**Microcontroller based Room Ventilation Control System (RVCS)**

People spent one-third of their life Sleeping and is highly essential to human health and wellbeing. However, bedrooms with the doors and windows closed for acoustic privacy and energy conservation are often poorly ventilated. Use of TV and computer in bedrooms also increase the risk of air pollution. Research findings show that in closed rooms the CO2 concentration increase to more than 2500ppm (normal level is around 350ppm only) and lead to disturbed sleep, headache, reduced performance levels and other health hazards compared to open ventilated rooms. This is a serious health hazard most of us are unaware of. Room Ventilation Control System (RVCS) offers an effective solution for improving the bedroom air quality fitted with Air conditioners and permanently closed ventilators.

The project is developed using ARDUINO micro controller and Infra-red sensor (SM0038 IR receiver). The system is optimized to work with LG AC remote. IR receiver senses and processes the signals from the AC remote which operates the AC, to dynamically control a mechanical ventilation closure system. The system can be tailor made to suit other AC make and models.

**Advantages**

* The RVCS prevents suffocation in rooms fixed with AC which need heat insulation in ventilators and prevents unnoticed health hazards.
* The system is controlled by the same remote and signal used for controlling the AC and needs no other control gadget.
* The basic RVCS system can be installed with less than 5% cost that is required for an AC.
* Easy to install and operate.
* Same power wiring for AC can be used for RVCS.
* The RVCS can also be fitted in rooms without AC to regulate air flow based on temperature and Humidity sensor values and can be controlled by inexpensive remotes.

**Limitation**

* The RVCS has to be tailor made to specific make and model since the IR control signals vary between equipment.

**Scope**

* There is enough scope to develop the model into a commercial product comparing its health benefits and the low cost involved.
* The commercial product can be developed with temperature, humidity and CO2 sensors, LCD Displays and additional venting fans to increase the efficiency and consumer preference.

CODE

#include <IRremote.h>#include <Servo.h>int IR\_PIN=5;int ledR=10;int ledG=11;Servo servo;int angle=90;IRrecv irrecv(IR\_PIN);decode\_results results;long int aron[]={0x8800347,0x8800448,0x8800549,0x880064A,0x880074B,0x880084C,0x880094D,0x8800A4E,0x8800B4F,0x8800C40,0x8800D41,0x8800E42,0x8800F43};void setup() { pinMode(ledR, OUTPUT); pinMode(ledG, OUTPUT); Serial.begin(9600); irrecv.enableIRIn(); servo.attach(9); servo.write(angle); digitalWrite(ledR, LOW); digitalWrite(ledG, LOW); }

void loop() { if(irrecv.decode(&results)) {Serial.println(results.value,HEX); delay(50); irrecv.resume(); for(int i=0;i<13;i++) {if(results.value==aron[i]) {angle=10; digitalWrite(ledR, HIGH); digitalWrite(ledG,LOW ); break; } } if(results.value==0x88C0051) { angle=90; digitalWrite(ledR, LOW); digitalWrite(ledG,HIGH ); } servo.write(angle); delay(100); }}