

# SMART WATER FOUNTAIN

## Phase -2 Project

### 1. Sensors used :

#### Water flow sensor :



#### Temperature sensor :



#### Light sensor :



**Motion sensor :**



**Ultrasonic sensor :**



**Water depth sensor :**



**2. Water flow sensor :**

Water flow sensors are installed at the water source or pipes to measure the rate of flow of water and calculate the amount of water flowed through the pipe. Rate of flow of water is measured as liters per hour or cubic meters.

**3. Temperature sensor :**

A water temperature sensor is a device used to measure the temperature of water. It is commonly used in various applications such as temperature monitoring, water quality assessment, aquatic temperature control, and more. The sensor is designed to accurately detect and measure the temperature of water, providing valuable data for analysis and decision-making.

#### **4. Light sensor :**

the light sensor is based on internal photoelectric effect, which states that when light energy or photons are bombarded on a metal surface than it can cause the free electrons from the metal to excite and jump out resulting in electron flow or electric current. The amount of current produced depends on the energy of the photon (i.e. wavelength of light). The emission of electrons from the metal surface occurs only after the light reaches a certain threshold frequency that corresponds with the minimum energy required by the electrons to break the metal bonds.

#### **5. Ultrasonic sensor :**

**Ultrasonic Depth Sensors** aren't limited to only water detection and are used in a variety of applications including: Tank level measurement Diesel fuel gauging Irrigation control Stream or River level monitoring Wet well and pump controls Sea or Tide level monitoring and Tsunami warning Liquid assets inventory

#### **6. Water depth sensor :**

Deep Wells Water level sensor is based on the principle that the measured liquid pressure is proportional to the height of the liquid. The piezoresistive effect of the advanced foreign isolated silicon diffused sensor is used. Change to electrical signal. After temperature compensation and linear correction, convert to 4-20mA standard electrical signal. Well water level sensor submerged in deep well work together with water pump. It is extremely difficult to replace and submit an inspection. Therefore, it adopts stainless steel cable, waterproof, sealing ring, and other four-level seals. Special cables and special water sealing technology make the transmitter highly reliable and stable.

#### **Project layout :**

The main materials or components in the design of the fountain;

1. Pump
2. Nozzle
3. Basin
4. Power Supply
5. Discharge Piping
6. Drain Piping

#### **PUMP :**

One of the key vital design components is the selection of the type of pump that will be used in generating the energy of the fluid flowing. The pump that we choose and will use is a Submersible Pump. Submersible Pumps are pumps that are completely immersed in liquid and having a hermetically sealed motor which is a motor that is air tight so that water cannot sip in and damage the motor.

### **NOZZLE :**

The Nozzles are key in producing the type of column liquid streaming out of the fountain nozzle. The nozzle chosen that will be used for this Fountain Design Project will be a Precision jet creating nozzle. Precision jet creating nozzle is ideal due the basin as it will only cater for water stream falling inside the basin. The other reason in choosing this type of nozzle is that it is simple and one of the cheapest nozzles available.

### **BASIN :**

The basin will be specially designed as it will be elevated above the ground level. The basin is where the reservoir of water will be stored as it is important in recycling the water and most importantly saving water. The basin will be ordered for as it will be easier than building one as the shape and size matters as it is important for pressure requirements.

### **POWER SUPPLY :**

The power supply needed for the pump and the lighting will be generated from the nearby Civil Engineering power supply. The voltage needed by both equipment is a standard 240 voltage.

### **DISCHARGE PIPING :**

The discharge piping system is the piping system where the water will flow from the pump to the fountain nozzle. The water flowing inside the pipe system will be driven by the power produced by the pump. The piping system height and diameter will be crucial for calculating the of the discharge height.

### **DRAIN PIPING :**

The Drain Piping is the piping system that will allow the waste water to be flow out. The flow of the water flowing through the drain pipe will be purely induced by gravity as it will flow from higher elevation to a lower elevation. The tap will be positioned in the piping system so that the waste water can be removed easily and only when needed t

