



CLEAN WATER



Clean Water Product Brochure

2024



MONITORING ASSETS, DELIVERING DATA, BRINGING CONTROL

About 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 CO₂ 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 research, development and manufacturing facility and dedicated engineering and production teams, 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.



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



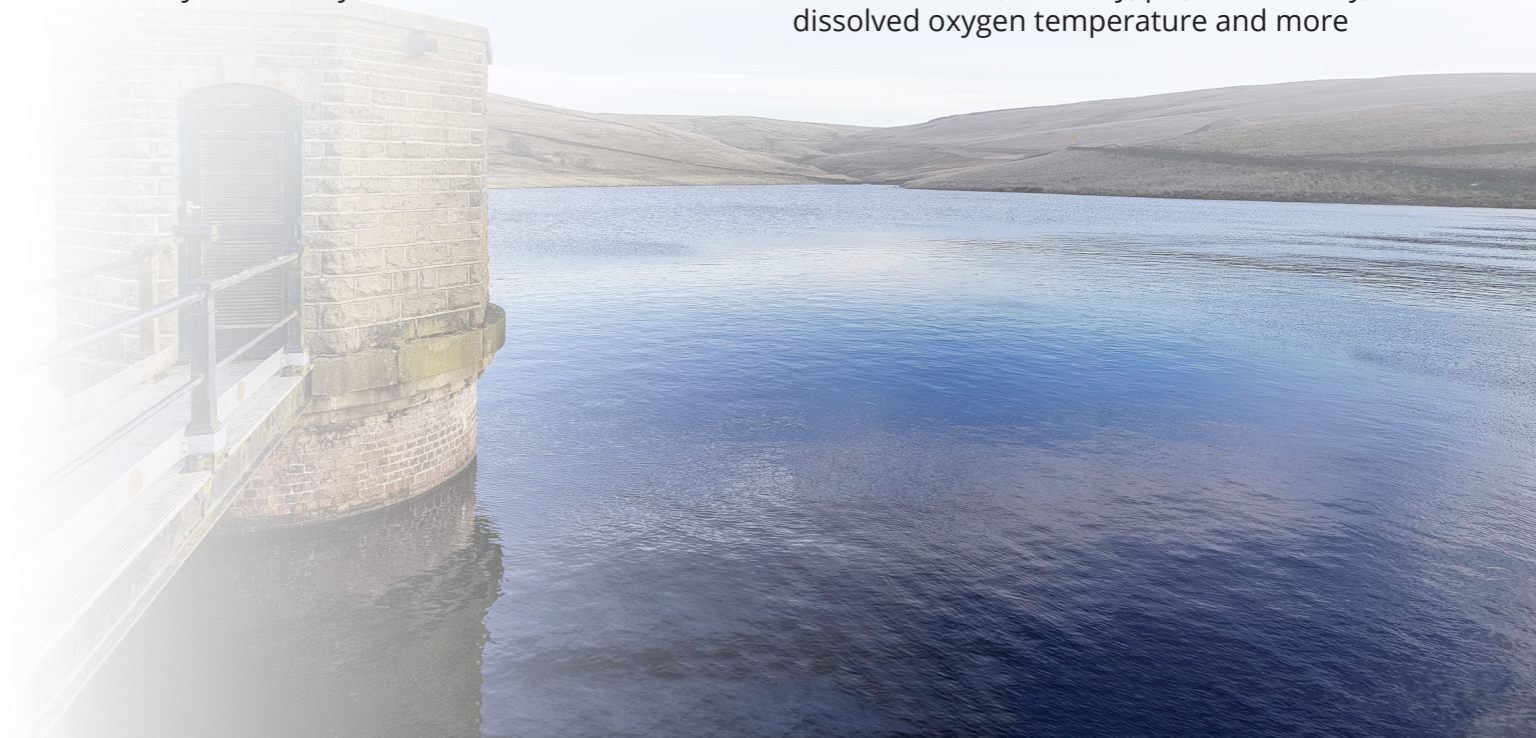
Data Logging

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

The innovative new leak detection system that combines a leak noise sensor with versatile telemetry technology in one robust single unit

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

PermaNET SU is robust and durable, having been designed specifically for smaller and more challenging installation areas. Housing a long-life battery with a **typical five-year life**, PermaNET SU also features a **sensor detection indicator** that alarms if device movement is detected. With these features, leakage teams can be confident that PermaNET SU is effectively monitoring their network.

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.



Fixed Telemetry Products



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 TM GPS

By combining the proven sensitivity of our new Hydrophone 2 with our advanced-telemetry data logger and GPS Time Synchronisation, Permanent TM GPS delivers accurate leak noise detection and correlation over greater distance on plastic and large diameter pipes.

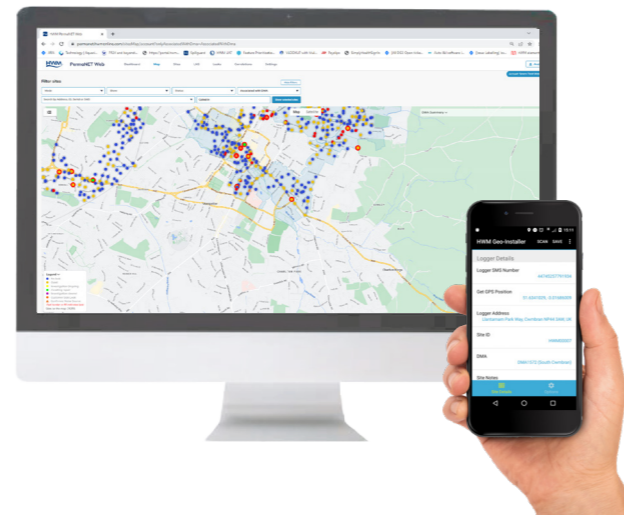
Key Features and Benefits

- fixed network monitoring continually scans for leaks, even in challenging installation areas
- full underground installation with remote cellular communication
- auto-correlation functionality automatically locates leak position
- works with HWM Deployment app for fast and accurate installation
- compatible with PermaNET Web online viewing platform, supporting correlation, Google Map view and more
- compatible with NBIoT, LTE-M cellular networks with 2G fallback for future-proofing

“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



PermaNET+

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

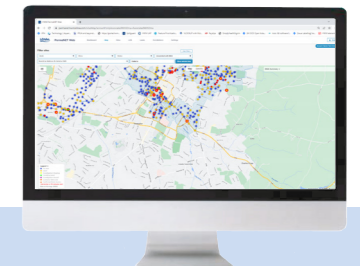
Once a leak is detected, PermaNET+ generates an audio sound recording which can be used for remote correlation.



Hydrophone 2

Hydrophone 2 is our new hydrophone sensor that delivers unrivalled leak detection performance.

Designed for our correlators and leak noise loggers, Hydrophone 2 is particularly effective on plastic pipes.



PermaNET Web

PermaNET Web 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.

Portable Leak Detection Products



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.



Touch Pro

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

Intuitive to control, Touch Pro is effective for accurate correlation.

Ground Microphone Products



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.



DXmic Pro App

The DXmic Pro app is a mobile application developed to simplify the process of data retrieval from DXmic Pro devices.

Through the app, DXmic users can immediately share downloaded audio files and site reports via e-mail or through DataGate.



PCorr Lift & Shift

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



MAST II

MAST II is a radio-based system that reports immediate notification of flow change as a valve is operated.

Through MAST II potential leak areas can quickly be identified, avoiding the need for a complete step test.



Bmic

Bmic is an easy to use, electronic leak monitoring tool ideal for general water leak detection operations.

Bmic is a cost-effective, simple tool designed to minimise disruption and reduce repair times for any leakage technicians.



Tmic

Tmic is a pocket-sized water leak detection device developed for effective, on the spot network monitoring.

Lightweight and portable, Tmic discovers and amplifies leak noise that is otherwise inaudible to the human ear.



Lmic

Lmic is an easy to use combined electronic listening stick and ground microphone.

Ideal for general sounding operations, Lmic can be fitted with either a tripod foot or probe rods to deliver excellent leak detection performance.

Pegasus 2

Our advanced, two-way pressure control system for remote pressure modulation, delivering a sophisticated level of targeted, demand-based control

With the capability to set target pressure by **time, flow** or a **combination of both** (with different table settings per day), Pegasus 2 delivers a intricate level of targeted control, even on a time basis.

Pegasus 2 features a secondary channel for **fast logging** down to **25Hz**. This is invaluable for investigating system transient events.

Featuring our **advanced modem**, Pegasus 2 transmits data though **NB-IoT** and **LTE-M**, with a **2G fallback**, ensuring reliable and consistent communication.

Pegasus 2 is supported by our **PressView app**, delivering **easy set-up** and programming functionalities.



Key Features and Benefits

- built-in pressure failsafe, set at installation, including on-site manual safe override
- intelligent pressure control proven to minimise leakage and reduce the frequency of pipe bursts
- NB-IoT LTE-based cellular communication standard with fallback 2G capability
- optional latching solenoids to fully vent the PRV top chamber in tight headloss conditions
- true max and min flow and investigation of pressure spikes through Pseudo logging
- optional 4th logging channel to record top chamber PRV pressure

“Pegasus is a really good, simple system that allows us to see our data remotely, make adjustments and have good visibility as to where all of the pressure controllers are in the system”



Graham Hollier
Network Pressure Adviser
Severn Trent



Pressure Monitoring Products



Pegasus 2

Pegasus 2 is an advanced, two-way pressure control system that delivers sophisticated targeted control, even on a time basis.

Featuring our advanced modem and supported by PressView app, Pegasus 2 can minimise leakage and reduce frequency of bursts.



Sentinel 2

Sentinel 2 is an effective solution for switching between high/low pressure, by time or flow, to provide pressure optimisation when demand changes.

Sentinel 2 is ideal for reducing pressure at night, minimising leakage and reducing pipe bursts.



Pressure Transient

Featuring an innovative ‘Event Window Selection’ and our advanced modem, Pressure Transient is designed for effective network transient logging.

Logging at up to 100 times a second, Pressure Transient is ideal for monitoring transient changes.



PressView

PressView is a web-based dedicated platform for managing Pegasus+ and Sentinel 2 pressure controllers.

PressView delivers zonal pressure management operations and self-learning closed loop control through a ‘fleet’ mapping view.

Multilog LX2

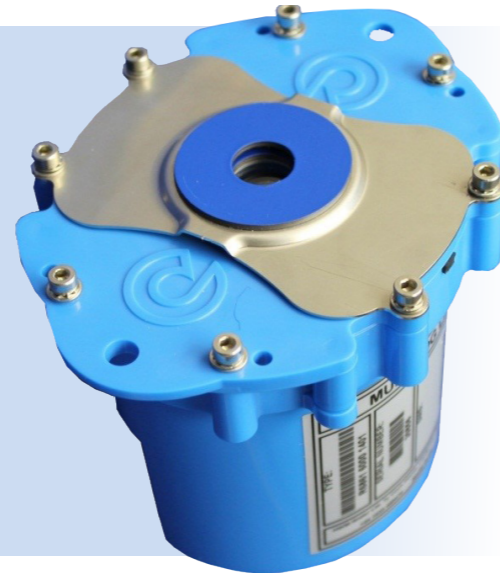
The highly versatile, battery powered telemetry data logger that supports compatibility with a wide variety of sensors and meters, including Modbus.

Designed to fit inside very shallow Atplas box installations, Multilog LX2 is ideal for many applications, including **monitoring flow** and/or **pressure** in a district or zone to assess demand, **leakage** and **pressure conformance**.

Multilog LX2 contains our innovative modem that is capable of connecting by **NB-IoT** and **LTE-M**. The modem includes a **2G fallback** which automatically engages should an NB-IoT signal not be available, ensuring consistently reliable connectivity.

The logger is **battery powered**, with a **five-year** life as standard. Additional battery packs can be added to support more frequent dial-in rates.

Built for versatility, Multilog LX2 is a **powerful fast logging solution** that delivers **effective data recording** and dependable transmission.



Data Logging Products



Multilog LX2

Multilog LX2 is a battery powered data logger that incorporates a serial input supports compatibility with a wide variety of sensors and meters, including Modbus.

LTE-M and NB-IoT-enabled, Multilog LX2 delivers effective data recording and transmission.



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.



IS Log

IS Log is an intrinsically safe, highly versatile data logger that is used for automated meter reading (AMR) in clean water.

Featuring our advanced modem and wireless programming, IS Log is an innovative multi-application solution.

Key Features and Benefits

- pulse interval timing smooths reading set times of infrequent pulses e.g. minimum night flow
- up to 2x digital flow inputs and 1x analogue input (internal or external pressure, 4-20mA)
- NB-IoT LTE-based cellular communication standard with fallback 2G capability
- fully waterproof with an IP68 rating that has been tested at 10m over a 24 hour period
- true max and min flow and investigation of pressure spikes through Pseudo logging
- serial input for connection to digital meters, SonicSens 3, Permalog+ leak noise logger and Modbus sensors



Incident Logger Data Logging System

Incident Logger is a data collection system for incidences where large amounts of data are required in a short space of time. Using a GPS module, Incident Logger can be rapidly deployed without software or PC cables, generating site specific data in moments and allowing for targeted work in the affected area.

- in-built GPS module generates location data
- real-time alarms can be enabled for immediate response
- up to 2x digital flow inputs and 1x analogue input



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.



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 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.

Applications and Software

To deliver effective results, HWM products are supported by a variety of applications and software solutions.

Each of the bespoke apps and software solutions that supports our products is designed and programmed in-house by our dedicated team.

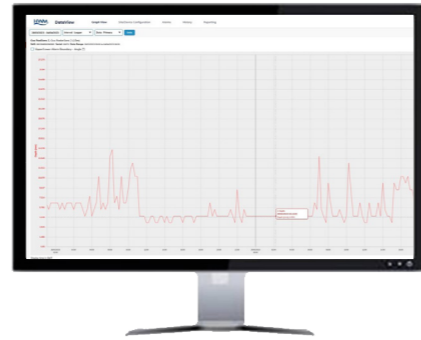
We have developed various applications and software solutions to support our range of loggers and sensors, including:



DataGate

DataGate is our online data server that provides fast, convenient and secure remote data management.

Through a variety of methods (FTP, VMN, modem etc.), DataGate has the capability to receive data from all mobile networks and processes over 1.7 million messages a day.



DataView

DataView is the customer-facing digital platform for viewing and analysing the data that has been collected in the field by HWM devices.

Accessible online, users can connect to DataView on any internet-enabled device.

Applications and Software Products



IDT

IDT is an installation and diagnostic app that both supports quick and reliable deployment and the on-site programming and updates of HWM Bluetooth® enabled loggers.

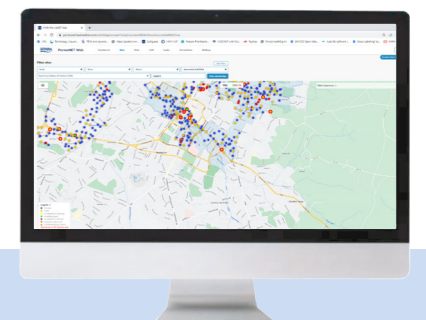
IDT can also be used to download data from deployed loggers.



PressView

PressView is a web-based dedicated platform for managing Pegasus and Sentinel pressure controllers.

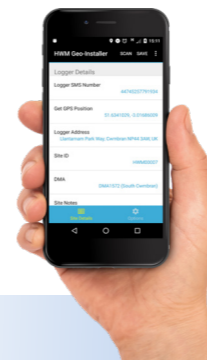
PressView delivers zonal pressure management operations and self-learning closed loop control through a 'fleet' mapping view.



PermaNET Web

PermaNET Web 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.



Deployment App

The HWM Deployment App is an installation tool that supports the quick and effective deployment of HWM manufactured data loggers.

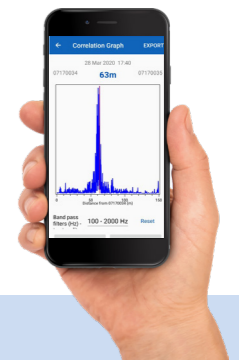
Using the app, installation simply becomes activating the unit, scanning the barcode and fitting the unit within the network.



DXmic Pro App

The DXmic Pro app is a mobile application developed to simplify the process of data retrieval from DXmic Pro devices.

Through the app, DXmic users can immediately share downloaded audio files and site reports via e-mail or through DataGate.



WebCorr

WebCorr is a mobile application that delivers rapid in-field correlation of data collected by PCorr+ data loggers.

Using wireless connectivity to retrieve data, WebCorr can quickly provide correlation of leak noise for effective leak location.

Antenna Options

Signal strength within the cellular network can vary dramatically even within the same cell proximity to the transceiver.

The type of antenna, position and angular orientation of the antenna each has a significant effect on the ability of a device to reliably communicate with the cellular network.

To ensure reliable cellular data communications, it is essential that the most suitable antenna is selected and mounted in the most appropriate location.



T-Bar



I Bar



Hanging Antenna



Magmount



Button



Dipole



Dome



Magpot



1/4 Wave Antenna



Stubby (FME)
above ground only



GPS Antenna

Antenna	Frequency Range	Dimensions	Operating Temp.	Mounting Method
T-Bar	698~960/1710~2655MHz	115 x 16.2 x 0.8mm	-40°C - +50°C	Adhesive
I-Bar	698~960/1710~2655MHz	26 x 125 x 7mm	-40°C - +85°C	Adhesive
Hanging Antenna	700~2700MHz	61 x Ø33 mm	-40°C - +85°C	Magnetic
Magmount	700/850/900/1700/1800/1900/2100MHz	280 x Ø50 mm	-40°C - +85°C	Magnetic
Button	850/863/900/1800/1900/2100 MHz	115 x 16.2 x 0.8mm	-40°C - +85°C	Bolted
Dipole	850/900/1700/1800/1900/2100MHz	160 x 45 mm	-20°C - +60°C	Magnetic
Dome	890~960/1710~1880 MHz	104 x Ø32 mm	-40°C - +80°C	Bolted
Magpot	698-960/1710-2655MHz	61 x Ø33 mm	-40°C - +85°C	Magnetic
1/4 Wave	700~2700MHz	80 x 7 mm	-30°C - +65°C	Direct to Logger
Stubby (FME)	700MHz ~ 2700MHz	115 x 8.5 mm	-40°C - +85°C	Direct to Logger
GPS Antenna	L1:1575.42 ± 3mhz; L2: 1602±5mhz	16±2 x Ø46 mm	-40oC ~ +85oC	M12 Screw

All antenna options are suitable for NBIoT/LTE-M and 2G data transmission



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.



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.



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A **Halma** company