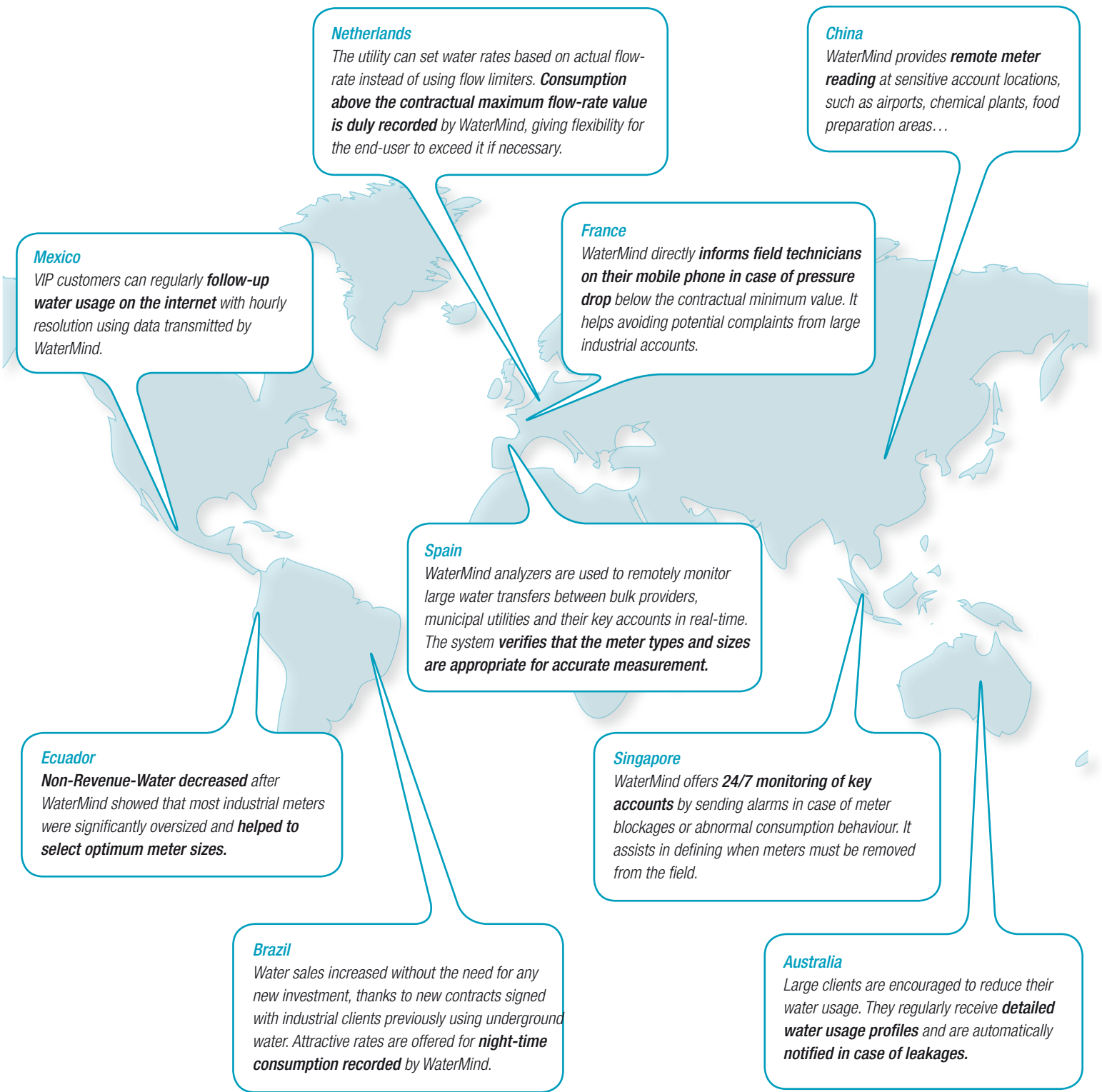Itron

Knowledge to Shape Your Future

WaterMind
Intelligence to serve Large Consumers

Worldwide water providers supply water to populations from a few thousands to a few millions inhabitants. However, it is often only a small fraction of the population that accounts for the largest proportion of the total water consumption. Therefore, this makes them major contributors to the utility's revenue generation.

Understanding that, many water providers all over the world are paying extra attention to these large consumers, made up of large industrial and commercial accounts, hotels, hospitals, universities, sport facilities, green area services, etc...

To help utilities serve their large consumers, Itron, a long-time supplier of high-performance water meters for large consumers, developed WaterMind, a dedicated real-time supervision system. WaterMind's innovative concept is based on the processing of accurate meter information into intelligence that is directly usable by the utilities to protect their revenue, improve their operations efficiency and enhance the satisfaction level of their strategic customers.

> *Intelligence at the metering point*

> *Consumption analysis & meter audit functions*

> *Multi-user applications*

Netherlands
The utility can set water rates based on actual flow-rate instead of using flow limiters. **Consumption above the contractual maximum flow-rate value is duly recorded** by WaterMind, giving flexibility for the end-user to exceed it if necessary.

China
WaterMind provides **remote meter reading** at sensitive account locations, such as airports, chemical plants, food preparation areas…

France
WaterMind directly **informs field technicians on their mobile phone in case of pressure drop** below the contractual minimum value. It helps avoiding potential complaints from large industrial accounts.

Mexico
VIP customers can regularly **follow-up water usage on the internet** with hourly resolution using data transmitted by WaterMind.

Spain
WaterMind analyzers are used to remotely monitor large water transfers between bulk providers, municipal utilities and their key accounts in real-time. The system **verifies that the meter types and sizes are appropriate for accurate measurement.**

Ecuador
Non-Revenue-Water decreased after WaterMind showed that most industrial meters were significantly oversized and **helped to select optimum meter sizes.**
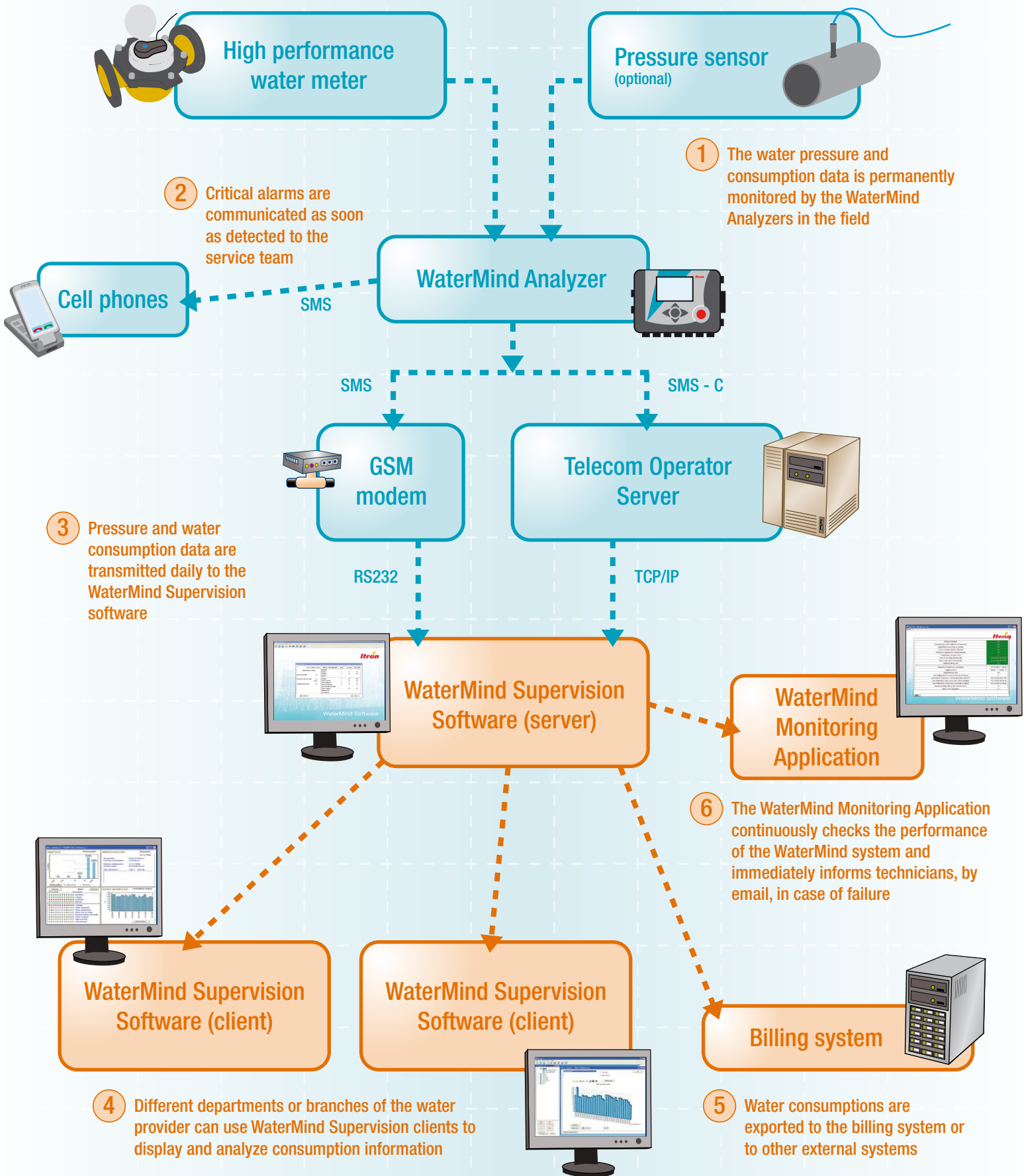
Singapore
WaterMind offers **24/7 monitoring of key accounts** by sending alarms in case of meter blockages or abnormal consumption behaviour. It assists in defining when meters must be removed from the field.

Brazil
Water sales increased without the need for any new investment, thanks to new contracts signed with industrial clients previously using underground water. Attractive rates are offered for **night-time consumption recorded** by WaterMind.

Australia
Large clients are encouraged to reduce their water usage. They regularly receive **detailed water usage profiles** and are automatically **notified in case of leakages.**
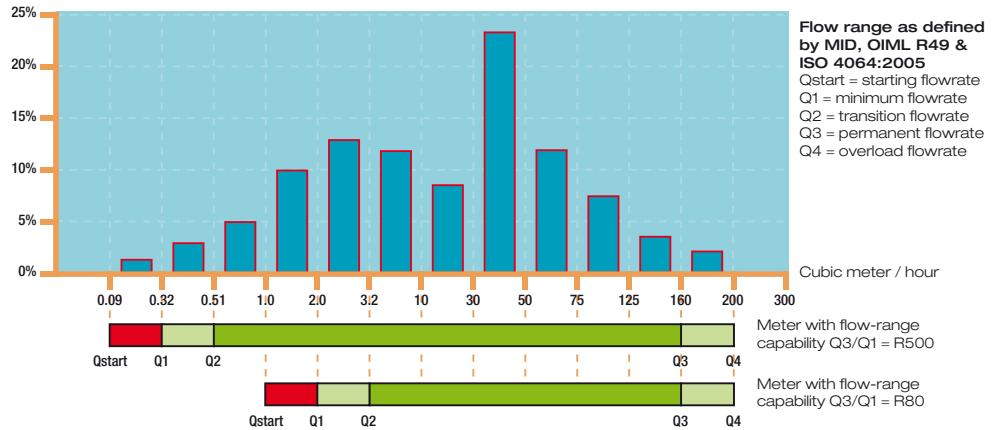
High performance
water meter

Pressure sensor
(optional)

1 The water pressure and
consumption data is permanently
monitored by the WaterMind
Analyzers in the field

2 Critical alarms are
communicated as soon
as detected to the
service team

WaterMind Analyzer

Cell phones

SMS

SMS

SMS - C

GSM
modem

Telecom Operator
Server

3 Pressure and water
consumption data are
transmitted daily to the
WaterMind Supervision
software

RS232

TCP/IP

WaterMind Supervision
Software (server)

WaterMind
Monitoring
Application

6 The WaterMind Monitoring Application
continuously checks the performance
of the WaterMind system and
immediately informs technicians, by
email, in case of failure

WaterMind Supervision
Software (client)

WaterMind Supervision
Software (client)

Billing system

4 Different departments or branches of the water
provider can use WaterMind Supervision clients to
display and analyze consumption information

5 Water consumptions are
exported to the billing system or
to other external systems

Water Meter

As the primary source of information for billing and for consumption analysis, the water meter needs to be carefully selected.

Itron offers a large choice of water meters dedicated to large consumers with unrivalled accuracy, flow-range capability and ageing performances (e.g. Flostar M).

Flow range as defined by MID, OIML R49 & ISO 4064:2005
Qstart = starting flowrate
Q1 = minimum flowrate
Q2 = transition flowrate
Q3 = permanent flowrate
Q4 = overload flowrate

Cubic meter / hour

Meter with flow-range capability Q3/Q1 = R500

Meter with flow-range capability Q3/Q1 = R80

The example above represents the consumption pattern of a technical university. A meter with basic flow-range capability (R80) doesn't record the flow below 1 m^3/h and is accurate only above 2 m^3/h. A meter with an extended flow-range capability (R500), installed on the same, site measures flow above 0.09 m^3/h and is accurate above 0.32 m^3/h.
The measurement difference amounts for 17% of the total volume.

Meter Interface Unit

The meter must be equipped with a digital output that reliably transmits meter data to the system.

Cyble Sensor is a unique meter interface unit that fits all Itron water meter types and is directly mounted on the meter register. It uses inductive detection for optimum reliability and to detect any potential backflow.

WaterMind Analyzer

Accurate measurement
The WaterMind Analyzer permanently collects data from up to four water meters and an optional pressure sensor.
Innovative flow-rate and pressure measurement technology enables accurate recording of minimum and peak values.

Intelligence within
Unlike standard data-loggers, WaterMind does not transfer millions of bits of raw data each day to the back-office of the utility. Instead, it was designed with a maximum of Intelligence at the metering point to process data as early as possible in the chain of information.
The WaterMind Analyzer permanently audits the water meters, comparing the real-time water consumptions with the actual meter performance and flow range characteristics. This allows dynamic detection of meters that are not correctly selected or sized.

Reliable data transmission
The SMS data transmission enables better success rate in low GSM network level conditions compared to GPRS. In addition, an optional external antenna can be connected to the WaterMind Analyzer in the most difficult locations.

Every day, the WaterMind Analyzer transmits consumption data to the WaterMind Supervision software. It communicates preanalyzed information that has value for the operators.
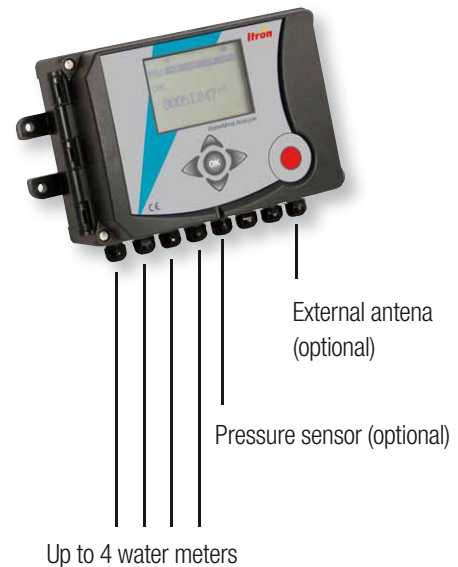
Real time monitoring
On alarm detections, the WaterMind Analyzer immediately sends alert messages to the cell phone of the support team in charge or to the WaterMind Supervision software . This allows immediate reaction on events such as meter blockage, important backflow detection, excessive flow consumption, or significant pressure drop.

Easy installation
The WaterMind Analyzer is easily configured by mean of a large display and push-buttons, avoiding the need for laptop or other equipment in harsh environment. At the end of the installation procedure, the GSM Reception. Signal Strength Indicator is directly made available on the cell phone of the installer. If required, configuration parameters can be modified over the air without going on site at a later date.

> **WaterMind Analyzer**

External antena (optional)

Pressure sensor (optional)

Up to 4 water meters

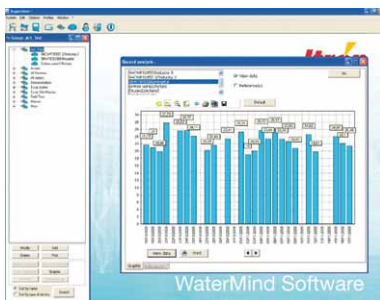| Inputs	Meter input	Up to 4 water meters equipped with pulse output or 2 meters equipped with Pulse + detection of backflow and tamper
	Pressur input (Optional)	1 pressure sensor (0 to 24 bars)
	Alarm inputs	2 contact inputs (e.g. for detection of cable-cut, intrusion, ...)
Analysis	Meter and consumption audit	Continous flow and pressure analysis
	Internal back-up memory	62 days of data (15 minutes intervals)
Output	GSM	Short messages (SMS) via GSM network
	Pulse output	Retransmission of pulses coming from the meter for connection to local automation equipment (e.g. chlorine dosing)
Installation	Case mounting	Wall mounting
	Protection class	IP66 enclosure (IP67 enclosure available on demand)
	Operating temperatures	-20°C to +55°C
	ATEX environment	Approved for installation in safe areas (assosciated apparatus). Approval N° LCIE 08 ATEX 6058 X
	SIM card	Internal slot mounting. Installation by utility operators
	Configuration	Manual installation using large display and 5 push-buttons No need to bring laptop on site
	Antenna	Internal antenna in standard installation conditions External antenna can be connected in difficult locations
Maintenance	Firmware upgrade	Over the air through GSM connection or local via infrared port
	Power supply	Autonomous lithium battery type 5 years lifetime with daily data transmission / Easily exchangeable

> **Daily transmission to supervision software**
> - hourly values (consumption + pressure minimum / maximum / average)
> - daily flow-rate distribution
> - real peak flow values with time of occurrences
> - back flow volume
> - meter is over-sized, under-sized or out-of-range
> - leakage detection

> **Alert messages**
> - blocked meter
> - flow-rate above limit
> - pressure below or above limits
> - backflow detection
> - tampering

> *Main dashboard to check at a glance the status of all metering points and the detected alarms*

> *Group management functions to sum-up or compare water consumptions by account category, district areas, etc.*

> *Historical consumption analysis in comparison with a reference profile*

WaterMind Supervision Software

WaterMind Supervision software is a versatile all-in-one application for the utility operators.

Secured collection engine

The WaterMind Supervision software receives data from the Analyzers using either GSM modems connected to the server or through secured TCP/IP connection to a FTP server.

To ensure data integrity at all levels of the system, the software automatically recovers any missing data from the WaterMind Analyzers and is equipped with a database back-up and recovery function.

WaterMind Monitoring Application, the running of optional software on a separate computer, can be used to permanently check the health of the WaterMind system. It provides full system reporting and alerts operators by email in case of critical failures.

Simplified system management

By using a central SQL database and client versions of WaterMind Supervision software, operators in different branches and departments of the water group can immediately share the latest water usage information with differentiated access rights.

A built-in scheduler allows automatic operation of frequent tasks such as data collection and data exports to third party systems with a choice of various formats (XML, CSV, TXT).

WaterMind Supervision software allows remote configuration of parameters in the WaterMind Analyzer or over-the-air firmware upgrade.

Graphical data interpretation

The main dashboard gives a quick view of the global operating system and of the detected exceptions.

Self-explanatory alarms inform the operators in case of abnormal consumption (meter blockage, backflow, high peak-flow…) or in case of inadequate meter type or size.

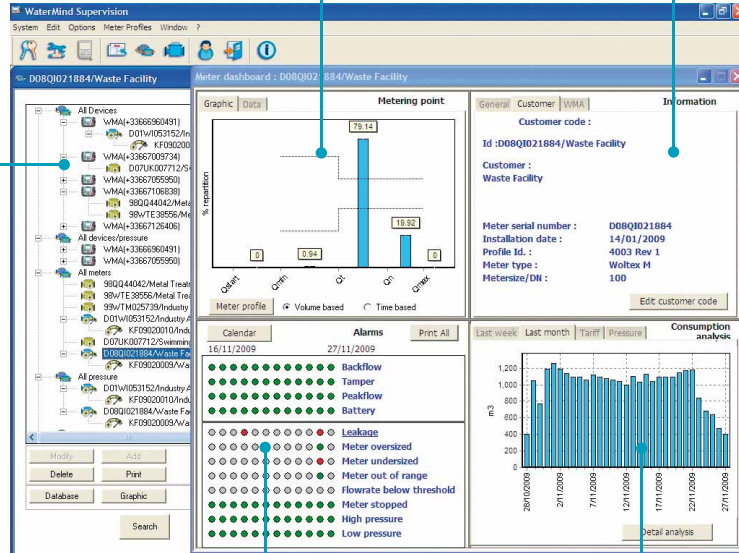For further analysis granulated water and pressure usage is displayed in different time scales. The consumption profile can then be aggregated with other meters or benchmarked with reference profiles.

If the meter is detected as inadequate, verification is done by checking the actual flow distribution compared with the meter performance characteristics on a graph. Percentage of time and volume consumed out of the meter flow-range capability gives an indication of how much water is inaccurately measured and could be recovered with an optimized meter selection.

> **Metering point analysis:**
- *Actual flow distribution profile*
- *Meter efficiency*

> **Account information:**
- *Customer*
- *Meter type*
- *Meter location*

> **Account / Meter list:**
- *Search by accounts, meters, WaterMind Analyzers*
- *Aggregation of points*

> **Alarm indicators:**
- *Alarms in case of abnormal consumption (meter blockage, backflow, high peak-flow, low pressure…) or inadequate meter type or size*
- *Detailed log book*
- *Remote configuration of parameters*

> **Consumption and pressure analysis:**
- *Zoom in / zoom out functions*
- *Maximum & minimum flow-rates*

Knowledge applications

WaterMind Supervision software can be interfaced with Billing system or specialized Knowledge Applications.

Itron offers advanced Knowledge applications for further use of the meter data, such as Revenue Protection Suite, Web presentation of consumption information, Distribution Asset Analysis or Forecasting systems…

WaterMind Supervision software is compatible with Itron Meter Data Management system, allowing complex and secured management of very large installations with multiple system interfaces.

Contact your regional representative to learn more about Itron's complete portfolio of Knowledge applications and Meter Data Management system.

> *Revenue Protection*

> *Customer Web Presentment*

Support services

Itron supports its clients throughout the project management process, brining extensive technical, industrial and product experience for end-to-end solutions from Metering points to Knowledge applications.

Committed to its customers, Itron has developed a worldwide network of regional customer service teams. Whatever the region, the time zone and the language, Itron can provide a global service offering to make the operations of WaterMind a success that will serve your key-account management objectives.

Deployment services:
> Help the utility roll-out the WaterMind solution from approval projects to largescale deployments following structured methodology
> Interface the WaterMind Supervision software with existing systems data centres and expert systems (Billing system, CIS/CRM, GIS, SCADA, etc…)

After sales services:
> Train operational staff on configuration tools and WaterMind Supervision software
> Accompany the utilities through the ramp-up phase until reaching the expected reading rate levels
> Run the WaterMind system for the utility and give access to the meter data
> Support system efficiency through time with specific maintenance contracts and hot-line services

For more details on Itron's service offering, please contact your local representative.

> *Regional customer service teams*

For more information, contact your local sales representative or agency.

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