Design and Development of Movable Fan For Classroom

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Group no:-23

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Outline

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Project Background

- At present condition, The main problem in the classroom is that the fix fans is not able to circulate necessary air in whole room.

- In the implimentation of this situation we can solve this problem.

- To solve this problem we have made movable fan with reducing number of total fan which circulate air in whole room and also save total electricity.

Introduction

- In every school and colleges , we found that in the classroom air is not properly circulate to around each and every students by up to 10 fans.

- And it also make waste of electicity.

- Because of this type of condition students got jittery by heat.

- In the starting of this project we had planned to calculate the area of classroom , in which that how many area covered by the air of 10 fans ?

- After the practical measurement we got that 60% of the classroom area was covered by that situation but every student could not get the proper air.

- So to solve this problem we have made the movable fan which is move on the particular circular path with the help of supporting shaft.

Project Objective

- To increase the confertable area in classroom.
- To reduce the number of fan in classroom.
- To increase the effectiveness of confertable environment in classroom.
- To reduce the totle electricity.

methodology

Start

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Calculation

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Design

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Analysis

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Report writing
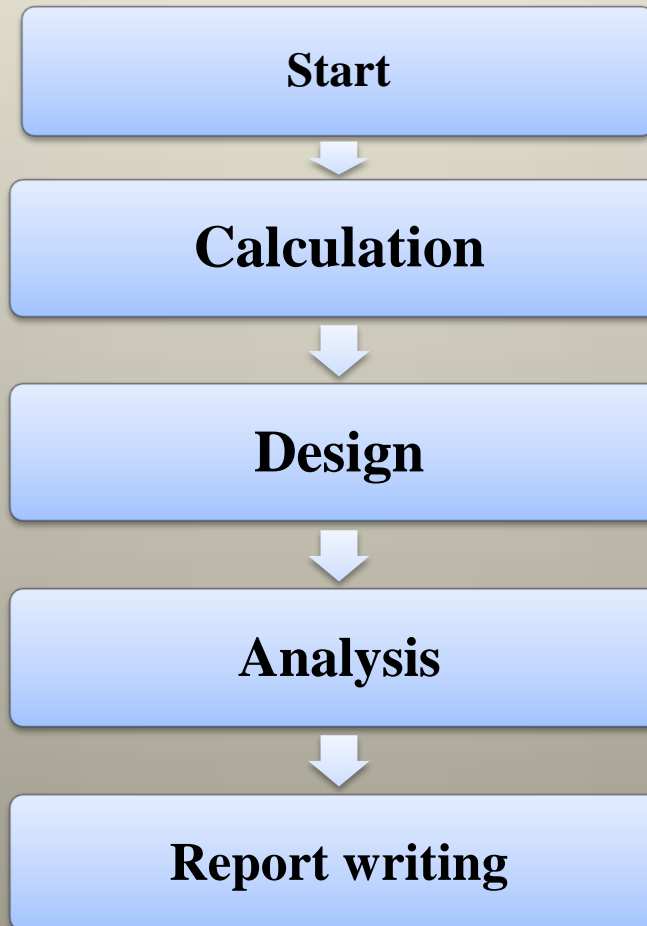
CALCULATION

SR NO	DISTANCE IN cm	VELOCITY IN m/s				AVERAGE
		1	2	3	4	
1	15	0.3	0.3	0.2	0.2	0.250
2	30	0.3	0.2	0.2	0.2	0.225
3	45	0.3	0.4	0.4	0.4	0.375
4	60	1.0	1.0	1.0	0.8	0.950
5	75	1.1	1.1	1.1	1.0	1.075
6	90	1.4	1.4	1.1	1.1	1.250
7	105	0.9	0.9	0.8	0.8	0.850
8	120	0.8	0.6	0.6	0.7	0.950
9	135	0.8	0.9	0.8	0.8	0.825
10	150	0.8	0.9	1.0	0.9	0.900
11	165	0.8	1.0	1.1	0.8	0.925
12	180	0.7	0.9	0.7	0.9	0.800
13	195	0.7	0.9	0.8	0.5	0.725
14	210	0.7	0.8	0.6	0.7	0.700
15	225	0.7	0.7	0.6	0.8	0.700
16	240	0.5	0.5	0.7	0.8	0.625
17	255	0.4	0.5	0.7	0.7	0.575
18	270	0.4	0.4	0.7	0.8	0.575
19	285	0.4	0.4	0.6	0.6	0.500
20	300	0.3	0.4	0.6	0.6	0.475
21	315	0.3	0.3	0.5	0.5	0.400
22	330	0.2	0.3	0.4	0.5	0.350
23	345	0.2	0.2	0.2	0.3	0.225
24	360	0.2	0.1	0.2	0.2	0.175
25	375	0.0	0.0	0.1	0.0	0.025
26	390	0.0	0.0	0.0	0.0	0.000

Research in student

- Name   comfortable distance (cm)
- Kuldip   215
- Axay   201
- Maulik   210
- Suraj   185
- Ravi   180
- Ketul   190
- Vishal   205
- Viral   197
- Bhavik   188
- Ajay   209
- Mihir   193

Dimension in class room

- width=744cm
- length=1125cm
- height=347cm

➢ **Beam**

        1)width=25.4cm
        2)length=744cm
        3)height=63cm

➢ **Ground to fan distance**

    1.fan-1 =268cm
    2.fan-2=277cm
    3.fan-3=277cm
    4.fan-4=256cm
    5.fan-5=256cm
    6.fan-6=245.5cm
    7.fan-7=245.5cm

1) Height of 2nd   stage to beam=336.5cm
2) Height of 2nd stage to 2nd beam=273.5cm
3) Height of 3rd   stage to 3rd beam=263 cm
4) Height of 4th stage to   4th beam=326cm

➢ height of 2nd stage to calling= 336.5cm
        height of 3rd stage to calling= 326cm
        height of 4th stage to calling= 315.5cm

➢height of 2nd stage to beam=273.5cm

       height of 3rd stage to beam=263cm

       height of 4th stage to beam=252.5cm

- **wall to fan distance**
-     fan-2=242.5cm
-     fan-3=248cm
-     fan-4=242.5cm
-     fan-5=248cm
-     fan-6=242.5cm
-     fan-7=248cm
-     fan-1=378cm

•**two beam distance**
-     beam 1 to 2 =275cm
-     beam 2 to 3=275cm

•**two fan distance**
-     fan 2 to 4 =278cm
-     fan 4 to 6 =278cm
-     fan 3 to 5=278cm
-     fan 5 to 7=278cm

Parts of project

- Ceiling fan

- Electric motor

- Step down transformer

- Shaft

- Rectifier

- Chain drive

- Bearing

Ceiling fan

- A ceiling fan is a mechanical fan usually electrically powered suspended from that uses hub-mounted rotating paddles to circulate air

- Fans never actually cool air, unlike air-conditioning equipment, but use significantly less power

- A ceiling fan can also be used to reduce the stratification of warm air in a room by forcing it down to affect both occupants sensation and thermostat readings thereby improving climate control energy efficiency

Electric motor

an electric motor is an electrical machine that converts electrical energy into mechanical energy.

The electric motor operate through the interaction between an eclectic motors magnetic field and winding current to generate force within the motor.

in applications as diverse as industrial fans, blowers and pumps, machine tools, household appliances, power tools, and disk drives.

Step down transformer
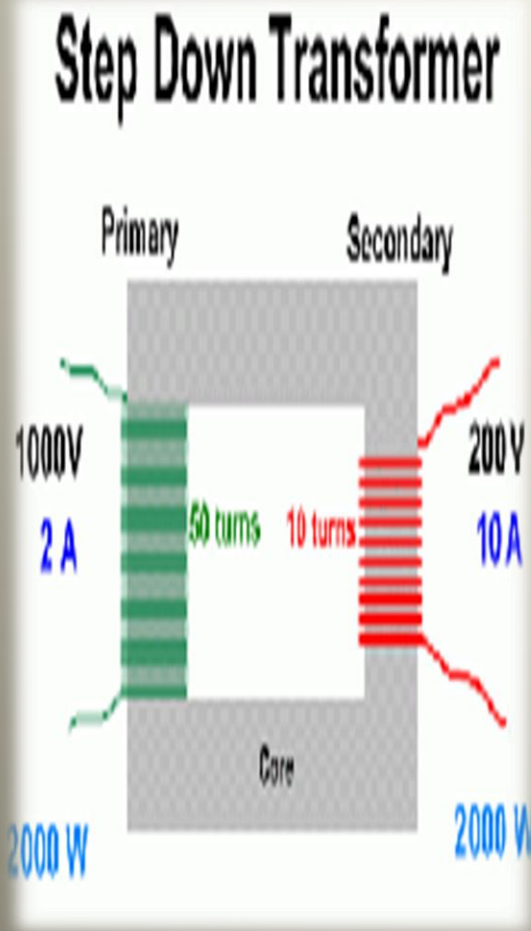
- Step down transformers are designed to reduce electrical voltage.

- Step down transformers convert electrical voltage from one level or phase configuration usually down to a lower level.

- They can include features for electrical isolation, power distribution, and control and instrumentation applications.

Shaft

- A drive shaft, driveshaft, driving shaft, propeller shaft (prop shaft), or Card an shaft is a mechanical component for transmitting <u>torque</u> and rotation

- As torque carriers, drive shafts are subject to <u>torsion</u> and <u>shear stress</u> equivalent to the difference between the input torque and the load. They must therefore be strong enough to bear the stress, whilst avoiding too much additional weight as that would in turn increase their <u>inertia.</u>

Bearing

- A bearing is a machine element that constrains relative motion to only the desired motion, and reduces friction between moving parts.

- Many bearings also *facilitate* the desired motion as much as possible, such as by minimizing friction.

Chain drive
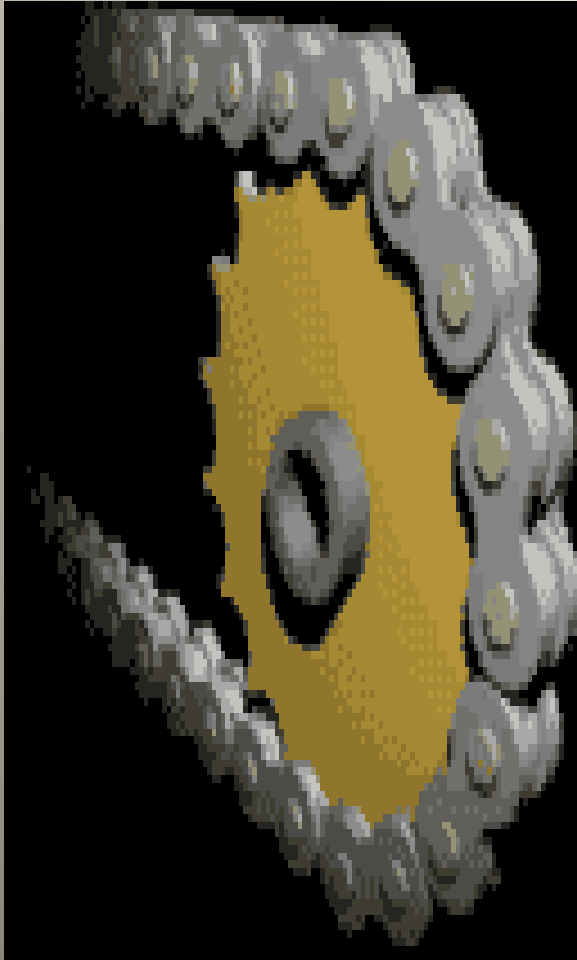
- Roller chain or bush roller chain is the type of chain drive most commonly used for transmission of mechanical power on many kinds of domestic, industrial and agricultural machinery, including conveyors, wire- and tube-drawing machines, printing presses, cars, motorcycles, and bicycles. It consists of a series of short cylindrical rollers held together by side links. It is driven by a toothed wheel called a sprocket. It is a simple, reliable, and efficient means of power transmission.
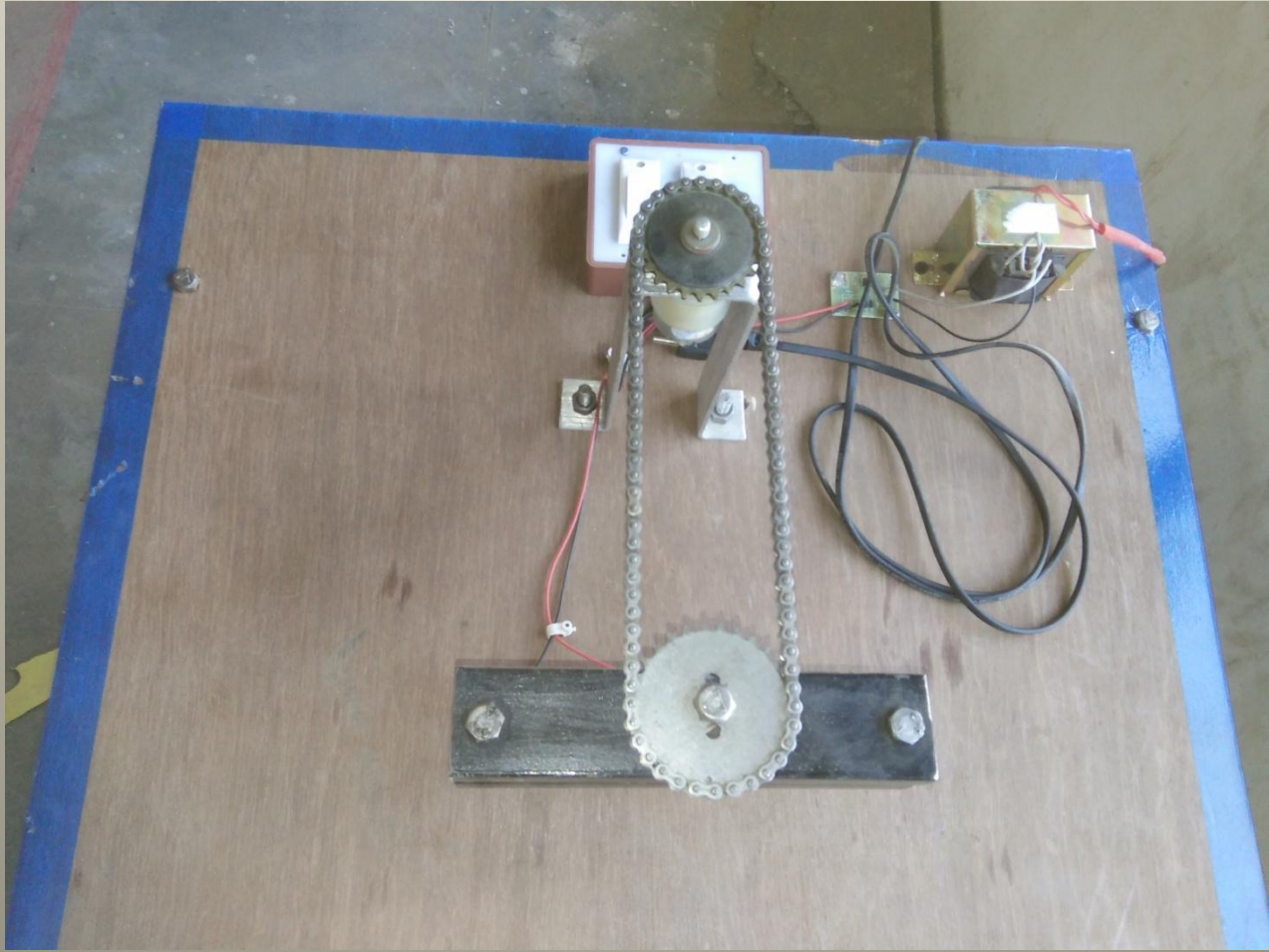
Scope of project

• The problem statement and project objective are define above.

•This project will use in the classroom of school and colleges.

•We can use this project in auditorium hall and hospital and many more places.

•it can also be use in any big industry.

Conclusion

➤ In every school and colleges , we know that in the classroom air is not properly circulate to around each and every students by up to 10 fans.so we had desided to solve this problem.

➤this project is will use in schools and colleges classroom,also in auditorium hall and hospitals etc.

➤In the future with the help of this project confertable area in the school and colleges classroom increase so students during lecture can study with proper concentration.And the most advantages is that the total number of fan and electricity is also can be reduce.

Project image

Thank you