Power Generation Unit for Foot Step for Underground Gardening

Day by day, the population of the country is increasing and the requirement of the power is also increasing. At the same time the wastage of energy is also increasing in many ways. So, reforming this energy back to usable form is the major solution. So, in this footstep power generation project, we are generating power with the help of human's footsteps either by walking or running.

It uses the piezoelectric sensors. To generate a voltage from footstep the piezo sensors are mounted below the platform. To generate maximum output voltage the sensors are placed in such an arrangement.

The project aims in designing a foot step power generation and the generated power is obtained stored into the rechargeable battery which uses to operate the water motor and microcontroller. Microcontroller will monitor the generated voltage from piezo plate through voltage sensor will display on LCD. This system consists of soil moisture sensor which is capable of detecting moisture level in the soil and capable of taking the decision to switching ON/ OFF water motor automatically using Arduino. Here we are using DC water motor to pump the water. Here relay module works as a switch to ON/OFF the water motor. Based on the moisture content in soil Arduino will control the water motor automatically.

The microcontroller will continuously compare output from soil moisture sensor. When there is no moisture in soil then microcontroller will turn ON the water motor through relay. There is sufficient water in soil microcontroller will turn OFF the water motor automatically. To achieve this task Arduino nano is loaded with a program written in embedded 'C' language to perform the task.

Features:

1. Automatic irrigation using soil moisture sensor.

2. footsteps based power generation using piezo electric sensors.

3. Generated power is obtained stored into the rechargeable battery.

4. Generated PIEZO voltage will display on LCD.

5. Battery power is used to operate the water motor and Arduino.

6. Using Arduino Nano to achieve this task.

Main blocks in this project:

- Battery power supply.

- ARDUINO Microcontroller.

- Relay with Water Motor.

- Soil moisture sensor.

- Piezo electric plate.

- Charging circuit.

- Voltage sensor.

Software's used in this project:

1. Arduino IDE studio compiler.
2. Express SCH for Circuit Design.
3. Embedded C language.

Block diagram:

Block Diagram