GROUP PROJECT

WATER DISPENSER POWERED BY WIND GENERATOR

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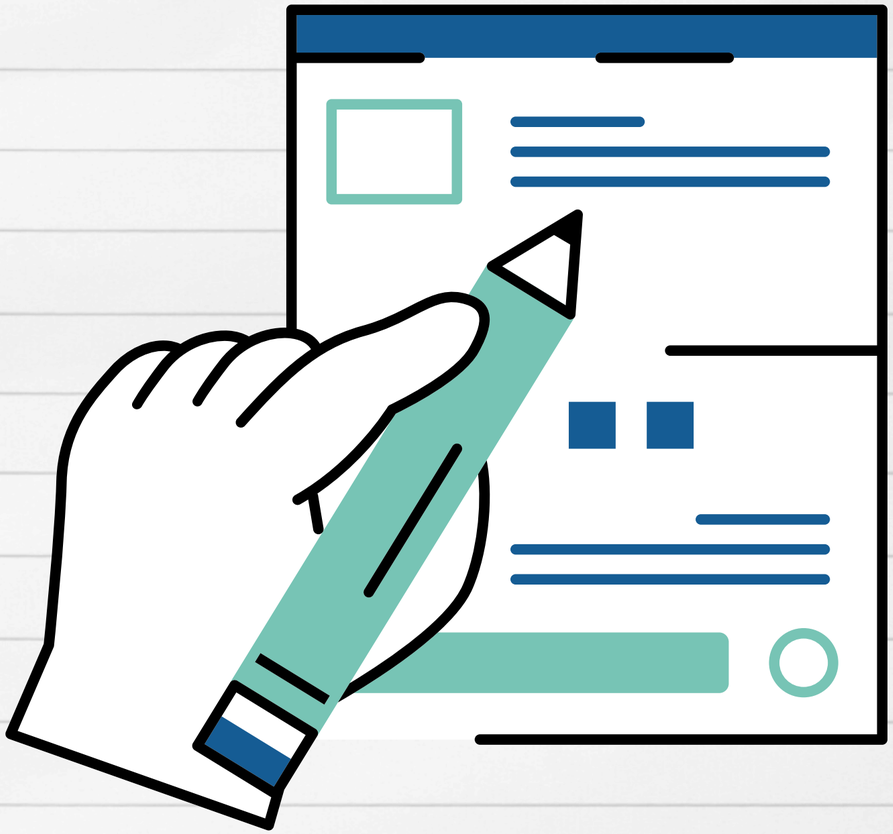
INTRODUCTION

- Renewable energy is defined as energy from a source that is not depleted when used, such as wind or solar power.
- Nowadays, renewable energy has been a source of energy that is becoming more and more used in both industrial and domestic sections.
- In this project, we use wind to generate electricity for our water dispenser



THE THEORY

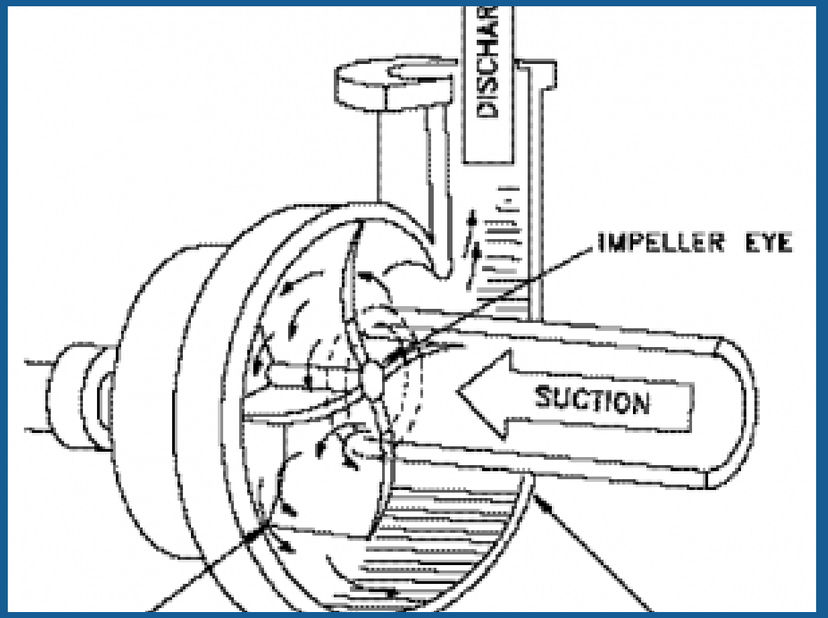
WIND TURBINE

A wind turbine transforms the mechanical energy of wind into electrical energy. A turbine takes the kinetic energy of a moving fluid, air in this case, and converts it to a rotary motion. As wind moves past the blades of a wind turbine, it moves or rotates the blades. These blades turn a generator. A generator works as an inverse of an electric motor; instead of applying electrical energy to turn it and create mechanical energy, it uses mechanical energy to turn and create electrical energy. Generators spin coiled wire around magnets to create an electrical current.

THE THEORY

CENTRIFUGAL WATER PUMP

A centrifugal pump is a mechanical device designed to move a fluid by means of the transfer of rotational energy from one or more driven rotors, called impellers
Centrifugal pumps use the impeller to move fluid, which enters through the rotating impeller and exits via centrifugal force through the impeller's tips. This boosts the velocity as well as the pressure of the fluid and directs it towards the pump's outlet. Centrifugal pumps are commonly used for pumping water, solvents, organics, oils, acids, bases and any 'thin' liquids in both industrial, agricultural and domestic applications.



OBJECTIVES

MAIN OBJECTIVE

To make water dipenser using only wind turbin as the main voltage .

SECONDARY OBJECTIVES

To examine the relationship between wind turbine, voltage and pump

EQUIPMENT & MATERIAL

- 8 x DC Motor
- Aluminium Tin
- Digital Multimeter
- Wires red and black
- Blower
- Arduino Uno R3
- Infra Red Sensor
- Boxes
- Toothes paste cap and water bottle cap
- Sticks
- Wood block
- Water pump 3V-5V
- Tube
- Relay 5V

PROCEDURES

01

Scratch the model

02

Built Turbine

03

Construct the circuit for water dispenser

04

Test the polarity of turbine and the circuit (simple calculation)

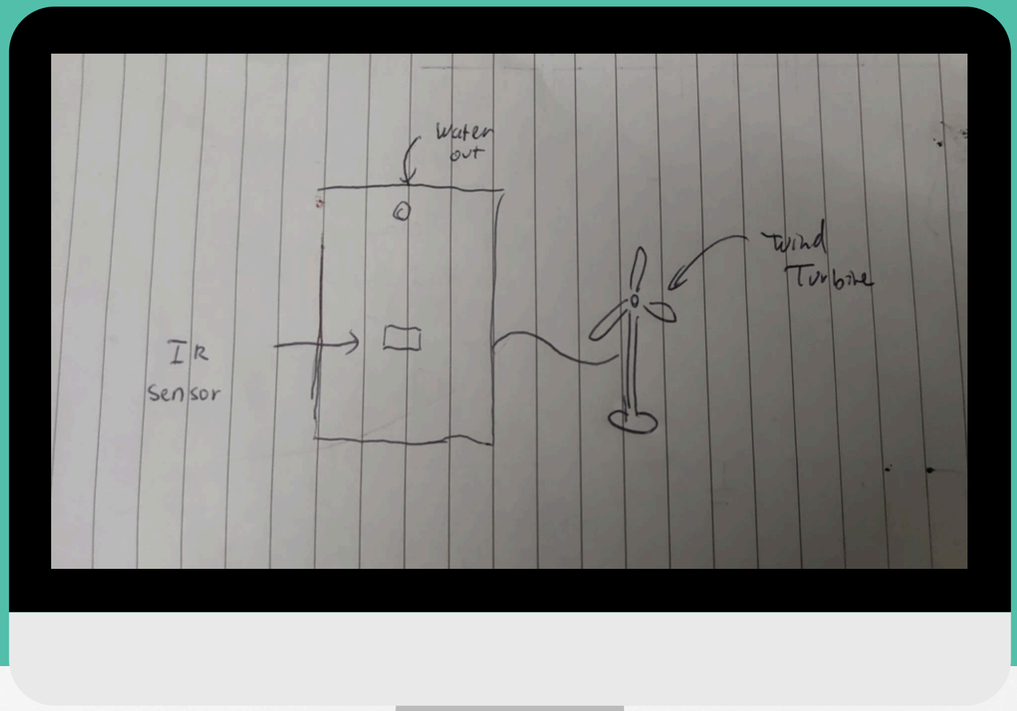
05

Assemble all the components (wind turbine with the circuit)

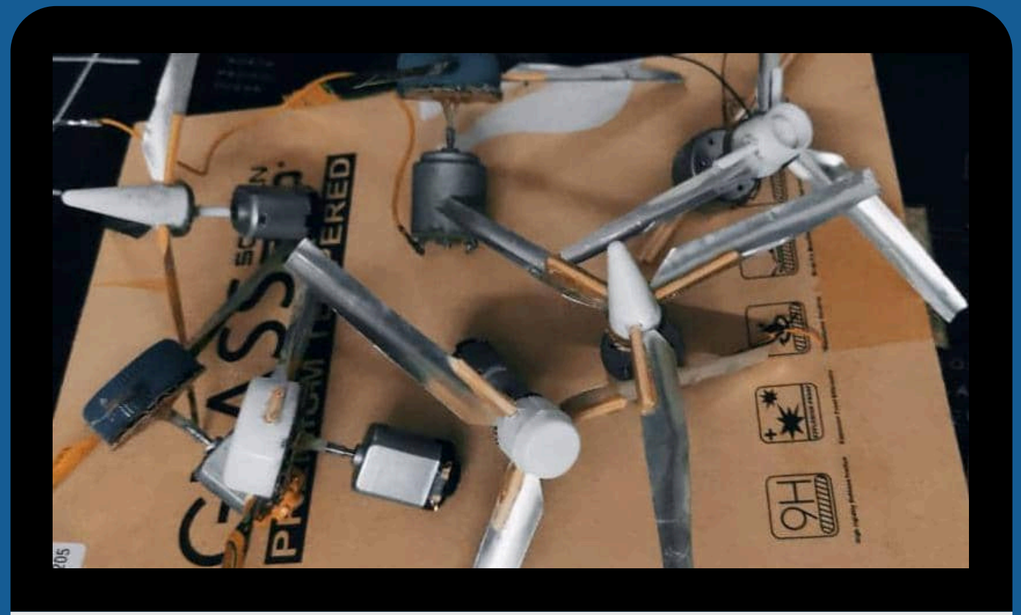
06

Run the Machine

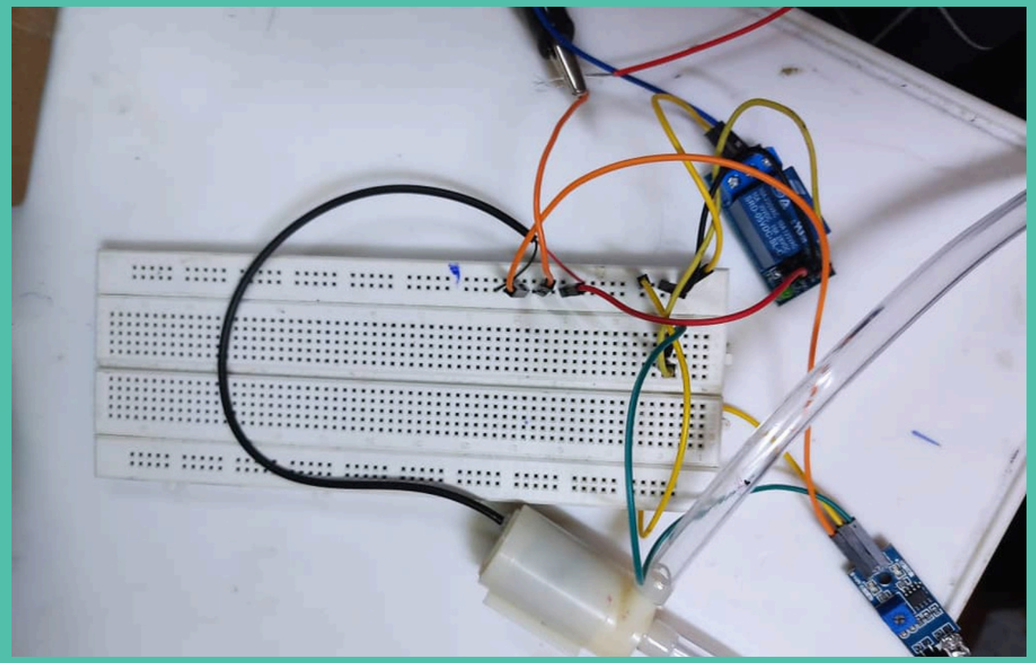
STEP 1: SCRATCH THE MODEL



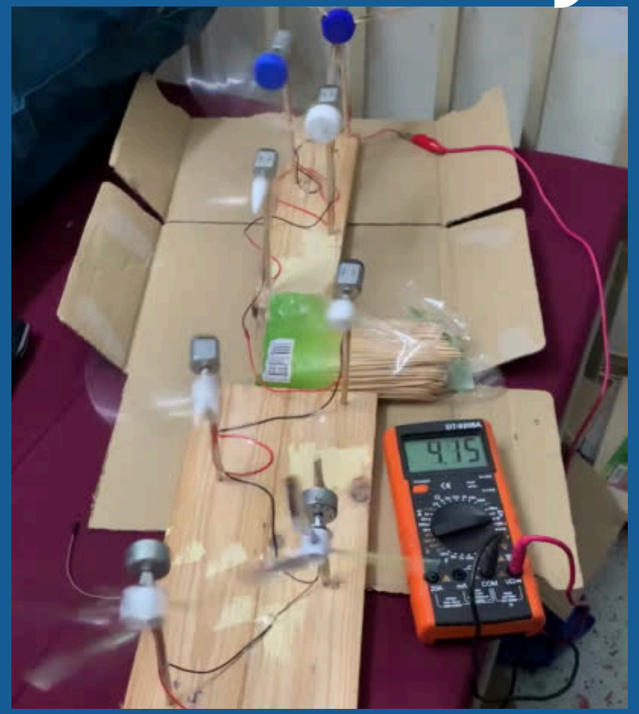
STEP 2: BUILT WIND TURBINE



STEP 3: CONSTRUCT THE CIRCUIT FOR THE WATER DISPENSER



STEP 4: TEST THE POLARITY OF TURBINE AND THE CIRCUIT (SIMPLE CALCULATION)

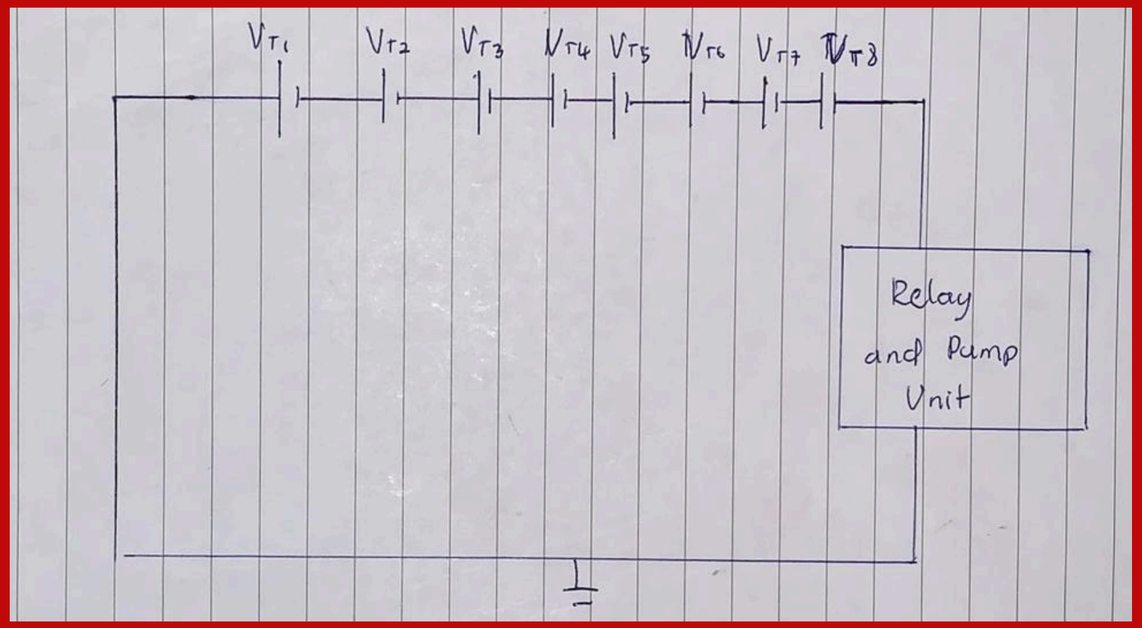


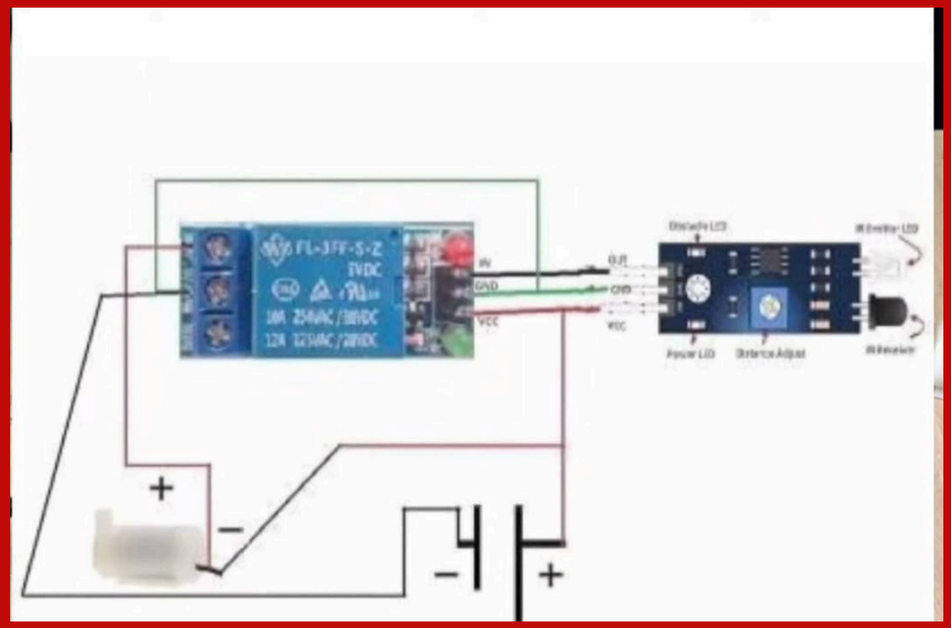
STEP 5: ASSEMBLE ALL THE COMPONENTS (WIND TURBINE WITH THE CIRCUIT)

STEP 6: RUN THE MACHINE

DEMONSTRATION

DIAGRAM


VT1
VT2
VT3
VT4
VT5
VT6
VT7
VT8
Relay
and Pump
Unit


FL-3FF-S-Z
5VDC
10A 250VAC/30VDC
12A 125VAC/28VDC
GND
VCC
+
-
-
+

RELATIONSHIP BETWEEN WIND TURBINE, VOLTAGE AND PUMP

V, turbine=k · v, wind speed where k is the coefficient that influence the V, turbine and v, wind speed

V,pump=V,turbine

P, input=V, pump · I, pump

η=Wind Turbine Input Power/ Useful Power Output

PROBLEMS & SOLUTION

1. Hard to obtain a stable voltage from the wind generator because of different angle of the blower.	1. Repeat the process to obtain the suitable angle for the wind generator, so it can make a maximum speed and obtain a high voltage.
2. The blade of wind turbines is easy to break because it is not strong enough to sustain the wind from blower.	2. Use a strong material as wood and aluminium to make it able to sustain a high wind from blower.
3. There is problem in using the relay because of the voltage obtain from the wind generator is not stable.	3. Get information about the voltage of the relay, so we can target and obtain the minimum voltage needed to use the relay.
4. We cannot afford to this activity frequently because of the loud sound from the blower that effect other resident.	4. Plan wisely and choose appropritate place as robotic design lab to do the project.
5. The electrical output from the wind turbine may be inconsistent and fluctuate with variations in wind speed.	5. Power electronics, such as inverters or power converters, may be used to convert the variable AC output from the generator into a more stable form, such as direct current (DC) or regulated AC.

CONCLUSION

As conclusion, renewable energy are very useful for pepole nowadays. From this project group, we can conclude that wind turbine is a good idea to generate electrical energy. For this project, it need more improvement to be more efficient such as to generate and amplify the current and voltage so that can be easily to water dispenser work in smoothly operation.

THANK YOU VERY MUCH!