SMART IoT WATER METERING

PRODUCT CATALOGUE

iEngineering Australia Pty Ltd

OFFICE: +61 (0) 283207682
PHONE: +61 (0) 485884829
EMAIL: sarika@iengaust.com.au

ketaki@iengaust.com.au

omkar@iengaust.com.au

Building T2A, Warawara Circuit,

Quaker Hills NSW 2763.

Project Lists

TIME	PROJECT NAME
2015	Vietnam: Water Treatment Plant in HCMC
2017	South Africa: AMR Project in Industrial Zone
2017	Taiwan: Smart School, National Yangming University
2018	Thailand: Smart Factory with 3G/4G/GPRS IoT Solution
2018	Thailand: Nurse Dormitory Sub-Metering Project
2018	South Africa: eThekwini Municipality Flow Monitoring Project
2018	Taiwan: Waste water treatment plant (TWC)
2018	Taiwan: Waste water treatment plant (TWC)
2018	Taiwan: Smart Watering for Mall, Nanfang Dream Times in Tainan City
2018	Taiwan: Sewage Treatment, Zhunan Water Resources Recovery Center
2019	Vietnam: Water Treatment Plant - 3G/4G/GPRS IoT Solution
2019	Thailand: Smart Residential Building with Sub-Metering
2019	South Africa: Water Supply Network Building in Kenya
2019	India: Smart Water Management Project for Industrial Zone
2019	India: HMWS&SB villages abutting ORR
2019	Indonesia: Sub-Metering Project for AEON Mall
2019	Taiwan: DMAs Project in Taichung City
2019	Taiwan: Smart Building Project in Taipei City
2019	Taiwan: Smart Building Project in Taichung City
2019	Taiwan: LoRaWAN Project in Hsinchu City
2019	Taiwan: Industrial Technology Research Institute**(ITRI)** Flow Metering
2019	Taiwan: Waste Water Measurement for Changhua Train Station
2019	Taiwan: Sewage Treatment, Rende Water Resources Recovery Center
2019	Taiwan: Agricultural Water Measurement for Xiangyi Ranch
2019	Taiwan: Cooling Water Metering for China Steel
2019	Taiwan: Recycled Water Measurement for Yung Shing Optical
2019	Taiwan: Sewage Treatment for Yuan Lin WTP
2019	Taiwan: Matsu NB-IoT Smart Water Island
2020	Philippine: Bulk Meter Upgrade in Manila

WT Series (Hybrid Digital Woltmann Water Meter)

- Bulk Water Meter
- Sized from 50mm~300mm (2"~12")
- R 200/ R 250 (optional)
- 10 years battery lifespan
- Support Wired and Wireless communications
- Digital LCD Display; No gears
- Built-in Smart functions:
  leak detection, 7 days consumption logs,
  Minimum Nighttime Flow(MNF), etc.

TH Series (Hybrid Digital Multi-Jet Water Meter)

- Domestic Water Meter
- Sized from 15mm~50mm (½"~2")
- R 200/ R 250 (optional)
- 10 years battery lifespan
- Support Wired and Wireless communication
- Digital LCD Display
- No gears, magnet-free design
- Built-in Smart functions:
  leak detection, 8 days/months consumption logs,
  Minimum Nighttime Flow(MNF), etc.

Leak Detection

Totalizer / Instant Flow Rate

Daily / Monthly Totalizer Logs

Tamper Proof Functions

ISO 4064 / EN14154 / OIML R49

Sub-metering Data Transmission

RMTs
- **RS485/ Modbus** Communication
- User-defined transmission intervals
- IP 68 rated housing
- Sub-metering application

GRM
- **3G/4G** Communication
- User-defined transmission intervals
- IP 68 rated housing
- Sub-metering application

Wireless Transmission - 3G/4G/GPRS

GTI 5/6
- **3G/4G/GPRS** Communications
- User-defined logging & transmission intervals
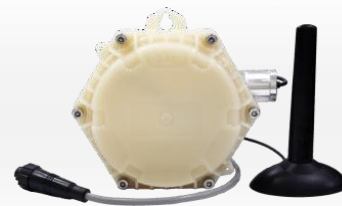- Integrating data of water flow, pressure, quality
- OTA-Remote parameters configuration

GTI 5 **GTI 6**

MINI-G
- **3G/4G** Communications
- User-defined logging & transmission intervals
- IP 68 rated housing
- OTA-Remote parameters configuration

Wireless Transmission - LPWAN

MINI-N
- **NB-IoT** Communications
- User-defined logging & transmission intervals
- Built-in 5 years battery life span
- Remote parameters configuration

LTI
- **LoRaWAN** Communications
- User-defined logging & transmission intervals
- Built-in 5 years battery life span
- Remote parameters configuration

## AMR SOLUTION   Smart Water Metering

iEngineering supplies various smart water metering solutions for different types of buildings, from wired transmission to wireless transmission, and from high-rise buildings to single buildings:

High-Rise Building	RS485/Modbus 3G/4G
Community	LoRa WAN NB-IoT
Single Building	2G/3G/4G

WAN → APP
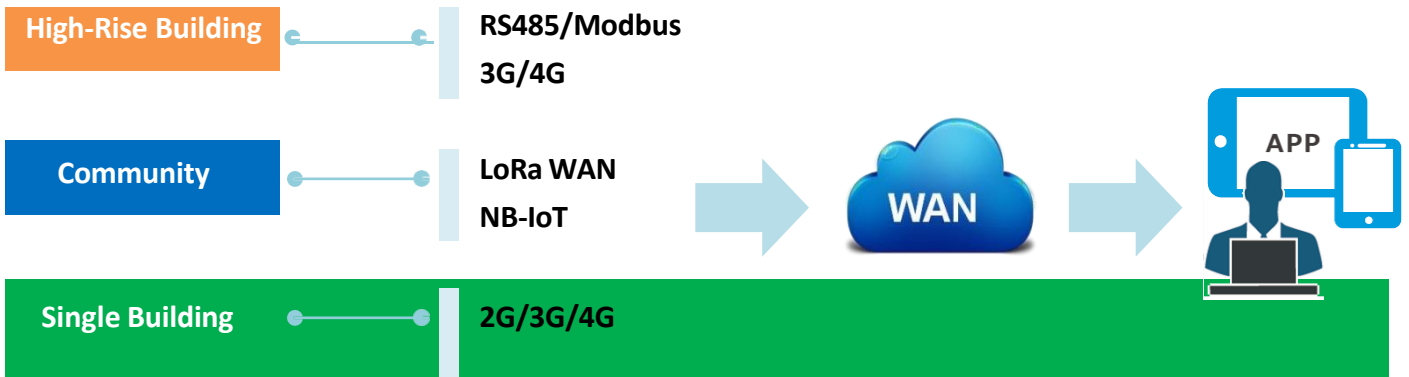
High-Rise Building / Sub-metering Solution
AWARDED BY TAIWAN EXCELLENCE 2018

For high-rise buildings, a big amount of water meters are located in different floors for each household. To increase the efficiency of water metering, iEng develops the Sub-metering structure with two versions, Battery-powered ver. and AC ver.
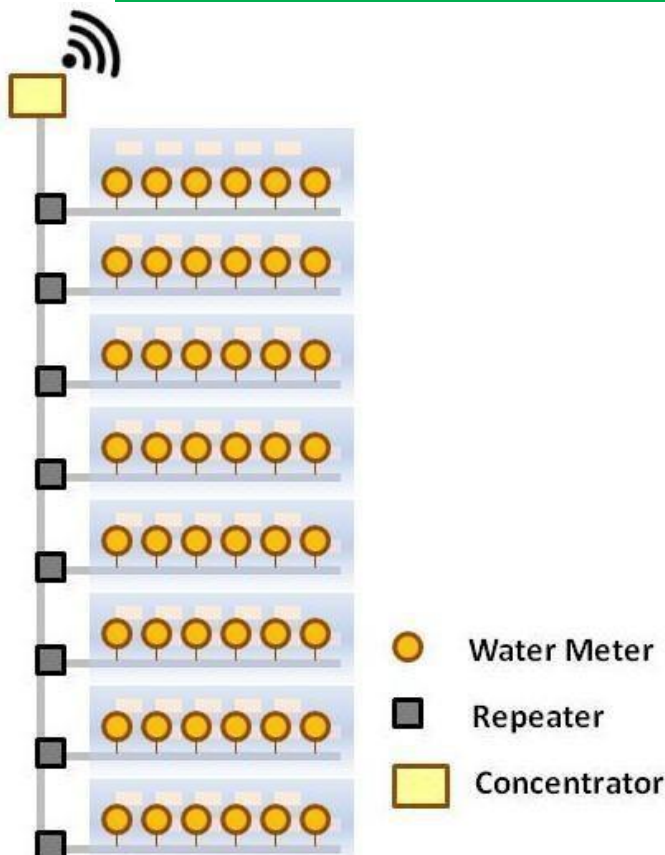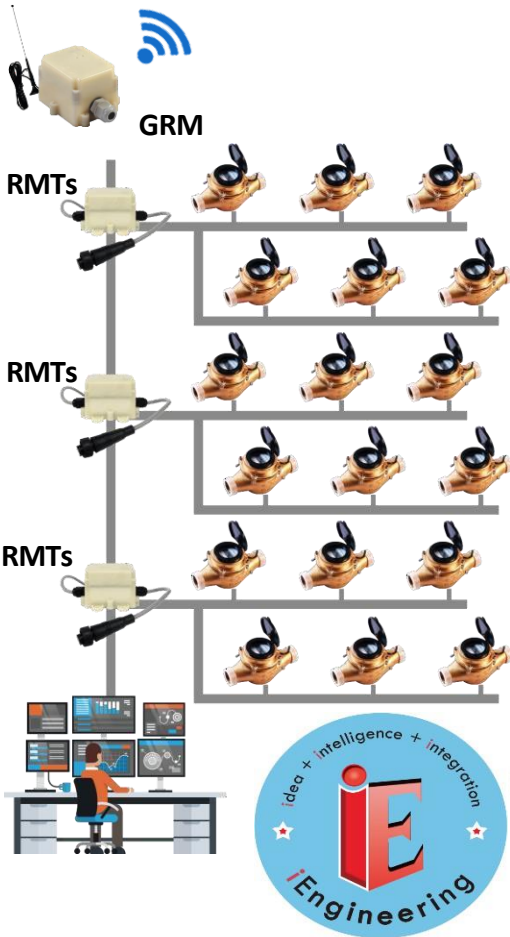
Under iEng Sub-metering structure, the data of meters on the same floor will be collected by one repeater. For AC ver., the repeater will be RMTs interface. While for Battery-powered ver., the repeater will be BMT interface. After all repeaters receive the data of water meters, they will be integrated with wires of RS-485/ Modbus communication. Finally, the data will be transmitted to a concentrator, GRM (for AC ver.) or BCT (for Battery-powered ver.), which will send information to the control system with 3G/4G communications.

● Water Meter
■ Repeater
▢ Concentrator

GRM

RMTs

RMTs

RMTs

AC ver. Sub-metering Solution

Under **AC ver. Sub-metering structure**, the power is supplied by 100~120VAC 50/60Hz 260Ma. Data of **TH Series** on the same floor can be integrated by one interface, **RMTs**, which can connect up to 40 meters. All **RMTs** will transmit and integrate the collected data through RS-485/Modbus to the control center. In addition, if users need to send data to the cloud server via 3G/4G/GPRS protocol, all **RMTs** will be wired to **GRM,** the 3G/4G/GPRS interface, which can connect up to 32 **RMTs** with Max. 247 water meters.

Battery-powered ver. Sub-metering Solution

Under **Battery-powered ver. Sub-metering structure**, the power is supplied by DC 9~24V battery pack. Data of **TH Series** on the same floor can be integrated by one interface, **BMT**, which can connect up to 40 meters. All **BMT** will transmit and integrate the collected data through RS-485/ Modbus and send the data to the 3G/4G/GPRS interface, **BCT**, which can connect up to 16 **RMTs** with Max 200 water meters, to complete the wireless data transmission via 3G/4G/GPRS.

BCT

BMT

BMT

BMT
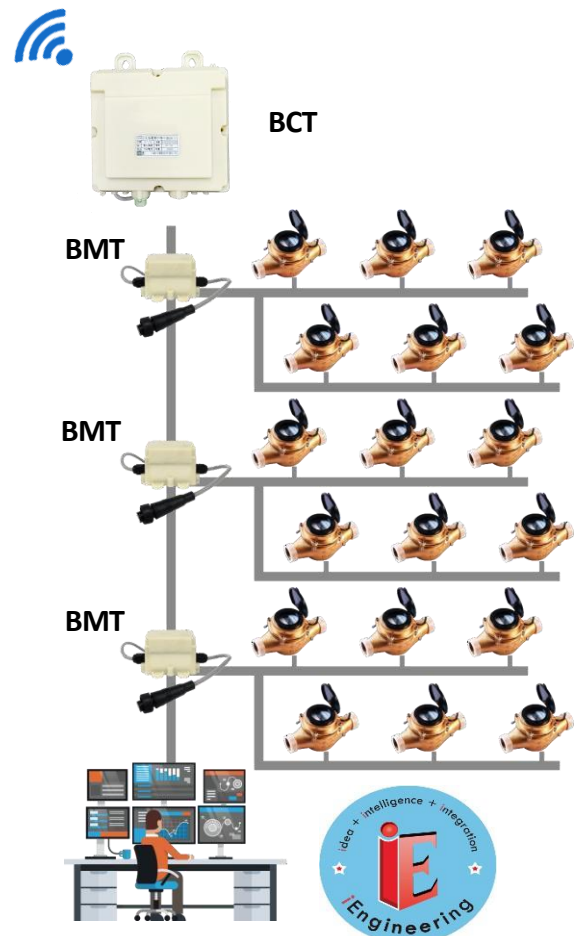
LPWAN SOLUTION

Community Water Metering Solution

For managing water consumption of the community, water meters are located in independent buildings. To help users to collect and transmit data of all water meters efficiently and wirelessly, iEng supports two solutions, including **LoRaWAN Commercial/Industrial Solution** & **NB-IoT Smart City Areas Solution.**

LoRaWAN Commercial/Industrial Solution
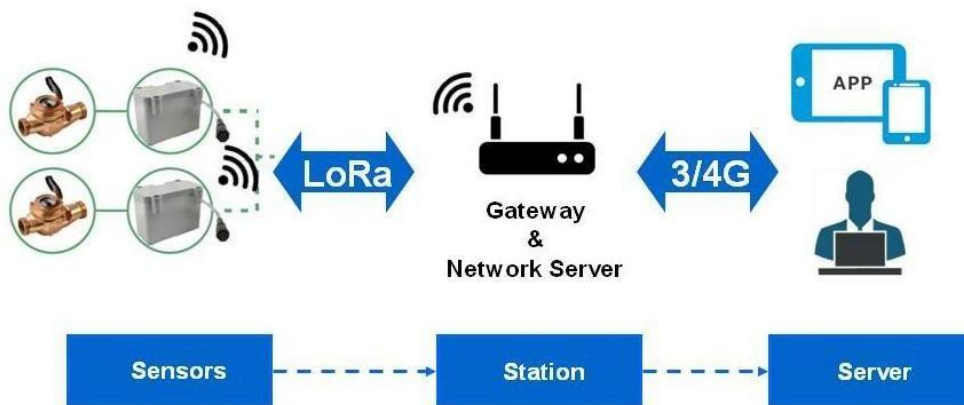
Under the LoRawan structure solution, **TH Series** will transmit metered data to **LTI interface**, which conveys data to the Gateway via LoRaWAN signal. By adopting this solution, users only need one SIM card for the Gateway, enjoying low power consumption and long-range transmissions.

**NB-IoT Smart City Areas Solution**
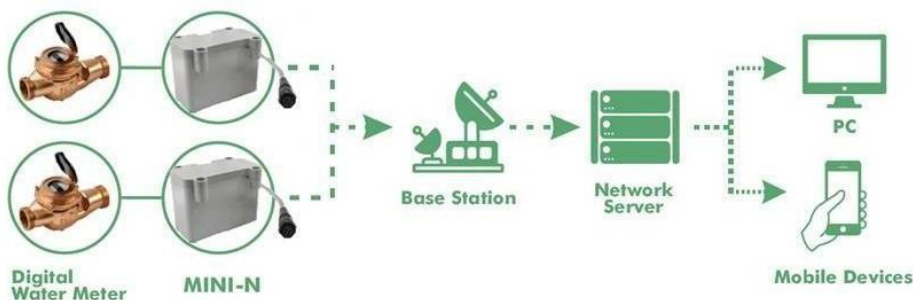
Under the NB-IoT structure solution, **TH Series** will transmit metered data to **MINI-N** interface. Each MINI-N contains one SIM card, and sends data back to clouded server through base station. With NB-IoT technology, users can reduce meter reading errors, save manual labors, lower water loss, upgrading to AMR data center.

Single Building Water Metering Solution

To manage water meters for single buildings, iEng supports 2 solutions based on the meter size, including **Domestic Water Metering Solution** & **Bulk Water Metering Solution:**

Domestic Water Metering Solution
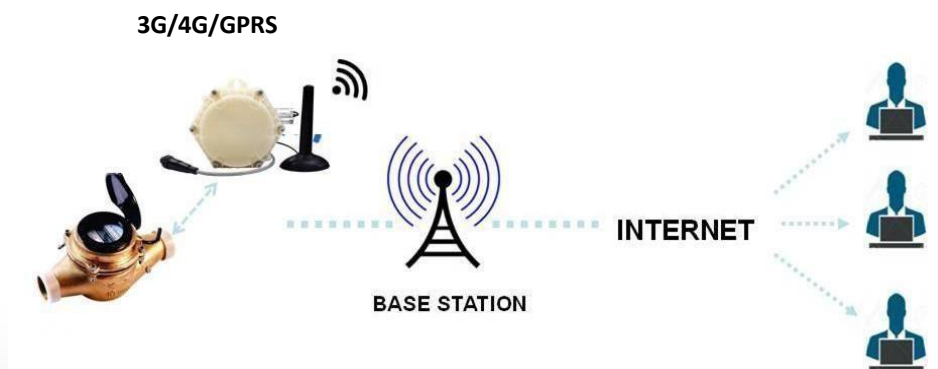
For domestic meters, users can apply **TH Series** to measure the flow, and transmit data with **MINI-G** by 3G/4G/GPRS. The data will be sent back to the control center for users to conduct detailed analysis and monitor the trend of water consumption data.

Bulk Water Metering Solution
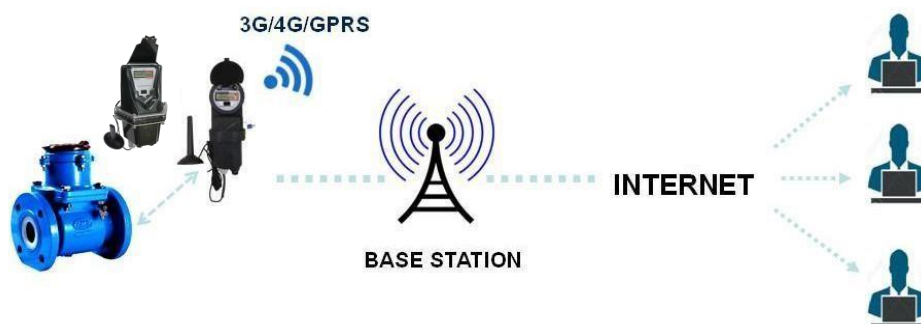
While for metering bulk water meter, from industrial applications to the water supply network, **WT Series & GTI-5** will measure, collect, log and transmit data back to the control center for detailed metering analysis and monitor the trend of water consumption data.

Smart Public housing in Taipei City

- **APPLIED PRODUCTS:**
  Domestic Smart Meter(**TH**), RS-485/Modbus protocol (**RMT**)
- **TIME:** 2018
- **DESCRIPTION:**
  Install 247 TH-series water meters in new public house in Taipei City, and adopt RMTs interfaces to collect all metered data. Integrating with clouded management system, user can use the mobile phones or PC to browse the data, including water consumption, historical data, and water quality data.

Smart Agricultural Water Metering

- **APPLIED PRODUCTS:**
  Domestic Smart Meter(**TH**), LoRaWAN logger(**LTI**)
- **TIME:** 2019
- **DESCRIPTION:**
  We applied LoRaWAN technology in smart agriculture. Due to wide areas, it was hard for farmers to monitor the water usage in the farms daily, which caused serious water waste and crops drowning when they forgot to turn off the water supply. With wireless data transmission, farmers can monitor the water consumption anytime & anywhere with mobile devices.

Taoyuan-A19 Buildings

- **APPLIED PRODUCTS:**
  Domestic Smart Meter(**TH**), LoRAWAN logger (**LTI**), **RMTs**
- **TIME:** 2019
- **DESCRIPTION:**
  There are three high-rise buildings with totally 650 households. For each separate building, we install TH water meters with RMTs interface for building up sub-metering system. The communications between each building is based on LoRawan technology.

NB-IoT Smart Water Island

Project Background

Matsu Island is in the northwest of Taiwan. With little land occupation, it is a big challenge for Matsu Water Company to collect the rain fall, which is the main water source for local residents. In 2019, Taiwan government started a series of Foresight Project to improve the public facilities and life quality, and Matsu- Smart Water Island Project is part of the plan. iEng was honored to be picked up out from all competitors. Even though we cannot increase the amount of rain fall, it is our expertise to enhance efficiency of water management by adopting various new technologies. Matsu has become the 1st smart water tech island.

Matsu Island

NB-IoT Solution

We have upgraded all water meters on the island, including 3,000 domestic meters and 50 bulk meters used in water distribution network, and reservoir. By adapting **NB-IoT** protocol to log and transmit metered data, user can receive the latest data in the control center. The clouded system integrates GIS info and advanced analysis modules, with numerous alarm functions, like leakage alarms, pressure alarms, and etc. Under this smart water network, the users will have access to all metering data, dramatically enhancing the management efficiency and increasing the efficiency of water resource management system.

Benefits

- Install **3,000** domestic water meters and **NB-IoT** modules
- Reducing meter reading errors
- Lowering labor costs
- Managing water resources with efficiency
- Detecting leakage to lower water loss
- Reported by numerous local medias (TV news, magazine, etc.)

Thailand / Nurse Dormitory

- **APPLIED PRODUCTS:**
  Domestic Smart Meter(**TH**), RS-485/Modbus (**RMTs**)
- **TIME:** 2018
- **DESCRIPTION:**
  70 TH-series and 3 RMTs have been installed in the dormitory, so every resident can access water data with mobile device easily. All meter data will be logged and sent at fixed time, allowing more flexible water resource management.

Vietnam / Water Treatment Plant

- **APPLIED PRODUCTS:**
  Bulk Smart Meter(**WT**), 3G/4G/GPRS Data Logger(**GTI 5**)
- **TIME:** 2019
- **DESCRIPTION:**
  Upgrade the existing mechanical water meters to WT-series smart hybrid digital water meters and installing 3G version of GTI5 to monitor the flow & pressure hourly, improving the water management effectively and reducing commercial loss.

India / Industrial Zone

- **APPLIED PRODUCTS:**
  Bulk Smart Meter(**WT**), 3G/4G/GPRS Data Logger(**GTI 5**)
- **TIME:** 2019
- **DESCRIPTION:**
  New Industry Park in India installs hybrid smart digital meter with GTI 5 (3G version) to log data every minute and send data daily to the clouded software system. Now, every factory can access water data with mobile device and management can receive all factory water consumptions easily.

Thailand Smart Condominium

Project Background

In 2009, we cooperate with Thailand vendors to install TH-series in the newly constructed condominium. There are totally 600 households in this building. With such a big number of residents, it is a big challenge for building managers to control the water consumption of each household. After detailed discussion and clarification, iEng decided to apply sub-metering structure to build up an AMR system for this project. With sub-metering solutions, building managers can sit in an office, and get all necessary metered data from the clouded system. Besides that, residents can also easily access daily consumption and detect leakage with their mobile devices.
.
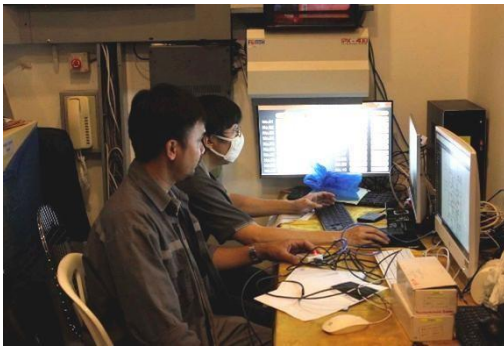
Sub-metering Solution

We installed totally 672 smart hybrid digital water meters (TH Series) for all households, setting up 17 RMTs interfaces to collect and transmit the water data to the control center. Wired RS-485/Modbus communications protocol is applied in this high-rise building. After the completion of the AMR solutions, the managers can detect pipe leakage and notice abnormal water consumption in advance to avoid water loss. Every resident can also access these water data from the clouded system via their mobile device quickly and easily.

Benefits

- Install **672** domestic water meters and **17** RMTs
- Reducing meter reading errors
- Lowering manual reading labors
- Detecting leakage and abnormal water consumption
- Knowing total water consumption to reduce water loss

Cloud Platform

Eye-Water System

ACCURACY

Smart hybrid digital water meters

INTEGRATED

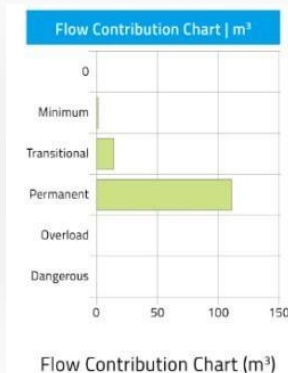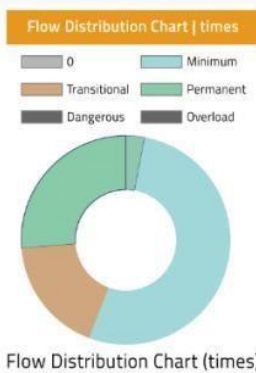Combine flow, pressure, quality data

REALTIME

Instant water consumption data

CONVENIENT

Data available with various mobile devices

INTELLIGENT

Advanced analysis modules

Multiple Analytic Chart

Flow Distribution & Contribution chart

Daily Flow & Top 10 Consumption

.

IP/Password authentication

HyperText Transfer Protocol Secure

Role-based authorization

Data Storage & Analytics

To supply customers with the comprehensive service, iEng develops the clouded system for water management, named **Eye-Water System (EWS)**. Integrating GIS system and advanced analysis modules, users can easily browse the logged data with various charts and tables. With the support of EWS cloud service system, you can access the real-time data with the exclusive account.

GIS Integration

Combine EWS system with **GIS information** and display detailed node information, including Node Name, Pipe Diameter, Totalizer, and Data Received Time, etc. on the map

> **GIS Information**

Alarm Records

> **Event List**

Eye-Water system helps users record and manage each abnormal event (**pressure alarm**, **battery shortage**, and **weak signals**, etc.). From the illustrated event list, users can get info including node name, event name, time, lower and upper Limit, and the alarm value, etc.

Historical Node Data

Eye-Water System can record all historical data of nodes for users. From the illustrated list, users can easily browse data, including Date/Time, Instant Flow Rate, **Forward** and **Reverse flow data**, etc.

> **Historical Record List**

iEngineering Australia Pty Ltd
Website: www.iengaust.com.au

For more recent updates, follow us on:

& Subscribe for iEngineering Updates