

Three Phase Appliance Controller Using IOT

^[1]Nitish Awachat, ^[2]Harshal Pawar, ^[3]Jitendra Bakliwal

^{[1][2][3]} Student, Department of E&TC, Marathwada Mitra Mandal's College of Engineering Pune, Maharashtra, India

Abstract--- The system is based on IoT hence one can operate it from a remote location, so it will be easy for the owner to operate or control the functions of the appliances or machines through their mobiles or laptops. The raspberry pi will be used as the main controller which will control the system. As we use the controller we can use it for various appliances which work on Three Phase by programming it accordingly. It will be also connected to smartphones or laptops through the cloud. The main motive of the project is to control the appliances which cannot be controlled by workers and will be feasible for the higher authority of the organization to control the system without going to that actual place. As the cloud has been used, it will be easy to track the data as it will upload the data to the cloud and one can track it easily. Also, a control action can be made manually as well as automatically. We are going to take a cooler for the project purpose which will be the three Phase device, there will be an air damper to control the flow of air. The air damper will be controlled by a servo motor. There will be a DHT-11 Sensor which is a Temperature & Humidity sensor. We can program the controller by setting a cut-off temperature below which the cooler will automatically start cooling.

Index Terms— DHT-11, SCT-013, Cloud Computing, Raspberry Pi, Current Sensor

I. INTRODUCTION

This project is about the controlling action for the three-phase appliances in the industries. The main motive of the project is to control the parameters required, from anywhere for which we are using cloud computing which is operated on the platform of the raspberry pi. By this system, we can control any three-phase appliances which are used in the industries or factories like Air Conditioners, Motors, Conveyor Belts and Drip Irrigation, etc.

Our idea of the project is to control any Three Phase Appliance or Machine through the cloud which will help to reduce the time as well as efforts of a person or owner to go to the place and operate the Appliance or Machine.

As for the project we are using the Air Cooler which is used in industries. It will sense the temperature and display it on the owner's device through the cloud and through which the owner can also control the cooling function. There will be air dampers that will control the airflow required which will be controlled by the servo-motor. The temperature sensor will be continuously monitoring the room temperature and upload the data to the cloud as well where the owner can keep an eye on the temperature. When the required temperature will be obtained then the dampers will get closed that is the servo motor will activate and close the opening of the dampers.

The temperature sensor will sense the temperature and send it to the controller which will be controlled either in manual mode (by the user) or automatic mode (by the controller by getting the input from the sensor that is closed-loop action).

• Cloud Computing:

Cloud computing is the delivery of different services through the Internet. These resources include tools and applications like data storage, servers, databases, networking, and software.[1] There are various cloud services such as Thingspeak, Microsoft Azure, Amazon Web Services and IBM, etc. These cloud providers provide the services like servers, storage, databases, networking software, analytics. Cloud computing is the technology that can be used by the user to calculate, access, upload the data to the cloud (storage) remotely. Through computers or smartphones. It is based on big data which allows a huge amount of storage access to the user.

• Raspberry Pi Zero:

It is the tiny computer as well as the brain of the system. This will provide the actions to the system. It has its operating system which can be accessed by connecting it to the computer and connecting it via Wi-Fi.[5]

II. PROCEDURE FOR PAPER SUBMISSION

A. Review Stage

Previous systems are not having remote access as per our study. We have added IoT which helps allows it. We went through some papers listed in the references. One of the papers was about the controlling of an Induction Motor.[6].


```

harshal@harshal:~/Desktop/tutorial$ python3 dht11.py
import sys
import Adafruit_DHT
import time
sensor = Adafruit_DHT.DHT11
gpio = 17
while True:
    humidity, temperature = Adafruit_DHT.read_retry(sensor, gpio)
    print('Temp = %.1f C' % temperature)
    print('\nHum = %.1f %%' % humidity)
    #time.sleep(1)
    #print("Hello")
  
```

```

Hum = 76.0 %
Temp = 31.0 C
Hum = 77.0 %
Temp = 31.0 C
Hum = 78.0 %
Temp = 31.0 C
Hum = 78.0 %
Temp = 32.0 C
Hum = 78.0 %
Temp = 32.0 C
Hum = 80.0 %
Temp = 31.0 C
  
```

Fig 5. DHT11 Output 2

III. SOME COMMON MISTAKES

Current Fault cannot be detected easily which can damage any system.

If the temperature is not set properly it can cause damage in industries such as chemical industries, food industries.

Three-phase appliances are costly if they are not used in proper conditions, it can damage the whole system.

Conclusion:

With the help of this system, any three-phase appliance can be controlled.

The appliance can be controlled remotely as well.

This system will revolutionize the controlling of three-phase appliances and make it easier and simpler..

IV. CONCLUSION

With the help of this system any three phase appliance can be controlled.

The appliance can be controlled remotely as well.

This system will revolutionize the controlling of three phase appliances and make it easier and simpler.

This project is sponsored by Whiz Key Pvt. Ltd.

REFERENCES

[1] <https://www.investopedia.com/terms/c/cloud-computing.asp>
 [2] Air Damper <https://youtu.be/LOH8h330c20A>
 [3] <https://components101.com/dht11-temperature/sensor>
 [4] 1Abinath.T.R, 2 Sudhakar.V, 3 Indhumathi.G, 4 Sathish.P, 5 S.Rajeshwari 1,2,3,4 Final Year Electrical and Electronics Engineering, Info Institute of Engineering 5 Associate Professor, Info Institute of Engineering, Coimbatore https://www.ijcsmc.com/docs/papers/April2015/V4I4_201504.pdf
 [5] <https://www.raspberrypi.org/>

[6] A Novel Intelligent Controller for Soft Starting Scheme in Three Phase Induction Motor. 1M. Muthuramalingam, 2G. Giftson Samuel, 3C. Christofer Asir Rajan 1Professor, EEE, Suguna College of Engineering, Coimbatore, India. 2Professor, EEE, Sir Issac Newton College of Engineering and Technology, Nagapattinam, India 3Professor, EEE, Pondicherry Engineering College, Puducherry, India. https://www.researchgate.net/publication/316889003_A_Novel_Intelligent_Controller_for_Soft_Starting_Scheme_in_Three_Phase_Induction_Motor
 [7] Speed Control of Three Phase Induction Motor Using Indirect Field Oriented Control Based on Real-Time Control System. Indra Ferdiansyah 1, Muhammad Rizani Rusli 2, Bayu Praharsena 3, Handri Toar 4, Ridwan 5, and Era Purwanto 6 2,3,4,5,6 Postgraduate of Electrical Engineering 1,6 Industrial Electrical Engineering 1,2,3,4,5,6 Electrical Engineering Department, Politeknik Elektronika Negeri Surabaya, Surabaya, Indonesia 4,5 Electrical Engineering Department, Politeknik Negeri Batam, Batam, Indonesia https://www.researchgate.net/publication/328982660_Speed_Control_of_Three_Phase_Induction_Motor_Using_Indirect_Field_Oriented_Control_Based_on_Real-Time_Control_System
 [8] Arduino Based Autorecloser for Three Phase AC System. Shyam Morzaria, Shreyas Surve, Uttej Devadiga, Arun Bhosikar, Department of Electrical Engineering, Rajeev Valunjkar, Asst. Prof., Department of Electrical Engineering, Atharva College of Engineering Mumbai, India. <https://www.ijert.org/research/arduino-based-autorecloser-for-three-phase-ac-system-IJERTCONV5IS01135.pdf>