**1️⃣ Portable Water Testing Kit (Lab / Community Use)**

**Purpose:** Quick, on-site water quality assessment by health workers or community volunteers.

**Design Concept:**

* **Compact box** with modular sensor compartments.
* **Sensors Included:**
  + pH sensor
  + TDS / Conductivity sensor
  + Turbidity sensor
  + Temperature sensor
  + ORP sensor (optional)
* **Water Handling:** Sample tray or small bottle; manual inlet/outlet for water flow.
* **Electronics:**
  + Microcontroller (ESP32 / Arduino)
  + **LCD display** for immediate readings
  + Optional LoRa / Wi-Fi module for transmitting data
* **Features:**
  + Detachable sensor slots for easy calibration and cleaning
  + Battery-powered for field use
  + Color-coded compartments for easy identification

**Presentation Tip:** Show it as a **portable “lab in a box”**, sensors clearly labeled, arrows for sample water flow.

**2️⃣ Fixed Outdoor / Tank-Mounted Kit (Continuous Monitoring)**

**Purpose:** Long-term water quality monitoring in ponds, rivers, or village water tanks.

**Design Concept:**

* **Rugged, waterproof enclosure** (IP65), floatable or tank-mounted.
* **Sensors Included:**
  + pH sensor
  + TDS / Conductivity sensor
  + Turbidity sensor
  + Temperature sensor
  + ORP sensor
* **Float Switch Integration:**
  + **Ocean Star 250V float switch** for motor/pump cutoff
* **Electronics:**
  + Microcontroller (ESP32 / Arduino)
  + LoRa module for remote data transmission
  + Relay module for motor/pump control
  + Battery or solar-powered
* **Water Handling:**
  + Water enters float switch chamber → flows sequentially through sensor chambers → outlet/pump
  + Modular compartments for maintenance
  + Optional mini filter at inlet
* **Features:**
  + No display needed; data sent remotely
  + External LoRa antenna for better signal
  + Color-coded chambers (yellow for float, blue for water, green for electronics)

**Presentation Tip:** Cutaway view showing float switch, sensors, pump, and water flow arrows for clarity.