



IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 1, January 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.488

 9940 572 462

 6381 907 438

 ijircce@gmail.com

 www.ijircce.com

FRESHAUST: An Innovative Home Exhaust Fan

Divya V Chandran¹, Aswathy N², Pranith S Prabhu³, Preethesh K⁴, Rahul G⁵

Assistant Professor, Department of Electronics and Communication, Adi Shankara Institute of Engineering and Technology, Kalady, Kerala, India¹⁻²

B. Tech Student, Department of Electronics and Communication, Adi Shankara Institute of Engineering and Technology, Kalady, Kerala, India³⁻⁵

ABSTRACT: The idea behind this project is to develop an exhaust system which not just disposes off the smell or moistness present inside the room, yet additionally auto invigorates within the room. By the use of a microcontroller and relay driver, the rotation of the fan is made in both forward and reverse direction. This can be utilized effectly more, rather than the existing exhaust fans that rotates only a single way in particular. The humidifier is a component which evenly distributes the provided liquid freshener all across the room. Also by the use of a relay driver and microcontroller, auto cut off (automatic shut down) of the system can be obtained.

KEYWORDS: Bidirectional rotation , Humidifier, Automatic power cut-off, Power saving.

I. INTRODUCTION

Exhaust fans are common home appliances for maintaining ideal temperature and air quality. We introduce a system named "Freshaust" in which the exhaust fan is modified with a room freshener. With this smart system being proposed, detailed odour controlled dispenser operation strategies and methods of control for the air-handling unit are presented. The proposed smart system can improve the air quality inside. The motivation behind this task is to plan an exhaust framework which not just disposes off the smell or mugginess present inside the room, yet in addition auto revives within the room. By the utilization of a microcontroller and relay driver, the roatation of the fan is made in both forward and reverse. The humidifier used in the system which uniformly conveys the given fluid freshener all over the room. Thus utilizing the relay driver, auto cutoff can also be achieved. This is much effective and efficient than the customary exhaust fan that turns a single way in particular.

II. LITERATURE REVIEW

SPEED CONTROL AND BIDIRECTIONAL ROTATION CONTROL OF INDUCTION MOTOR

Above paper presents an innovation to rotate a squirrel confined fan motor in both clockwise and counterclockwise direction. The framework is reproduced with the orders input surrendered to the virtual terminal and the three methods of activity are approved with the yield of the regulator. The arrangement to control the rotation of the engine utilizing a remote innovation is accessible with this framework. The proposed framework recreation is approved under the Keil uvision 4.0 programming. It contains a power supply, regulator, hand-off, AC engine.

FUME HOOD STACK EXHAUST

Fume hood exhaust stack framework and method uses a variable speed fan and a exhaust/fumes stack having a movable cross-sectional region. The fan powers the fumes through the fumes stack. A variable Speed drive, programmable regulator, stream signs, and static pressure and complete pressure signals are used to balance the speed of the fan and the region of the fumes stack to keep up the ideal fan channel pressure and exhaust speed.

MODULAR VENTILATING EXHAUST FAN

It is a particular, more easy to understand model of existing exhaust fan framework. The back mass of the fan incorporates a couple of curve down tabs that can be put in contact with the base surface of the joist to accurately situate the base edge of the fan for its placement. The fan wheel can be fitted in the fan case effectively by changing the width of the case by changing the handle.

III. EXISTING SYSTEM

Existing model is a simple exhaust system which is used for its basic purpose to remove the foul odour from a closed space or a given room. This model basically has a single purpose, and it comes with only a single rotation (cycle) to complete its purpose. Also here in this existing system we required to use a separate air freshener for the room to freshen it up even after the exhaust fan is used. Being a straightforward system, its activity, i.e. the working time of the fan is controlled physically, as per requirement of the user. So longer the use, the energy devoured by the system will also be larger.

IV. PROPOSED SYSTEM

The proposed system consists of the following sections:

- Microcontroller
- Induction Motor
- Humidifier
- Relay driver

Microcontroller- This paper includes Atmel AVR XMEGA 8/16-bit Microcontroller. The microcontroller controls the rotation of the motor in both clockwise and anticlockwise direction. The rotation time and direction is changed as per the instruction/program stored in the microcontroller.

Humidifier- A user friendly liquid freshener which adds moisture to air, making use of ultrasonic vibration technology. It can produce finest mist in 30 second and spread all over the room. It is very convenient and easy to refill.

Relay driver- A relay driver circuit is a circuit which can drive, or work, a relay with the goal that it can work properly in a circuit. The driven relay would then be able to work as a switch in the circuit which can open or close, as indicated by the requirements of the circuit and its activity.

As the system is turned on, the exhaust framework works like an ordinary exhaust system, i.e. pulls out the scent containing air from within and discharges it into the external premises. After this cycle is done, the exhaust fans rotates in the opposite direction. This bidirectional revolution of the fan is controlled by the microcontroller. For the microcontroller to work a reasonable DC is required, so the high AC voltage is reduced down by the utilisation of a step down transformer, which then is given to a rectifier, so that the voltage gets converted into a DC quantity. The suitable value is fixed utilizing a regulator. This appropriate voltage is taken care of into the microcontroller. A humidifier and a relay driver is associated with the microcontroller, 2 relays are then associated with the relay driver, each relay controls the rotational direction of the fan. While the fan is rotating the other way, the humidifier gets turned ON, so the air purifier is spread all over the room, henceforth invigorating the room. The framework is customized in such a manner that the relay drivers are turned off after a specific time span controlled by the microcontroller, thus auto cut-off is accomplished.

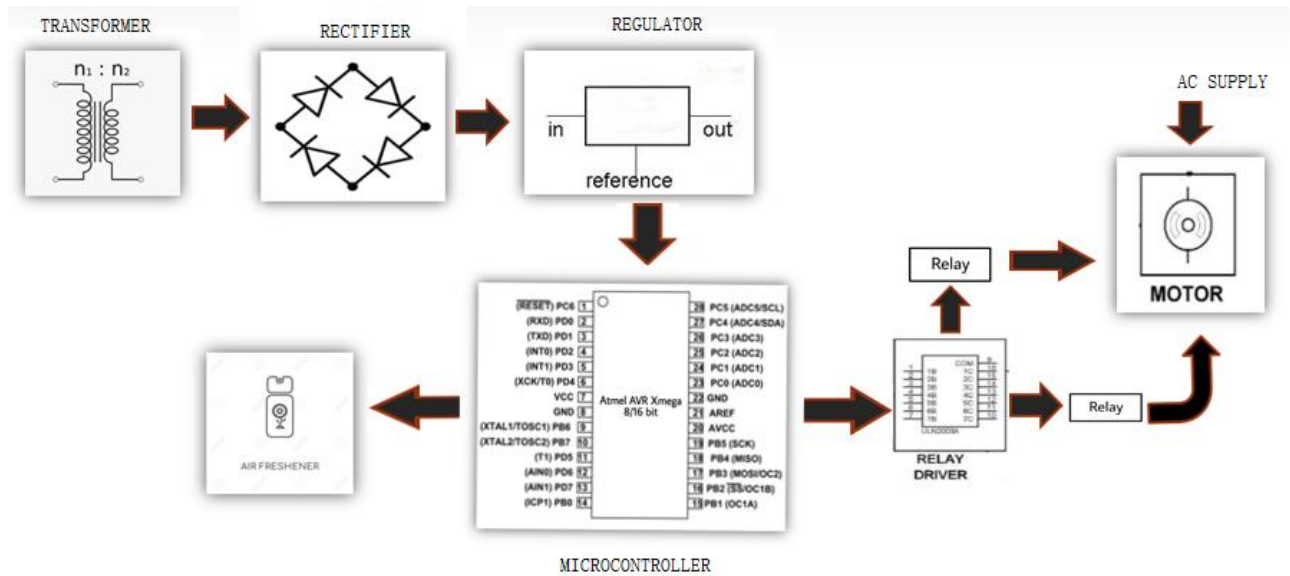


Fig: Block diagram

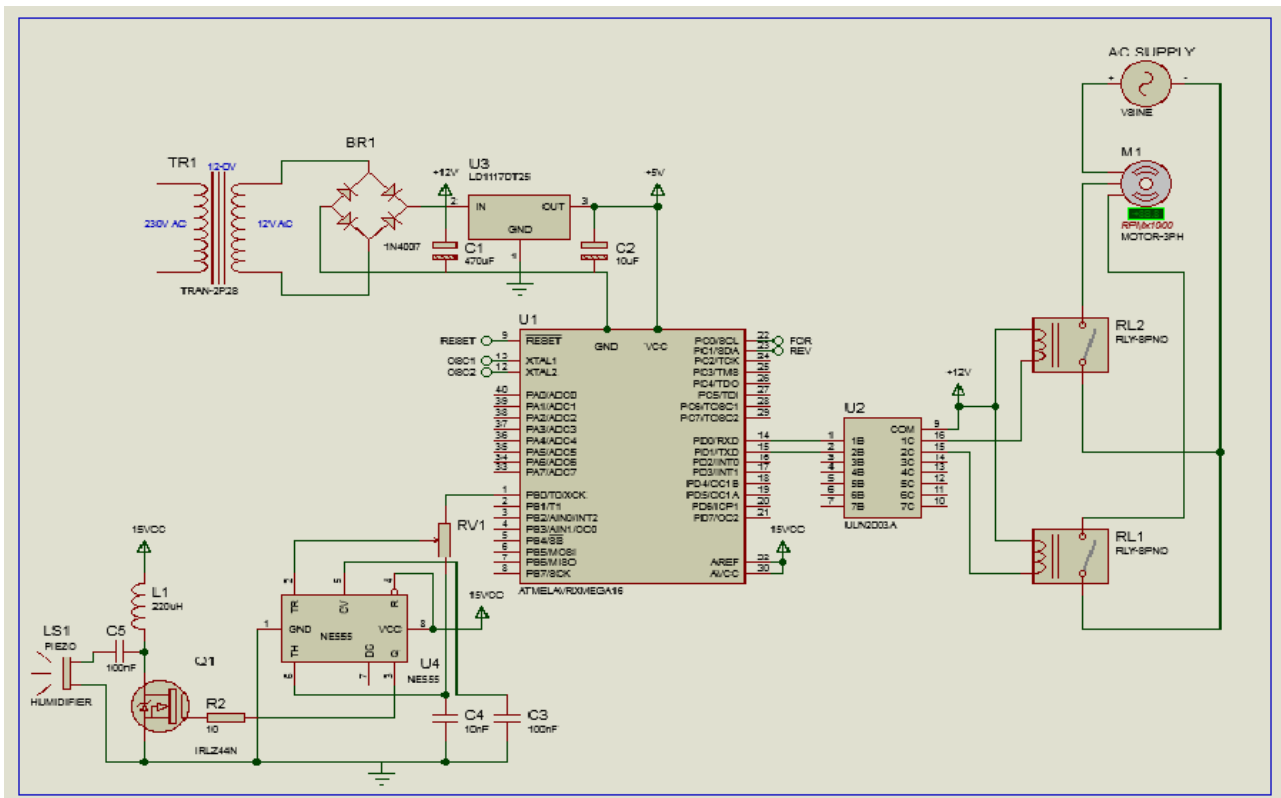


Fig: Circuit diagram

V. ADVANTAGES

- Modular Efficient system.
- Multi cycle and multi purpose.
- Gets rid of odour as well as freshens the room.



- Use of separate air freshener is not needed as it is already incorporated in the system.
- Bi-directional rotation.
- Less Energy consumption due to Auto-cut-off feature.

VI. CONCLUSION AND FUTURE WORK

In our everyday life exhaust fans perform fundamental action in air purification. They dispose off the old indoor air and keep clean air circling in the room. This product can overcome the issue of the existing exhaust framework by the utilization of room revitalizers and cut off which are both consequently done, which is more proficient and efficient. Therefore this item is new, the attractiveness is likewise high and if the customer reaction is satisfactory there will be an interest for this product. In future, it can additionally be improved by controlling the activity of exhaust fan motor utilizing thyristors instead of relays, for commotion free activity.

REFERENCES

1. SPEED CONTROL AND BIDIRECTIONAL ROTATION CONTROL OF INDUCTION MOTOR, Ms. Krupal Patel¹, Mr.Mihir K Patel², International Journal For Technological Research In Engineering Volume 6, Issue 12, August-2019
2. MODULAR VENTILATING EXHAUST FAN ASSEMBLY AND METHOD, Inventors: Robert G. Penlesky, Waukesha, WI ; Daniel L. Karst, Beaver Dam, WI Assignee: Broan-NuTone LLC, Hartford, WI, Patent No.: US 7,455,500 B2 (45) Date of Patent: *Nov. 25, 2008
3. FUME HOOD EXHAUST STACK SYSTEM Inventor: Mingsheng Liu, 17569 "Y" StUS 2003/0207662 (12) United States Patent (10) Patent No.: US 6,890,252 B2 Date of Patent: May 10, 2005



INNO  SPACE
SJIF Scientific Journal Impact Factor

Impact Factor:
7.488

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  ijircce@gmail.com



www.ijircce.com

Scan to save the contact details