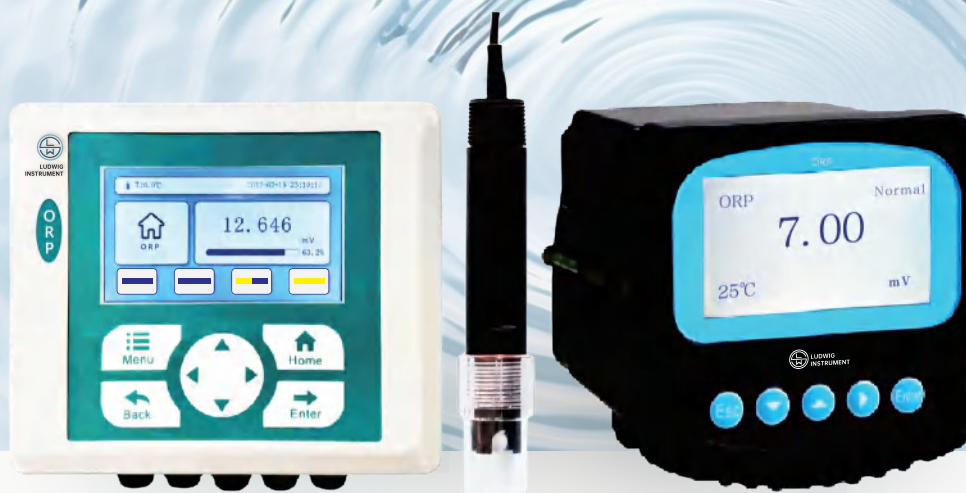


Please refer to page 7 for selection details

# ORP Analyzer

(Oxidation-reduction Potential)

## Water Quality Analysis



### Operational Principle

The instrument consists of signal measurement, calculation, display, network communication, and panel commands. The impedance transformation of ORP and temperature transforms ORP into a low resistance signal of 59.16mV/ORP (25 °C); Transform NTC into a voltage signal.

The instrument is matched with an ORP electrode to monitor the ORP value of the solution's acidity and alkalinity. The sensor is a battery composed of an ORP glass electrode and a calomel (or Ag/AgCl) reference electrode, which generates a potential difference related to the solution's ORP value based on the Nernst equation:  $E_x = E_o + SPH$ .

The potential difference is amplified by a preamplifier with high input impedance, and the thermistor sends a signal corresponding to the temperature value. After the two sets of signals are amplified, they are converted into A/D and processed by an I/O interface chip. After being processed by a single microprocessor, they are prominently displayed on the display screen.

### Functional Characteristics

**Intelligence:** Using a single chip microprocessor to complete ORP value measurement, temperature measurement, and compensation;

**Dual high impedance preamplifier:** high input impedance, anti noise, strong anti-interference ability;

**There are three calibration methods:** one point calibration, two point calibration, and known concentration calibration;

**Human machine dialogue:** menu operation structure, users can operate according to the prompts on the screen;

**Multi parameter display on the same screen:** simultaneously displaying ORP value, temperature value, and working status;

**Software setting output method:** The software selects 0-10mA or 4-20mA output;

**Free setting of measurement range and alarm upper and lower limits;** Upper and lower limit exceeding alarm prompt;

**Two sets of relay control switches,** with adjustable hysteresis control range;

**Self cleaning switch setting,** setting cleaning time and interval;

**After sales service:** Provide technical support and contact information for after-sales service to users;

### Product Application

Widely used in wastewater treatment, purified water, circulating water, boiler water and other systems, as well as in processes such as electronics, electroplating, printing and dyeing, chemistry, food, pharmaceuticals, etc., it has demonstrated outstanding performance in large-scale sewage treatment plants, desulfurization, industrial process monitoring, and other applications.

## Product Model

Product Model	ORP Analyzer (Oxidation-reduction Potential)	
Product Diagram		
Display	4.3-inch Lcd color screen	3.2-inch Lcd screen
Measuring range	-2000~+2000mV	-2000~+2000mV
Measurement accuracy	± 5mV Temperature: ± 0.5 °C	± 5mV Temperature: ± 0.5 °C
Resolving power	1mV	1mV
Isolation output current	4-20mA(Load Resistance<800Ω)	4-20mA(Load Resistance<800Ω)
Communication interface	RS-485 Modbus Standard Communication Protocol	Optional RS-485 Modbus Standard Communication Protocol
Two sets of relay contacts	3A 240VAC, 6A28VDC or 120VAC	3A 240VAC, 6A28VDC or 120VAC
Power supply	85-260VAC/50-60Hz or 24VDC	85-260VAC/50-60Hz or 24VDC
Power	≤3W	≤3W
Quality	0.82kg	0.5kg
External dimensions	180x157x84.5mm	96X96X125mm
Installation opening	Plate mounted 138x138mm (wall mounted)	Plate mounted 92X92mm
Usage conditions	Temperature 0-45 °C, humidity not exceeding 85%, no electromagnetic field interference	Temperature 0-45 °C, humidity not exceeding 85%, no electromagnetic field interference
Electrode selection	Analog signal, digital signal electrode	Analog signal electrode
Data function	Data storage, operation logs, Bluetooth printing	-


## Measurement Principle Of Electrode Series:

The sensor is based on the ion selective electrode method. The principle is to use a membrane electrode to represent the concentration of the measured ion as the electrode potential value, and determine the ion concentration in the solution by measuring the electrode potential. Specifically, two different electrodes are inserted into the tested solution, and the potential changes with the concentration of hydrogen ions, known as the working electrode; The other electrode has a fixed potential and is called a reference electrode. These two electrodes form a primary battery, measure the potential between the two electrodes, and determine the AH value of the measured solution according to the Nernst equation.

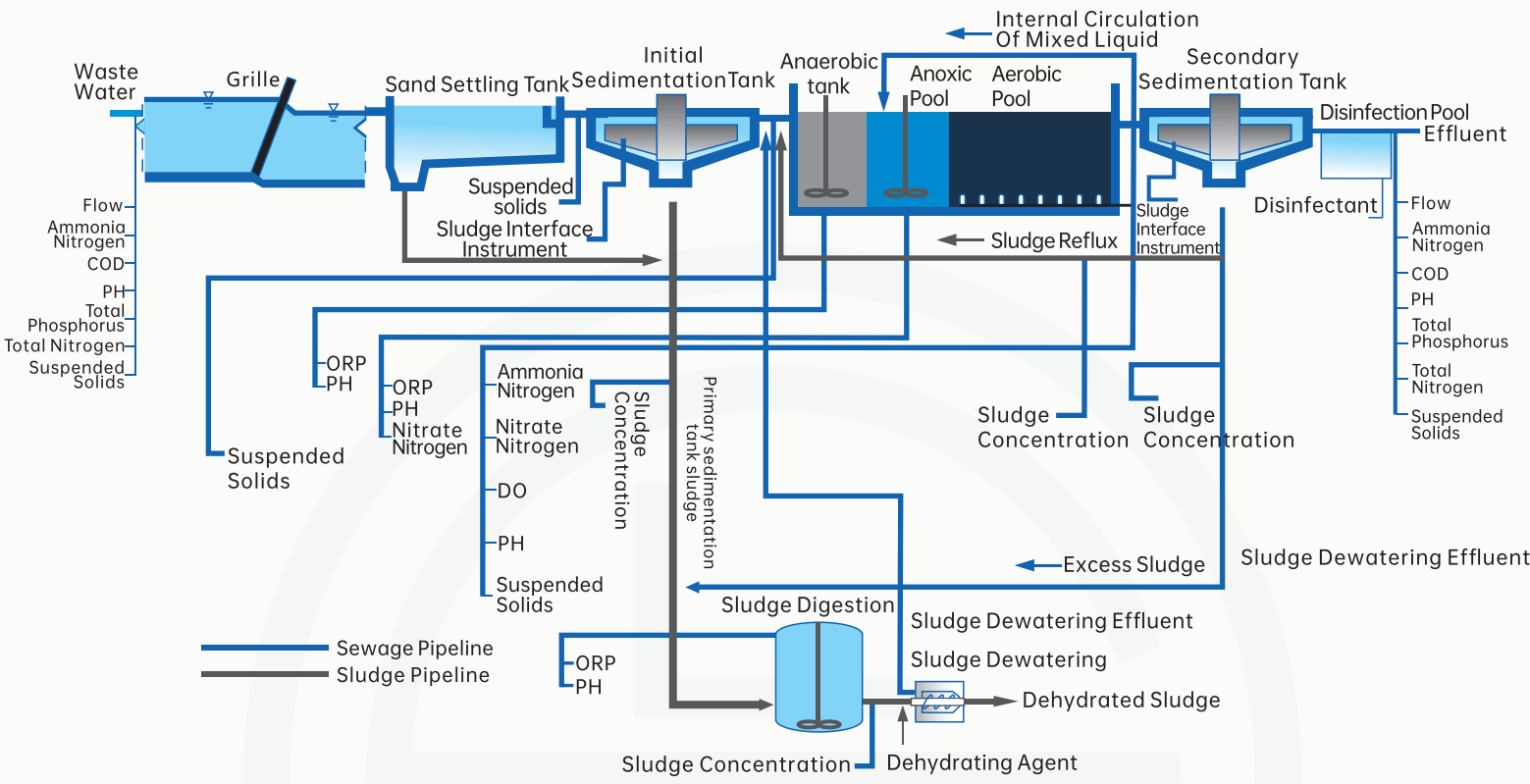
## Kind Reminder:

When the electrode is not in use, it is necessary to keep the glass bulb on the electrode head moist and not dry (which is prone to premature failure). Users with conditions can purchase maintenance solution to clean and maintain the electrode, helping to restore its function.

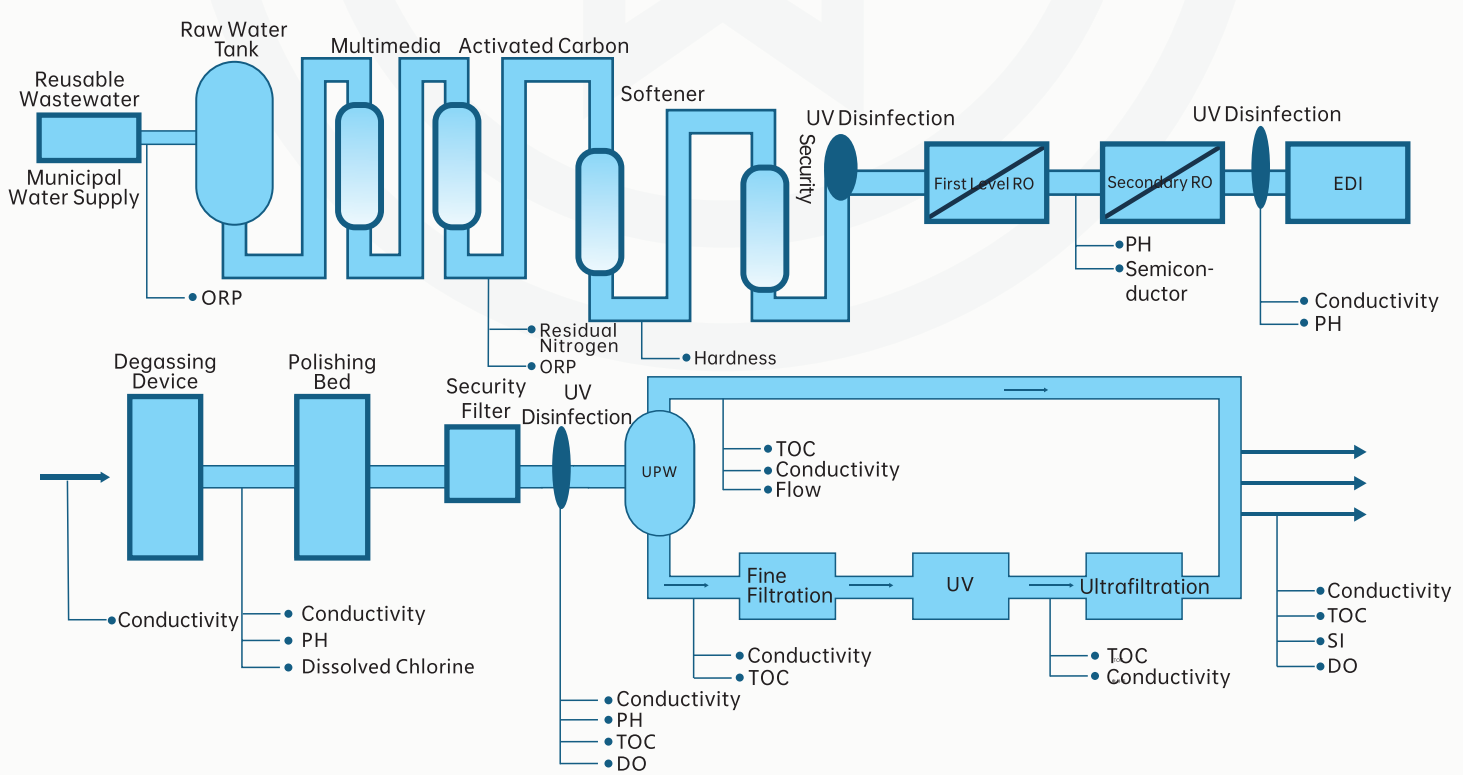
## Product Model

Model	ORP-B1 Sewage Electrode	ORP-B2 Glass Electrode	ORP-B3 High-temperature Electrode	ORP-B4 Digital Electrode
Product diagram				
Measuring range	±1999mV	±1999mV	±1999mV	±1999mV
Temperature range	0-60°C	0-60°C	0-135°C	0-60°C
Temperature compensation type	NTC2252, NTC10K PT1000, PT100	NTC2252, NTC10K PT1000, PT100	NTC2252, NTC10K PT1000, PT100	-
Power supply	-	-	-	12-24VDC
Output signal	-	-	-	RS485
Liquid receiving material	PPS, Quartz Glass, Tetrafluoro	Quartz Glass	Quartz Glass, Tetrafluoro	PPS, Quartz Glass, Tetrafluoro
Installation interface	Up and down NPT3/4	PG13 .5mm	Up and down NPT3/4	Up and down NPT3/4
Electrode withstand voltage	0.3Mpa, 0.6Mpa	0.3Mpa, 0.6Mpa	0.3Mpa, 0.6Mpa	0.3Mpa, 0.6Mpa
Applicable scenarios	Industrial wastewater treatment	Mining and smelting, papermaking, petrochemicals, biotechnology and other fields	Industrial wastewater, acid-base neutralization, strong acid and strong alkali conditions, and heavily polluted water quality	Water treatment, surface water, etc

# Sewage Treatment Process Diagram

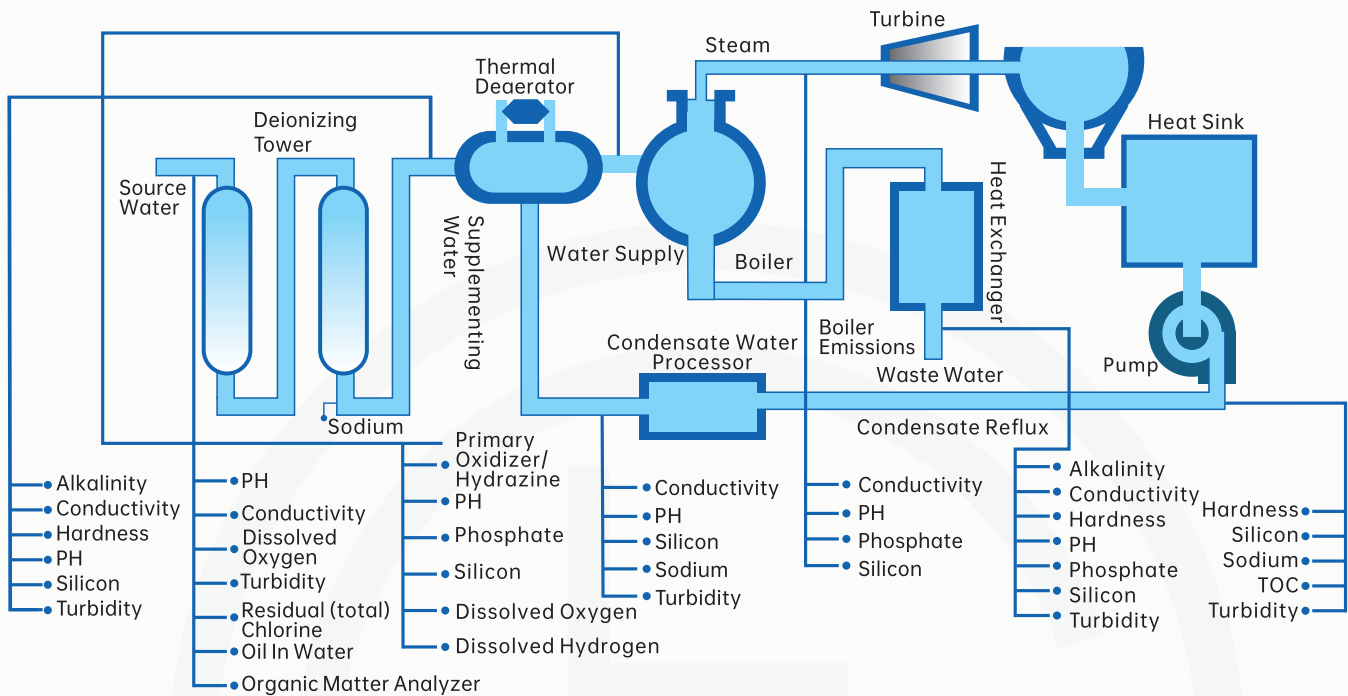


# Electronic Industry Water/Wastewater Reuse Process and Water Quality Monitoring Plan

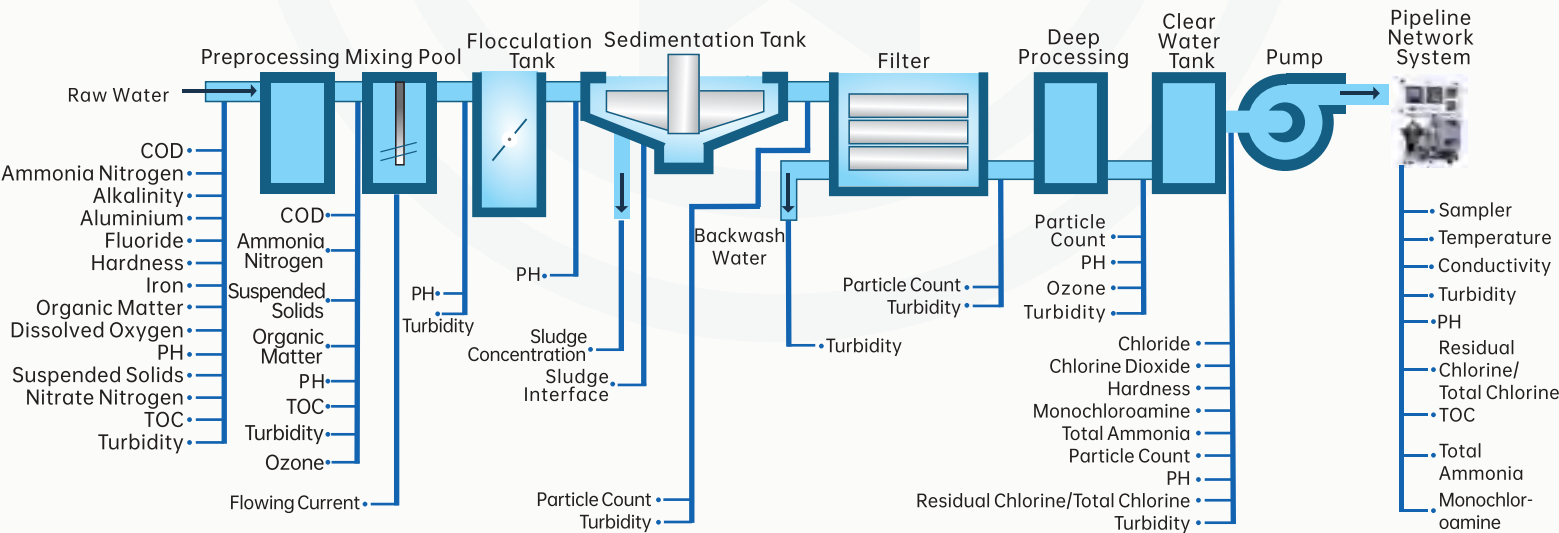




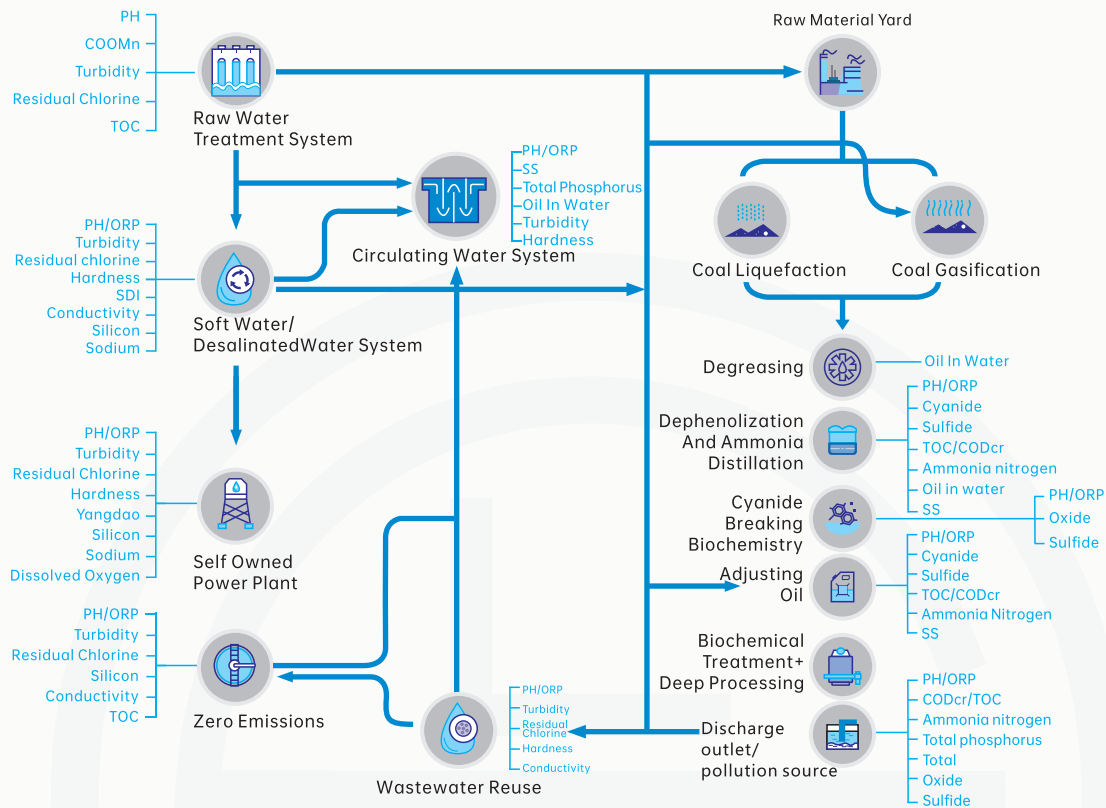
# Boiler Water Flow Diagram



# Drinking Water Treatment Process Diagram

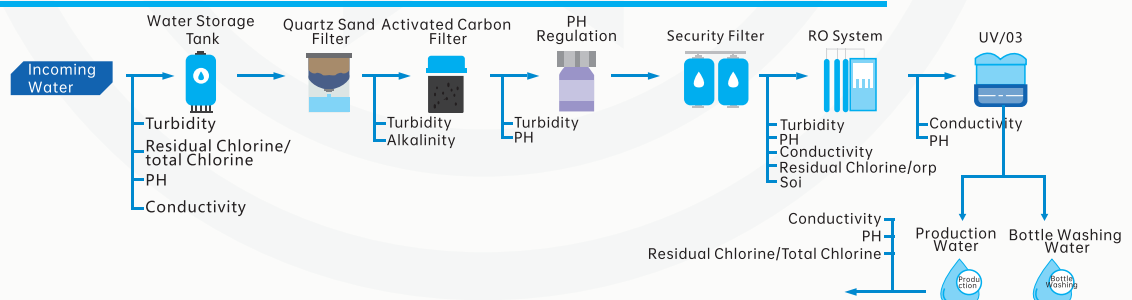


# Petrochemical Environmental Water Treatment Process Diagram

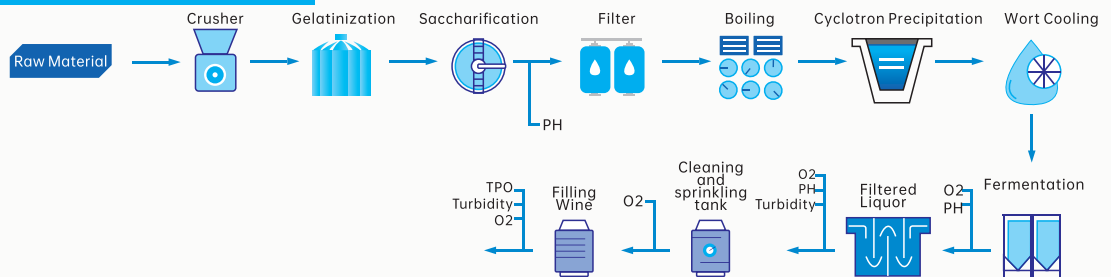


# Wastewater Treatment Process And Water Quality Monitoring Plan For The Beer And Beverage Industry

## Process Flow Of Beer Beverage Raw Water Pretreatment



## Beer Water Usage Process



## ORP Selection Composition

Selection example ORP-

1	B1	2	C	3	G	4	L	5	V	6	A	7	N	8	S	9	Q	10	H
---	----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	---

1. Model	B1	Sewage electrode	
	B2	Glass electrode	
	B3	High temperature electrode	
	B4	Digital electrode	
	T()	Other electrodes	
2. Display screen size	C	4.3-inch LCD color screen	
	D	3.2-inch LCD screen	
	T()	Other sizes	
3. Range	G	-2000~+2000mV	
	T()	Other ranges	
4. Electrode material	L	PPS (0~60 °C)	
	M	Glass+PTFE (0-60 °C)	
	N	Glass+stainless steel (0-60 °C)	
	O	PTFE (0-60 °C)	
	P	Glass+PTFE (0-100 °C)	
	Q	Glass+stainless steel (0-100 °C)	
	R	Glass+PTFE (0-135 °C)	
	S	Glass+stainless steel (0-135 °C)	
	T()	Other materials	
	5. Accuracy	V	±5mV, ±0.5°C
T()		Other accuracies	
6. Power supply	A	24VDC	
	B	220VAC	
7. Output signal	N	4~20mA	
	O	4~20mA+RS485	
	P	4~20mA+RS232	
	T()	Other signals	
8. Installation interface	S	Up and down 3/4 NPT	
	V	PG13.5MM	
	T()	Other interfaces	
9. Data function	Q	Data storage, operation logs, bluetooth printing (3.2 inch not selected)	
10. Cable length	H	10m	
	I	5m	
	G	15m	
	T()	Other lengths	

## Explanation:

ORP-B1 analyzer, equipped with sewage electrodes and a 4.3-inch LCD color screen, with a range of -2000~+2000mV, electrode material PPS (0-60 °C), accuracy of 5mV, ± 0.5 °C, The power supply is 24VDC, with an output signal of 4~mA. The installation interface is 3/4 NPT up and down, and the data functions include data storage, operation logs, and Bluetooth printing. The cable length is 10m.

## Product certification

Compliance and approval; The Ludwig water quality analyzer meets key standards and certifications for process measurement technology; To ensure the highest reliability in such settings;