



# Experts in Clean Water Monitoring

for long term monitoring  
and surveying in  
clean water networks

PRODUCT CATALOGUE



MONITORING ASSETS, DELIVERING DATA, BRINGING CONTROL

# Who are HWM?



**We are experienced and respected manufacturers of monitoring and telemetry equipment for water, wastewater and gas networks, together with telemetry AMR and facilities optimisation products.**

Having serviced the clean water industry for nearly 40 years, we have combined advanced cellular communications technology with rugged, purpose-designed hardware to deliver a wide variety of robust and efficient network monitoring solutions.

We are dedicated to achieving our aim of **helping customers to save natural resources and reduce CO<sub>2</sub> emissions.**



Based out of our Head Office in South Wales, which incorporates a 400 year old, Grade II listed farmhouse, we design, test and manufacture all of our network monitoring solutions in-house.

We boast an innovative manufacturing facility and a dedicated production team, allowing us to deliver our industry-leading products to customers quickly.

Our unique Head Office also houses our advanced testing and development equipment. This includes our complex new test rig and our industry-renowned external leak site.



The test rig, which was developed to meet our own specifications, is built in three parts and allows the replication of a variety of network conditions. Our team of engineers and technical specialists use the test rig to support development of new technologies and to test upgrades of current products.

Our leak site is an underground network of pipes and valves designed to simulate leaks and generate authentic leak noise. While our technical teams use the leak site for product development, it is also a great facility to help train customers in leak noise detection.

## Why monitor **Clean Water Networks**?

Demand for clean drinking water is rapidly increasing, while water networks are being challenged by environmental factors such as climate change and population growth.

**Leak detection is a proven method of safeguarding water.** If leaks are not detected quickly then immense quantities of water may be wasted. Significantly, it is estimated that 90% of leaks never show at ground level, making them much harder to identify.

Network monitoring can also be used for the prevention of leaks. Efficient **pressure management** can reduce the strain on a network, reducing pressure spikes and preventing bursts.

## How do we monitor **Clean Water Networks**?

We have developed an innovative range of clean water network monitoring products that fall under the following categories:



**Leak Detection**

Wide-ranging leak detection solutions, including award-winning acoustic noise loggers, correlators and electronic ground microphones



**Pressure Monitoring**

Two-way communicating devices that support remote management of pressure reducing valves



**Data Logging**

Market-leading loggers that use advanced cellular telemetry to securely deliver customer data



**Water Quality Monitoring**

Smart digital sensors to continually measure residual chlorine, turbidity, pH, conductivity, dissolved oxygen temperature and more

# PermaNET SU

## Leak Detection

### PermaNET SU: the innovative new correlating leak noise logger

Retaining the industry leading features of the PermaNET+ system, PermaNET SU combines a leak noise sensor and telemetry technology into a compact single unit.

Designed specifically for smaller and more challenging installation areas, PermaNET SU is fully compatible with PermaNET Web, the online data viewing and analysis platform, combining to provide map-based display, GIS interface and full audio and correlation facilities.

#### Key Features and Benefits

- Fixed network monitoring continually scans for leaks
- Full underground installation with remote cellular communication
- Auto-correlation functionality automatically locates leak position
- Designed specifically for smaller and more challenging installation areas
- Works with GeoInstaller app for fast and accurate installation
- Compatible with PermaNET Web online viewing platform, supporting:
  - Correlation
  - Google Map view
  - Aqualog
  - GIS Interface
  - Remote reconfiguration
  - Audio sound playback
  - Logger removal alarm

**“PermaNET gives us a much greater understanding and visibility of what is happening in some of the areas most prone to leaks. By installing these devices we will potentially help our Leakage Technicians save millions of litres of water”**



**Martin Hattersley**  
Head of Water Leakage Operations



**Customer**  
United Utilities

**Industry**  
  
**CLEAN WATER**

**Product**  
PermaNET+



**Application**  
- Leak Detection  
- Fixed Network

## Case Study: United Utilities rolls out biggest 'acoustic project' of its kind

by initially installing 44,000 units and with a plan to expand coverage in APM7

### The Challenge

From Crewe to Carlisle, United Utilities supplies over 1.9 billion litres of water every day through its 26,000 mile pipe system. Maintaining a network of this size and actively reducing non-revenue water (NRW) is a challenge that United Utilities is proactively tackling.

### The Solution

Following discussions with HWM, United Utilities conducted a trial project by installing 2,000 PermaNET+ fixed network telemetry devices in Liverpool and Manchester city centres.

The trialling of the technology was deemed to be a great success and the 2,000 PermaNET+ units are already thought to have saved up to 5 million litres of water per day.

As a result of this impressive trial, United Utilities has decided to install a further 44,000 PermaNET+ acoustic loggers across their network by the start of 2020, with the potential to expand this during AMP7.



**“By 2020 we will have the largest estate of acoustic logger technology in the world. Every quarter of a mile on our water network we will be able to glean real-time data, allowing us to respond faster and more accurately when a pipe begins to leak”**

**Kevin Fowlie**  
Network Delivery Director

Phase 1 of the installation will see 44,000 PermaNET+ devices being installed across the North West of England, starting in July 2019, to be completed by March 2020.

Phase two could potentially expand this, making the United Utilities network the largest monitored by fixed acoustic logging in the world.

# Products for Leak Detection



## PermaNET SU

Retaining the industry-leading features of PermaNET+, PermaNET SU combines a leak noise sensor and telemetry technology into a compact single unit.

PermaNET SU is designed for small installation areas and is fully compatible with PermaNET Web.



## PermaNET+

PermaNET+ combines a leak noise sensor with our versatile telemetry technology to create a fixed network to monitor leakage.

Once a leak is detected, PermaNET+ generates an audio sound recording which can be used for remote correlation.



## PermaNET Web

PermaNETWeb is a digital platform created to gather, collate and easily display the leak noise data collected by PermaNET devices.

PermaNET Web is secure, easy to use and available on any internet-enabled device.



## PermaNET+ TM

The PermaNET+ Trunk Main (TM) system replaces the leak noise sensor with a hydrophone sensor to create a continuous monitoring system for sensitive pipelines.

PermaNET+ TM is compatible with PermaNET Web for quick access to data.



## PCorr+

PCorr+ is a compact device that provides both leak noise logging and correlation in one complete, portable system.

Paired with mobile app WebCorr, PCorr+ provides the ability to record and replay sound files, as well as in-field data correlation.



## Patroller 4

Patroller 4 is a discreet, wireless Bluetooth-compatible transceiver used for the collection of data from PCorr+ and Permalog+ devices.

Compatibility with WebCorr supports on-site correlation and data upload to PermaNET Web.



## DXmic Pro

DXmic Pro is the latest generation digital ground microphone developed to precisely localise the position of a leak.

Delivering the highest quality sound, DXmic incorporates a wide variety of features, including auto filtering and frequency display.



## ST20 Listening Stick

The high performance ST20 Listening Stick uses mechanical amplification to detect and pinpoint leakage.

Suitable for basic level leak detection, the Listening Stick is made from Chromium-plated mild steel, making it lightweight.



## Touch Pro

Touch Pro is an advanced leak noise correlator designed for the more difficult leak detection situations, including plastic or large diameter pipes.

Touch Pro includes a unique Automatic Intelligent Filtering System to deliver optimum results.



## Mast II Step Tester

MAST II is a radio-based system providing users with immediate notification of flow change as a valve is operated.

It is used for step testing and is particularly suited to identifying leaks in plastic pipelines or when leak noise is absorbed.



## PCorr Lift & Shift

PCorr Lift & Shift is an entry level leak detection device that records pipe sounds at pre-set intervals.

Data is collected from PCorr Lift & Shift with Patroller 4 to be viewed in graph format, helping the user to distinguish clearly between leak and non-leak noise.



## SoundSens i

SoundSens i is ideal for both sound logging survey work and accurate pinpointing of leaks via multi-point correlation.

Operators can set up and download data without a PC. Loggers are downloaded via infra-red, removing the need for a physical connection.

# Pegasus+

## Pressure Control System

**Pegasus+ is a sophisticated and highly versatile solution for pressure control with integral two-way mobile communications.**

Pegasus+ has the capacity to set target pressure by time, flow, or by a combination, with different table settings per day of the week.

With the addition of a critical point data logger, our PressView software can automatically analyse and calculate network conditions to maintain a stable pressure at the critical point to fully optimise a PRV zone.



### Key Features and Benefits

- Proven to minimise leakage and reduce frequency of pipe bursts
- Provides great flexibility to modulate pressure according to demand throughout the day
- Built-in pressure failsafe, set by user at installation, including on-site manual safe override
- 2G, 3G, NBIoT and Cat-M1 versions available, enabling rapid monitoring and remote control



**Water pressure management project saves Severn Trent 5 MI/d**

**SEVERN  
TRENT**

Since April 2015, Severn Trent has installed over 250 Pegasus+ pressure controllers, saving 5 MI/d in the process.

As Pegasus+ allows for detailed multi-point pressure release valve (PRV) control without a flow logger, the water company was also able to save money by replacing some of its district metered area and flow loggers, which were often located next to the PRVs.

**"The Pegasus+ has proven to be excellent value for money and its given us a calmer network. It's a really good, simple system that allows us to see the data remotely, make adjustments and have good visibility as to where all the pressure controllers are in the system".**

**Graham Hollier, Network Pressure Advisor**

## Pressure Transient Pressure Data Logger



Pressure Transient is a highly advanced logger with an innovative **'event window selection'** option which allows the operator to send transient alarm information and a selectable window of fast logged data before and after the event.

Network transient logging is no longer a purely survey operation, but can now be part of permanent network monitoring for standard flow and pressure monitoring.

Transients are immediately identified so remedial action can be taken, avoiding bursts and infrastructure damage.

# MetriNet

## Water Quality Monitoring System



**MetriNet combines the market leading Multilog 2 telemetry logger with ATI's pioneering multi-parameter system to deliver real-time water quality data.**

MetriNet uses a series of smart digital sensors to continually measure a range of water quality parameters including residual chlorine, turbidity, pH, conductivity, dissolved oxygen temperature and more.



### Key Features and Benefits

- Wide variety of water quality parameters available
- Can be used in closed bypass arrangement to completely eliminate vented water loss
- M-nodes run autonomously for years on small batteries



**flow.watch**

## Fire Supply Surveillance

**Flow.Watch is a unique solution that combines advanced temperature analysis with our versatile telemetry technology to create an economical method to monitor fire supply flow**

Flow.Watch identifies and categorises fire supply flow into leakage, test use and intermittent use.

The system can also be used to detect water being used illegally, to monitor vacant properties and to confirm customer usage when no meter is present.



### Key Features and Benefits

- Capable of detecting almost any flow through the fire supply
- Enables rapid resolution of customer-side losses on unmetered services
- Cheaper, non-restrictive alternative to metering
- Uses already established HWM COMlog 2 platform

# Multilog LX2

## Versatile Data Logger

Multilog LX2 is the highly versatile, battery powered telemetry data logger incorporating a convenient serial input that supports compatibility with a wide variety of sensors and meters, including Modbus.

Designed to fit inside very shallow Atplax box installations, the logger is ideal for many applications, including monitoring flow and/or pressure in a district or zone to assess demand, leakage and pressure conformance.



### Key Features and Benefits

- Pulse interval timing smooths reading set times of infrequent pulses e.g. minimum night flow
- Up to 2 x digital flow inputs and 1 x analogue input (internal pressure, external pressure or 4-20mA)
- Can record mixture of minimum, maximum, average or spot values in each sample interval
- Flexible logging up to 25Hz with window logging (on request)



## Case Study: Wanhua Chemical turns to HWM for bespoke monitoring solution

When Wanhua Chemical required both pressure and leak noise monitoring in their water network they turned to HWM for a bespoke solution.

Approaching us with a unique set of requirements, Wanhua Chemical aimed to accurately monitor both the pressure within their water network as well as to listen for leak noise and effectively reduce leakage.

To be able to meet these specific requirements we combined our Multilog LX2 logger with a hydrophone sensor. The hydrophone is able to monitor both pressure and leak noise, while the Multilog LX2 device records the data and uses both 3G and GPRS transmission to provide Wanhua Chemical with the recorded information.

Throughout the trial and installation process, HWM offered regular support to Wanhua Chemical, including weekly meetings to discuss the status of the project. We've been able to support in choosing locations within the network for the loggers to be placed, helping to provide the most accurate results.

With our innovative solution, Wanhua Chemicals are now successfully monitoring their water network.



# Products for Data Logging



### COMlog 2

COMlog 2 is the highly versatile data logger designed to be a cost-effective, multi-application data logging solution.

Perfect for AMR monitoring, COMlog 2 is compatible with any sensor or meter that has a volt-free, pulsed output.



### Multilog 2

Multilog 2 is the highly advanced and versatile multi-channel data logger designed to monitor any combination of digital and analogue signals.

Multilog 2 is ideal for a variety of specialised applications, including monitoring PRV flow and pressure.



### LoLog Vista

LoLog Vista is a simple, highly flexible data logger. Featuring a convenient display screen and designed for portable use, it can be applied to most data logging applications in minutes.

LoLog Vista operates unattended until a user collects the data.



### LoLog 450

LoLog 450 is a flexible data logger.

Completely waterproof, battery powered and submersible, it is designed for portable use and can be supplied in single or dual channel variants. The analogue channel can be used for internal pressure and external pressure.



### LoLog-R

LoLog-R is a high specification data logger which incorporates Pulse Interval Timing to help establish accurate recording of minimum flow.

As a compact and battery powered radio 'drive by' logger, it is designed for portable use.



### HydrINS 2

HydrINS 2 is an easily deployed insertion flow meter providing highly accurate bi-directional measurement for water distribution and raw water pipelines.

Robust, watertight and compact, HydrINS 2 features a highly accurate electromagnetic sensor.

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## **Clean Water Network Monitoring**

With over 30 years in the water industry, HWM is skilled at addressing the challenges of water network monitoring. With increased pressure on water globally, we can solve the problems of effective water network management, providing data on performance and enabling effective network management.

## **Waste Water Network Monitoring**

Control of waste water networks is a key public health challenge. Effective monitoring of waste water networks reduces both frequency and impact of pollution events. Permanent installation of remote monitoring equipment helps to alert network operators to immediate problem sites.

## **Gas Network Monitoring**

Effective monitoring of gas networks has traditionally been a challenge, due to a lack of on-site power and deployment difficulty. Our gas products address these concerns, using our expertise in ATEX and low power design capabilities. This enables users to collect data about this critical infrastructure.

## **Automated Meter Reading**

Accurate and consistent data is the foundation for effectively controlling energy usage and reducing waste. AMR delivers precise and timely consumption data for investigation and analysis of energy usage as well as exact billing.

## **Facilities Management**

HWM has pioneered the development of wireless monitoring solutions for fixed network deployment. These can be combined with a variety of sensors, providing our partners with 'near real-time' data that they need to help their customers to eliminate waste, cut costs and reduce carbon emissions.



A Halma company

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