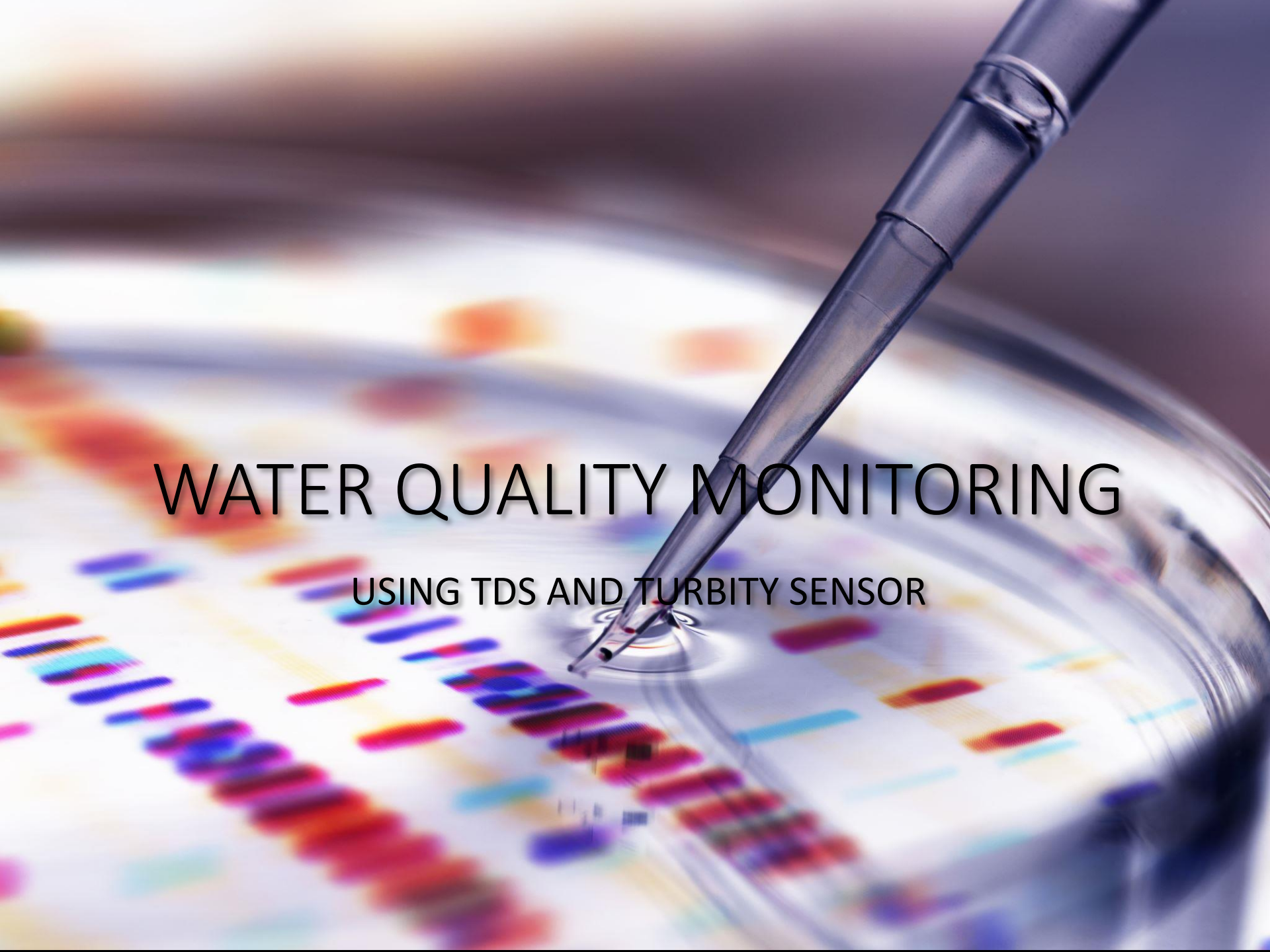


WATER QUALITY MONITORING

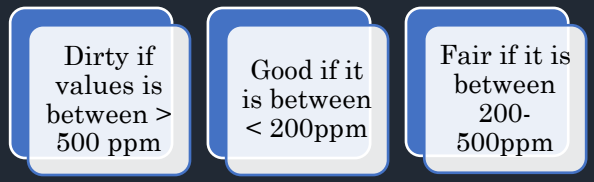
USING TDS AND TURBITY SENSOR

MOTIVATION BEHIND THE PROJECT

- Public Health Concerns: Monitoring water quality ensures safe drinking water, reducing the risk of waterborne diseases.
- **Environmental Protection**: Contaminated water causes significant risks to human health, aquatic ecosystems, and overall environment.
- The present Traditional monitoring methods often lack real-time data collection, accuracy, and efficiency, leading to challenges in timely detection and response to water quality issues which is dangerous for environment
- Therefore, there is a need for a comprehensive water quality monitoring system that can provide reliable, real-time data to ensure the safety of the human and animal health by ensuring the safety of water resources.

TDS SENSOR and Turbidity sensor

Water quality based on TDS values



Water quality based on turbidity value

turbidity	Water quality
> 50	poor
< 20	good
20-50	fair

IMPLEMENTATION

Sensor Measurement Principle:

TDS sensor measures conductivity, converting it to TDS values.

Turbidity sensor measures light scattering to determine turbidity.

Data Acquisition and Transmission:

Sensors continuously measure parameters, data acquired by microcontroller.

Microcontroller processes and prepares data for analysis.

Integration into Data Flow:

Microcontroller analyzes data to assess water quality.

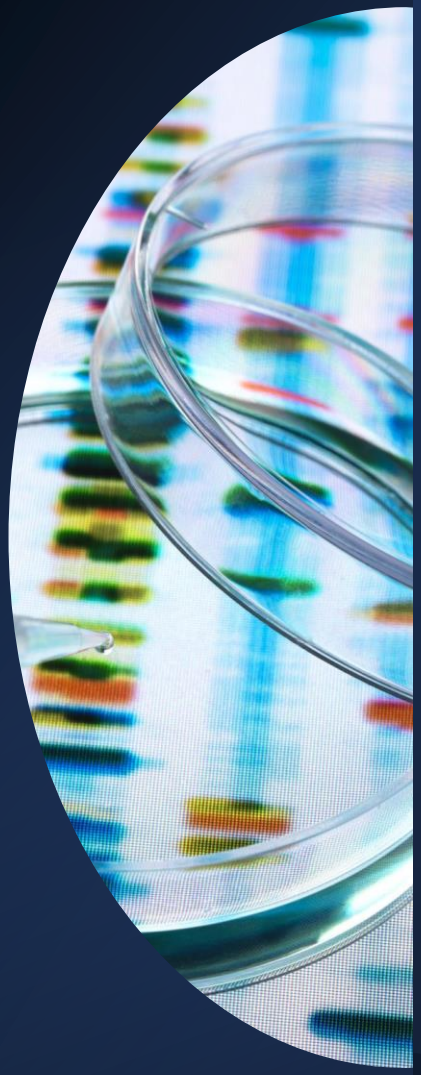
If deviations are detected, microcontroller triggers actions like activating solenoid valve.

SENSOR DATA ACQUISITION

DATA PROCESSING AND ANALYSIS

DECISION MAKING AND ACTUATION

FEEDBACK AND MONITORING

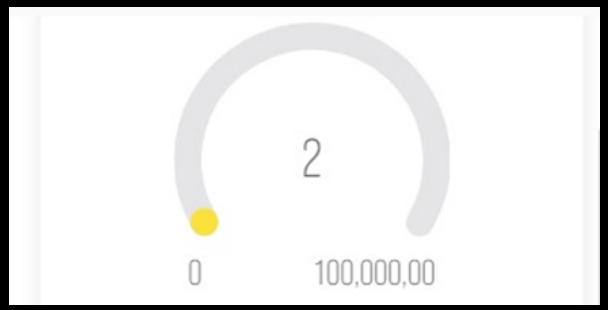


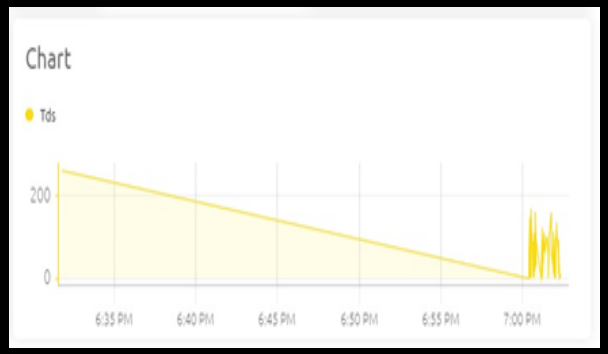
DATA AND DATA ANALYSIS

TDS ,TURBIDITY

TDS SENSOR

Complete analysis and usage of the data

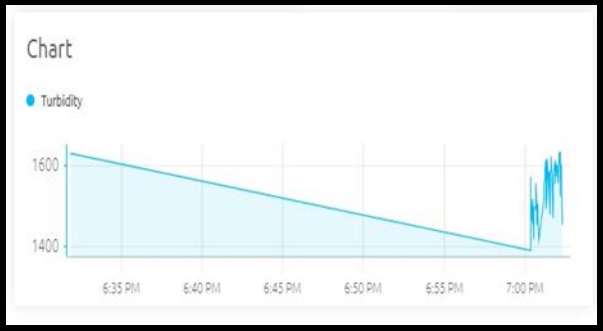




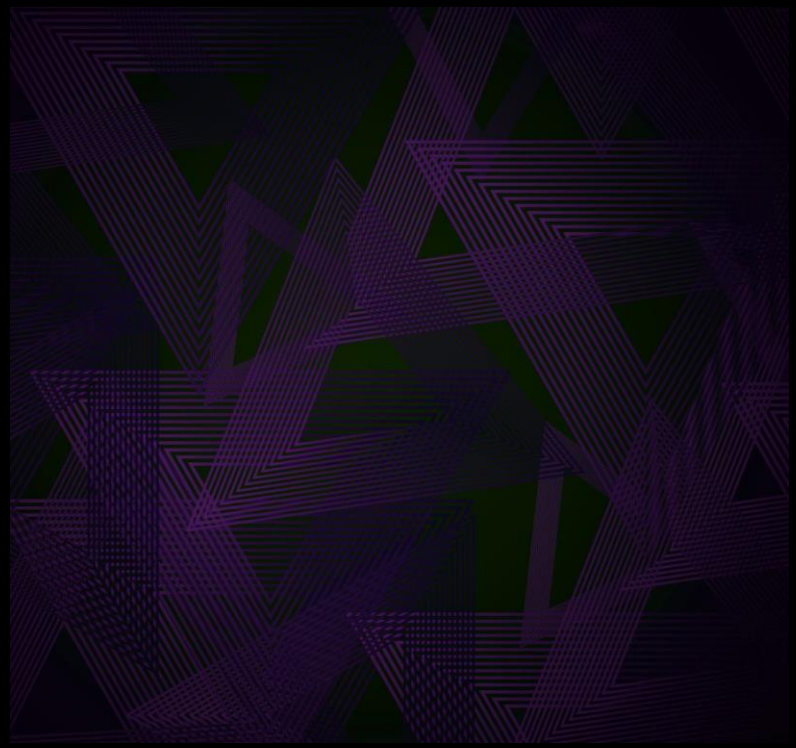
Real-time TDS Data Analysis:	Continuous monitoring of TDS levels. Setting thresholds for acceptable TDS ranges.
Decision-making Logic:	Triggering valve control if TDS exceeds thresholds. Determining valve actions based on TDS analysis.
Feedback Mechanism:	Displaying TDS readings and valve status. Generating alerts for high TDS levels.
Dynamic Valve Control:	Adjusting valve parameters based on TDS fluctuations.

TURBIDITY SENSOR

- **Real-time Turbidity Data Analysis**:
  - Monitoring turbidity levels continuously.
  - Setting thresholds for acceptable levels.
- **Decision-making Logic**:
  - Triggering valve control for high turbidity.
  - Determining valve actions based on analysis.
- **Feedback Mechanism**:
  - Displaying turbidity readings and valve status.
  - Generating alerts for high turbidity.
- **Dynamic Valve Control**:
  - Adjusting valve parameters based on turbidity changes.



Failure analysis Of each prototype



Failure analysis

- **Analysis of Potential Failures in TDS Sensor:**
- **Calibration Drift**: Over time, the TDS sensor may drift, leading to inaccurate readings.
- **Electrode Contamination**: Contaminants on the electrodes can interfere with conductivity measurements.
- **Sensor Degradation**: Exposure to harsh conditions can degrade sensor components.

- **Analysis of Potential Failures in Turbidity Sensor:**

1. **Optical Interference**: Presence of particles in water can interfere with turbidity measurements.
2. **Sensor Fouling**: Accumulation of substances on the sensor surface can obstruct light transmission.
3. **Light Source Degradation**: Malfunction of the light source can affect turbidity readings.