. Level indicator technology.
6. Embedded C programming.
7. PCB design

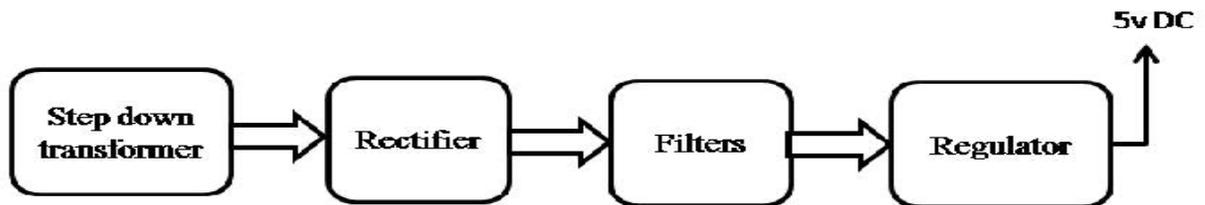
The Major building blocks of the project are:

1. Regulated Power Supply.
2. Microcontroller.
3. Temperature sensor.
4. Sensors for level measurement.
5. LCD display with driver.
6. Buzzer with driver.
7. Relay with driver.
8. Reset.
9. Crystal oscillator.
10. LED indicators

Software's used:

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

Regulated Power Supply:



Block diagram:

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