

Instinctive Radiance Electro-Pneumatic Shifter

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Abstract: In this paper, the motor is operated to vacillate between the curtains. The input to the motor is pressurized air. Various Sensors are used such as Temperature Sensor (RTD) and Position Sensor (Inductance). Temperature Sensor senses the temperature change and sends the signal to the control unit which operates the motor to move the curtains. Position Sensor senses the signal that curtain is approaching and sends that signal to the control unit and keeps the circuit on hold till the delay period is over. The methodology, circuit diagram, advantages and disadvantages of this project are discussed.

Keywords: Temperature Sensor, RTD, Position Sensor, Control Unit

1. Working Principle

Here in this project curtains are operated by using motor which moves back and forth the window. Temperature Sensors are present on the window glass one present inside and one outside. The sensor which is present inside operates when the inside temperature is in the range of 30-40 C. The sensor which is present outside works when the temperature reaches 28 C. As the sun rises and falls on the glass, they get heated which are sensed by RTD which is present outside the glass. The sensor gives the signal to the control unit and by using a relay motor is started and this initiates the motor in the forward direction causing the curtains to close and by using a timer by keeping the relay on hold for nine hours the curtains remains intact and stays close till that time period ends. This happens only when the position sensor senses the signal and its output is given to timer. Again when the temperature drops to 28 C the sensor which is present inside senses the signal and makes the motor to move in a forward

direction leading to closing of the curtains and even this circuit can be on hold for few hours by giving the output of position sensor to the timer. It can be operated manually also when the temperatures are showing a fall back detecting the temperatures.

A. Project Elements

- Power Supply 24VDC
- Motor (2 no)
- Relay (2 no)
- Position Sensor (2 no)
- Temperature Sensor RTD (2 no)
- Timer (2 no)
- Control Unit

2. Block Diagram

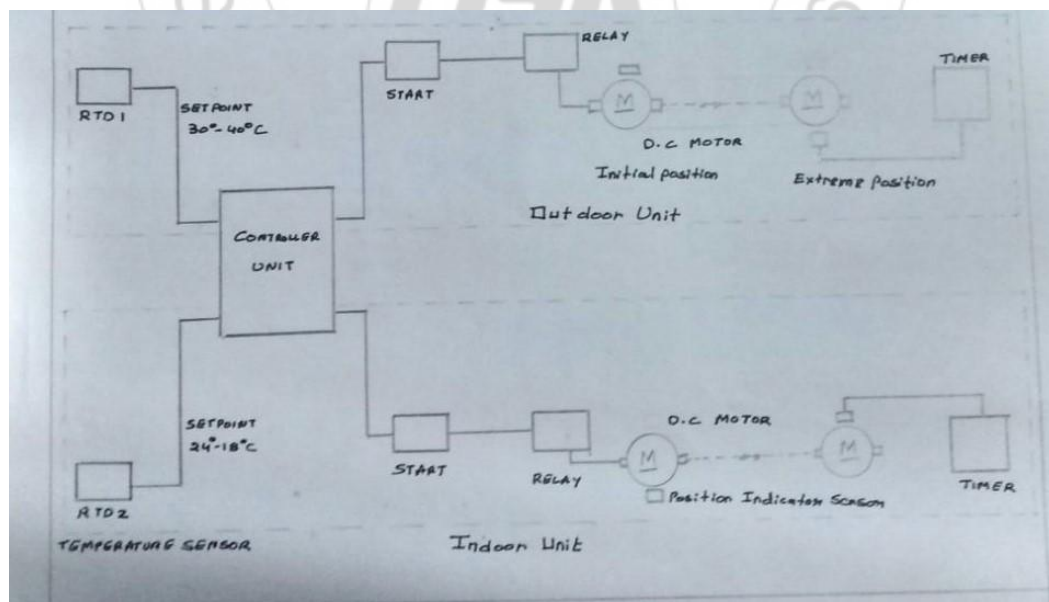


Figure 1: Block Diagram of the above project

3. Circuit Diagram

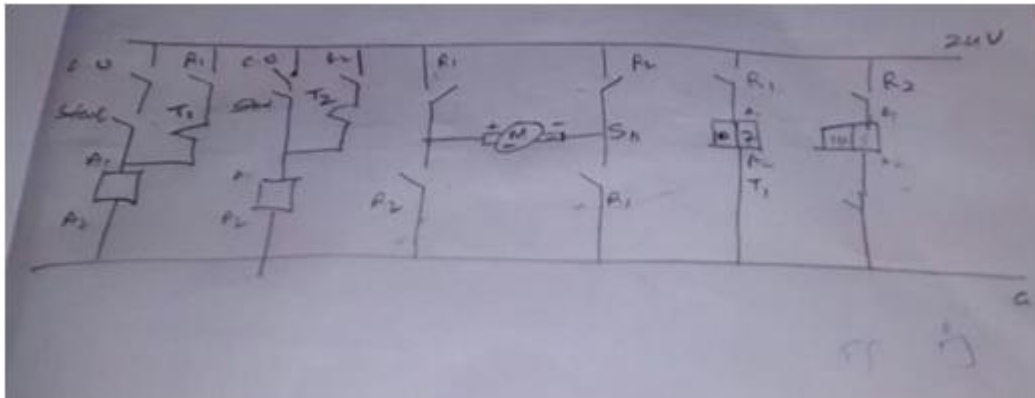


Figure 2: Circuit Diagram of the above project

4. Advantages

- This system is used to develop industrial automation and assist with CIM environment.
- It promotes the unmanned industry.
- Reduces waste motions which cause fatigues to worker.
- It includes the advantages of the systems pneumatic and electro pneumatic.
- Idle time of the machine is reduced.
- There is no leakage in the motor.
- There is no direct contact of moving elements therefore the wear is less.
- The orientation of the carriage can be changed easily.

5. Disadvantages

- Initial higher cost.
- Initial time is high.
- Setup is complicated

6. Conclusion

From the above discussion it is clear that our project is more economical and powerful than the mechanisms which were developed before. Due to its better performance it can become a powerful competitor to the latest things. By further research and development it can be proven to be a boon to the middleclass Indian citizen.

7. Acknowledgement

During this project we have had support from a large number of people to whom we owe great amount of gratitude. There is however one person, our mentor Mr. Abdul, who made this report work possible and who supported and pushed us throughout the whole process. Therefore a special recognition goes out to him, Thank You!

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