

Smart Water Platform

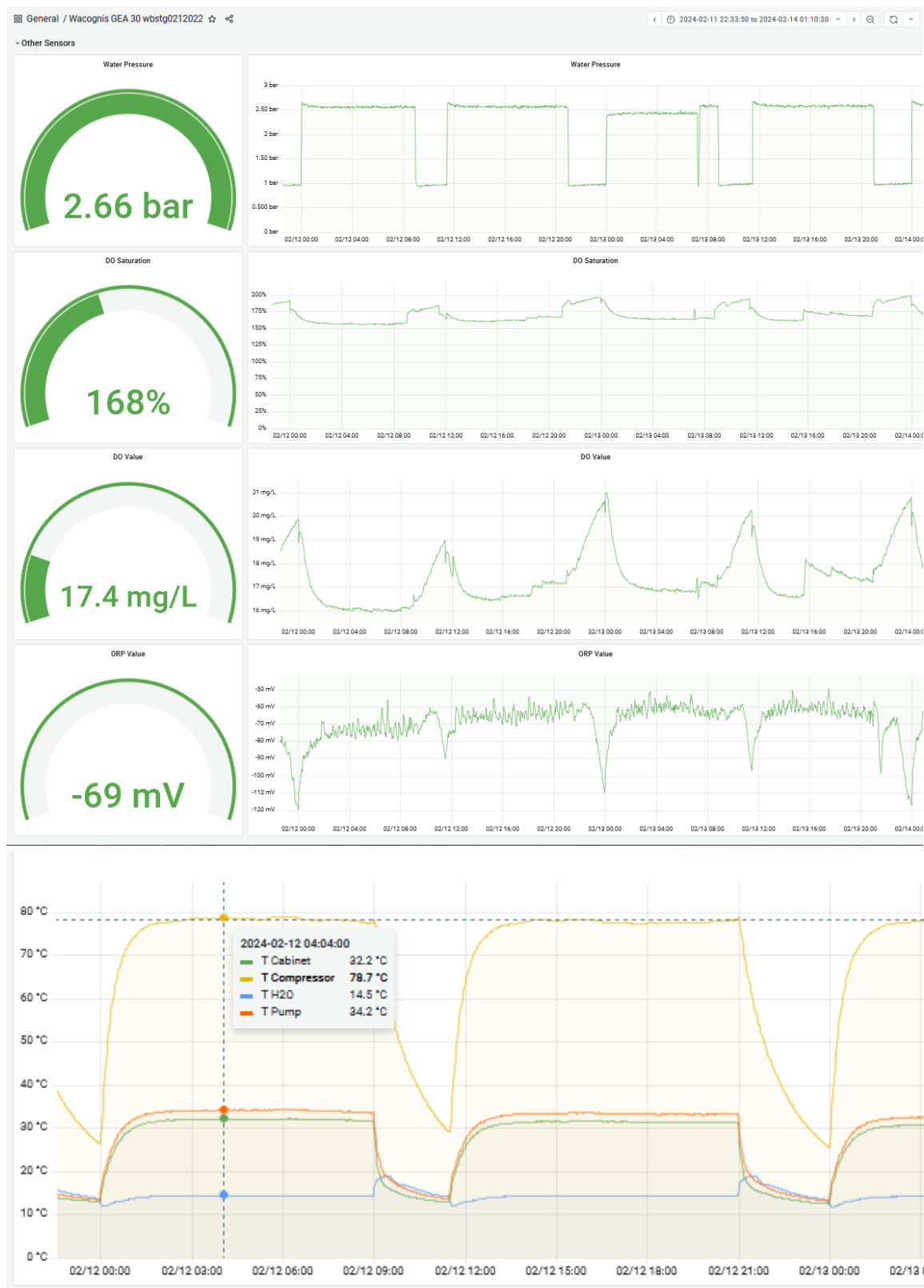
Smart Water is an IoT remote control unit for water nano-aeration systems, operated from your mobile phone or tablet.

The Smart Water unit provides full Wi-Fi or mobile network real-time remote control and management of a nano-aeration system. The unit comes in the form of an IoT module that is plugged into the "IoT ready" port of the control panel unit ("DB box"). Different sensors can then be connected to the unit.

The Android or iOS mobile application enables real-time remote supervision of the sensor data and control of operation, while the separate Smart Water web application provides advanced system data analytics and visualization.

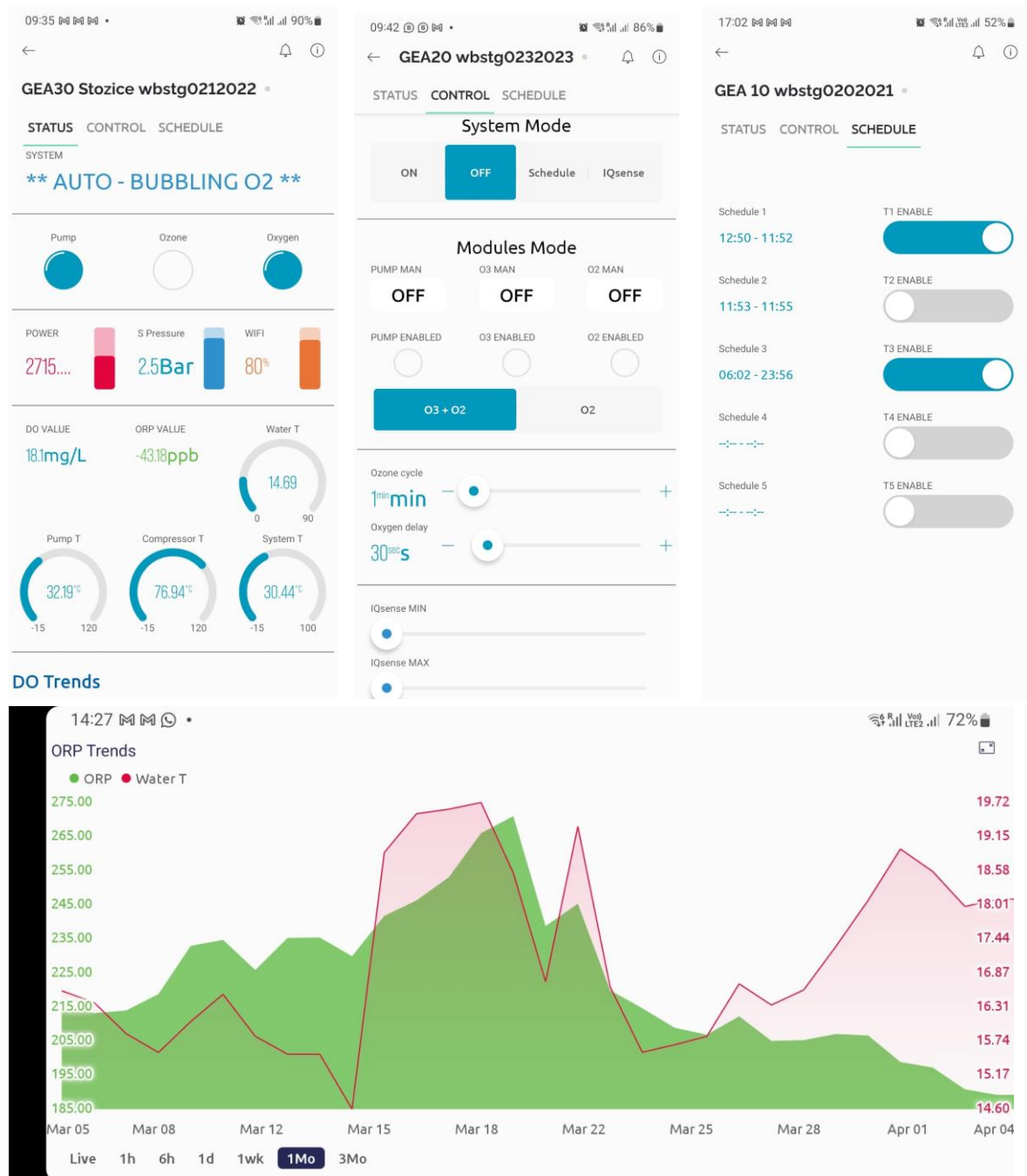


Overview and architecture of Smart Water system



Display examples of the operational parameters for the Smart Water web version

Nano-aeration systems can automatically adapt its operations based on the preset user defined values and are constantly updated through the monitoring system. For example, user can set the target ORP or dissolved oxygen range in the water tank and the Smart Water system will automatically adapt the operation of Nano-aeration systems to keep the required level of ORP or dissolved oxygen in the treated water.



Display examples of the Android/iOS app of the Smart Water

Control panel unit

The control panel is designed to operate and monitor nano-aerator systems using embedded oxygen and/or ozone generators. It can manage multiple power standards (single phase 50/60 Hz, 110/240, 3 phase 380V etc). It includes also the IoT controller module for remote monitoring.

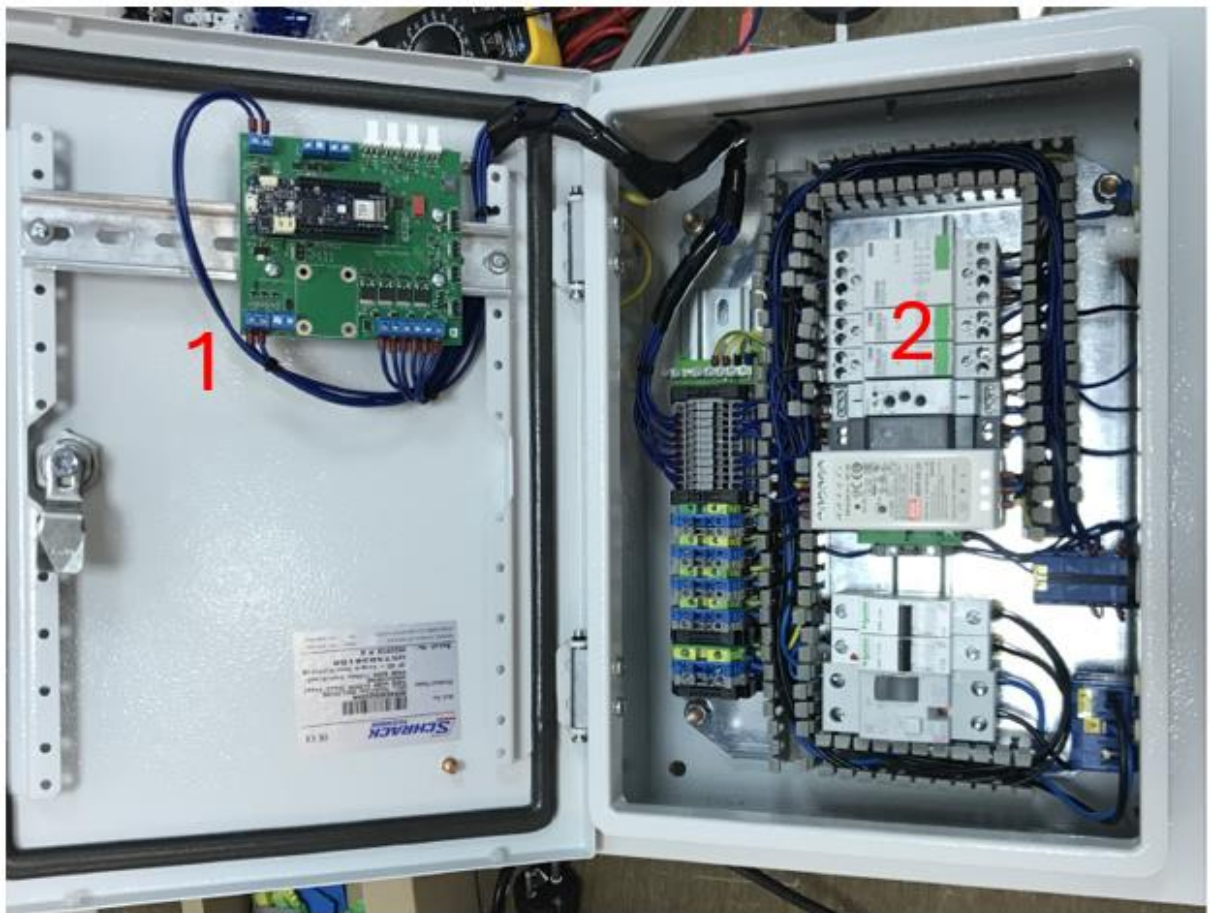


Image of control panel unit: (1) IoT controller and (2) Power control panel (DB Box)

SPECIFICATIONS:

Standard Features

- Dimensions: 400 x 340 x 155 mm
- Power input: 50/60 Hz, 110/240/380 V
- PLC Controlled (Auto mode / Manual mode)
- Remote update/support via VPN
- Cloud Portal Monitoring

- Cloud Portal Control (Start/Stop/Reset/Config)
- WiFi
- 4 digital inputs and outputs
- Connection for up to 255 external Modbus RS484 digital sensors (ex. dissolved oxygen, ORP, TDS/EC etc)
- 4 Relay outputs (ex. 1 x Pump, 2 x O2/O3 Generator, 1 x Fan)
- Water pressure sensor
- Cabinet internal temperature and humidity
- Electrical current sensor (Voltage/Current/Watt/KWH)
- Device temperature (ozone generator, compressor, water temperature)
- Main Switch

Optional features

- Custom Software/System development
- Custom branded cloud design (logo, colors etc)
- 4G/5G/Loran connectivity
- Dissolved oxygen sensor (0-50 mg/L & Water Temperature)
- Cabinet ozone concentration sensor
- External reservoir floating switch connector
- Oxygen Purity Sensor (0-100%)
- Smoke Detector
- Leakage Sensor
- Possibility to connect up to 255 different sensors – see the current list of available sensors below.

Smart Water Cloud system features:

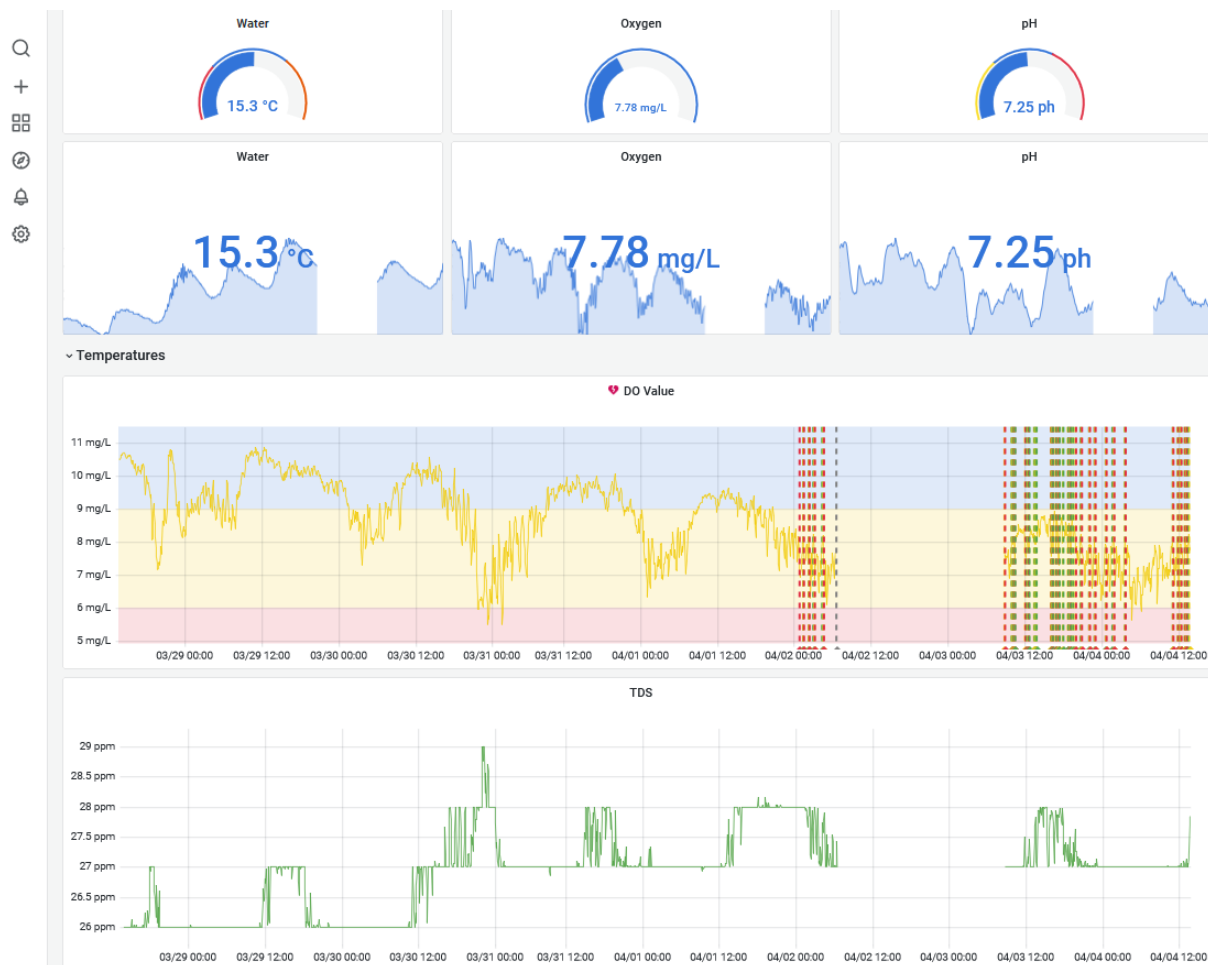
- Event and alarm monitoring and management
- User roles and rights management
- Remote software/firmware updates
- Real-time alerts and notifications
- Remote control and system monitoring
- Real-time sensor data analysis and visualization
- Automatic self-regulation of the system
- Automatic critical shut down
- Cycle trigger timing
- System administration and setup

Sensor Station

The Sensor Station is designed to monitor water parameters in any remote location. It can be powered with standard 100 or 240VAC power or with solar panel.



Up left: Sensor station box. Up right: Sensor installation in the lake. Bottom: Sensor installation in greenhouse



Display examples of the Web cloud application (above) and Android/iOS app of the Smart Water (below)

SPECIFICATIONS

- Dimensions: 200 x 300 x 130 mm
- IP65
- Color: Light gray (other on request)
- Power: 110/240 VAC
- Power consumption: 15W
- Solar panel power option
- Integrated Wifi (4G/5G on request)

Sensor specifications

Type	Specifications
DO - Dissolved Oxygen	Optical sensor, Range: 0-50mg/L, accuracy -/+ 1%, cable length:10m
ORP - Oxidation reduction potential	Range: -1000-1000mV, accuracy -/+ 1%, cable length: 10m
pH	Range: 0-14 pH, accuracy -/+ 1%, cable length: 10m
EC - Electrical conductivity	Range: 10-70ms/cm, accuracy -/+ 1%, cable length: 10m
DO3 - Dissolved Ozone	Range: 0-20mg/L, accuracy -/+ 1%, cable length: 5m
Water temperature	Range: 0-100C, accuracy -/+ 1%, cable length: 5m

Applications

Hydroponics: Plants that take the nutrients directly from the water need a precise pH and Oxygen in water (DO) levels to get the maximum growth. EC is important to understand level of nutrients and other additives in the irrigation water.

Farm drinking water quality remote measurement: Measuring oxidation-reduction potential (ORP), dissolved oxygen, pH and turbidity levels of animal farm drinking water can determine if the drinking water quality in animal farms meets safety & health standards.

Fish Farming / Fish Tank Monitoring / Hatchery / Aquaculture / Aquaponics: Measuring the water conditions of aquatic animals such as snails, fish, crayfish, shrimps or prawns in tanks. Important values are pH, Dissolved Oxygen (DO), conductivity, total dissolved solids and water temperature.

Lake & pond water real time monitoring: Common parameters include pH, temperature, conductivity, ORP and dissolved oxygen ("DO"). Measuring DO is an important gauge of water quality. Changes in dissolved oxygen levels indicate the presence of microorganisms from sewage, urban or agriculture runoff or discharge from factories. A right level of ORP minimizes the presence of microorganisms such as E. coli, Salmonella, Listeria.

Chemical leakage detection in lakes and rivers: Extreme pH or low DO values signal chemical spills due to sewage treatment plant or supply pipe problems.

Pollution levels in the ports & marinas: Measuring levels of temperature, pH and dissolved oxygen for quality-sensing systems in seawater.

Real time control and management of installed equipment: Configuration allows real time control of all vital parameters for smooth operations of the installed park of machines, including power control, voltage, power consumption, system temperature, over/under current, system outage, remote shut down/restart, timer profiles, geo-position, security (geo-fencing) and user multiple alarms.

Benefits

Total control of operations

Smart Water was developed to suit the specific needs of water treatment applications. They are simple, user-friendly configurations with a range of parameter measurement and control factors that allow supervisors and engineers to monitor just about every aspect of water treatment activity and performance.

Smart Process Automation

Smart Water features automatic self-regulation of the system by adapting its operations to the real time data from the sensors. Safety features include automatic critical shut down in case of water leakage, too high water / air temperature, to low water level in the tank etc.

Lower Costs of Ownership

Traditional water treatment systems control, and monitoring is expensive and time-consuming. When something goes wrong, someone must visit the site, identify the problem, and fix it.

Smart Water station solution is designed to sense problems, identify them and, in many cases, correct them without a site visit. Real-time alerts and notifications will alert user about any dysfunction of the system.

Simple

Besides direct operational benefits, Smart Water also eliminates the technological hassles of running your own system. Many operators do not have the resources required to continually update software, train personnel, and write programming code.

There's no software to install.

There's no server to maintain. There's no programming to do. Smart Water solution provides secure cloud service system that collects, analyzes, and presents all the data on private and secure web pages and on mobile phone (Android / iOS).

Security and Privacy

Data is stored on secure cloud server and data communication is encrypted to ensure that no one can intercept and view your data. Nobody has access to your data unless you allow it. available only via protected login procedure. The cloud service is secure, backed-up and hosted by one of the most

secure web hosting facilities in the world. The data center has technical and security staff on site 24/7. Each element of the system is backed-up from internet connections to power systems.