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Christian Paetz,
CEO

WATER
LEAKAGE

**PROTECTION
SPECIALISTS**

**AQUA-SCOPE
TECHNOLOGIES**

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CEO

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**WE'RE A 21ST
CENTURY
COMPANY
WITH PEOPLE
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SAME VISION
AND WORK
TOGETHER**

AQUA-SCOPE TECHNOLOGIES

WATER LEAKAGE PROTECTION SPECIALISTS

By Rachel Smith

Every homeowner has encountered the unpleasant consequences of water leakage at some time or other, and the inconvenience caused by such incidents is often too difficult to deal with. Water leakage poses a serious threat to houses and occupants, leading to mouldy walls, damaged flooring, foul odour, and damp furniture. As such, even a minor leak in the house must not be dismissed as inconsequential. Considering that every house has an intricate network of plumbing, even a small leak can quickly snowball into a full-blown catastrophe if it goes undetected for a long time. It could be a burst pipe, an overflowing sink, a faulty toilet flapper, or a dripping dishwasher—any leak can cause substantial damage and potentially flood an entire house.

Statistics show that the damage from leaking water is ten times more common than burglary, floods, fires, tornadoes, and lightning strikes. As per the industry estimates, 14,000 people in the U.S. experience a water damage emergency at home or work each day. The trials and tribulations don't end there. Only two-thirds of all households in Western countries have insurance coverage for their home. Homeowners most certainly have to break the bank for a massive clean-up and an extensive restoration process to remove mould and mildew, replace the drywall, repair the floor, and more.

Putting an end to the plight of homeowners by making them proactive in preventing water damage is Aqua-Scope Technologies—a technology leader in smart leak protection for homes and offices. Founded in 2018, the Estonia-based company offers a non-invasive 360-degree water leakage protection solution to safeguard homes from water damage round the clock.

WATER LEAK DETECTION AND DAMAGE PREVENTION MADE EASY

Christian Paetz, CEO at Aqua-Scope Technologies, explains that despite the considerable damage and losses caused by water leakage, homeowners are often reluctant to install traditional leakage protection systems as they require a certified installer or plumber, which costs both time and money. In addition, typically, plumbers cut into the pipe near the main shut-off valve to install the leakage protection system, creating a point of no return and further weakening the water pipe

system. “Every leak starts with the first drop of water leaving the pipe and every connection in the water pipe system is a possible leak point. And the sooner you find out something is wrong, the lesser damage you bear,” says Paetz. The Aqua-Scope water leakage protection system is designed to provide comprehensive and effective water leak protection without any pipe-cutting. It can be easily installed within minutes by the homeowner without the help of any certified installer/plumber. Users can set up, configure, and operate the Aqua-Scope system through the Aqua-Scope app, available for iOS and Android users, as well as a simple web browser—thanks to the modern PWA (Progressive Web App) design of the app.

Through a highly sensitive pressure sensor and a network of distributed sensors placed on strategic points in the home, the Aqua-Scope system continuously analyses the situation in the homeowner’s water pipes and detects all types of leaks well before they cause any damage. The Aqua-Scope pressure sensor also allows locating other malfunctions such as tiny leaks or faulty toilet flappers in the pipe inside the wall. The company’s water sensors that are placed in critical positions within a resident’s home can detect even the smallest drops of water effectively. “We have developed an ‘easy to use and attach’ sensor that leverages acoustic leak detection technology to analyse what is going on in the water pipe system and provide information about the quantity, frequency, and time of water consumption,” states Paetz.



Christian Paetz, CEO



Often, the traditional flow sensors used in leakage detection systems cannot differentiate malfunction from normal water take for washing, drinking, and cleaning. Unlike those systems, the Aqua-Scope system’s single central sensor evaluates sound waves within the tap water network to seamlessly detect when water is normally utilised for household chores. This information, in the form of the current water consumption and comparative values, offers the homeowner with valuable feedback on their water usage. Whether it’s an acute defect of a departing and broken pipe or the slow leakage of small amounts of water over a long time, the Aqua-Scope system can detect all different types of leakages.

SMART WATER MONITORING AND CONTROL

Given that even a dripping worn faucet can waste a substantial amount of water per day, the Aqua-Scope system monitors the home’s water supply 24/7. Additionally, the easy to retrofit

motorised actuators automatically shut off the water supply—depending on the urgency and amount of outflowing water. In fact, the ability to switch off the water by radio command opens further possibilities to avoid damages. As such, if an apartment/building is not going to be used for several days, its water supply can be turned off and on automatically. This protects the pipes, and no water will leak out at all in case of an error. Moreover, the Aqua-Scope system alerts the residents via the internet and mobile phones. The components within the home can communicate with each other using robust LoRa wireless technology, plus they can communicate individually with a server using public LoRaWAN or the resident’s home WIFI.

The world has different ways to shut-off the water depending on geography and simple history, such as Ball Valves, Butterfly Valves, Gate Valves, Angled Gate valves, etc. Aqua-Scope provides retrofittable motors for all of these types to shut-off the water. The flexibility of the retrofit motors, combined with superior durability (20,000 turns) and robustness against the environment (waterproof, vibration-proof, and more), has been a reason for their rising demand in the market.

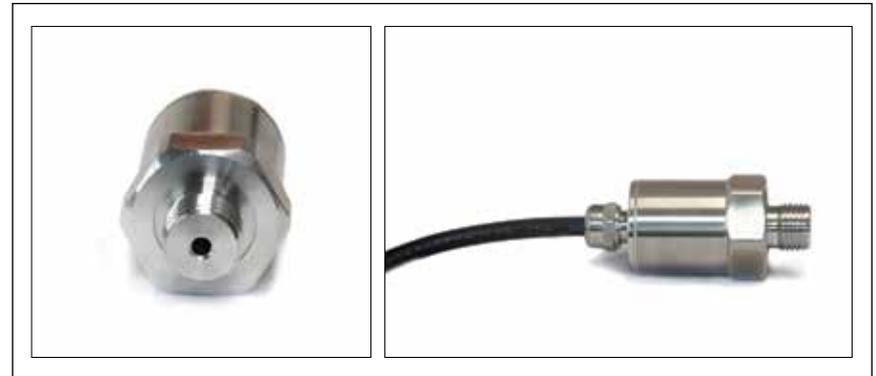
In detail, Aqua-Scope offers Ball Valve Servo (BVS), an intelligent ball valve controller that can be mounted on straight



Driven by the quest to improve its system, Aqua-Scope aims to add more capabilities to help homeowners efficiently prevent water damage. The company’s interest in leveraging ultrasonic flow meters for measuring the flow rate of water in the pipes is just another step in that direction. Paetz explains that it’s crucial to measure the temperature and relative humidity at the sensor’s location to prevent mould in the house. Being experts in the area, Aqua-Scope leverages silicon sensors to detect these parameters and ensures minimum water damage and mould growth.

With its administrative and financial centre in Tallinn, logistics in Germany, and electronics work in Shenzhen, Aqua-Scope plans to expand its footprint in international markets.

pipes and on pipe elbows by adjustable clamps position. Furthermore, the BVS can be used to retrofit existing and installed ball valves into smart water controlling devices. Being IP67 rated, the Aqua-Scope BVS is suitable for outdoors and can work even when submerged in water. On the other hand, Aqua-Scope’s Gate Valve Servo (GVS) can be placed on already installed (angled) gate valves commonly used in central Europe across Austria, Germany, Switzerland, and other countries. The “Valve Servos” communicate with different wireless technology, either forming a complete system (WIFI/LoRa) or for integration into third-party systems (Z-Wave/ LoRaWAN). Besides, both servos can seamlessly receive commands from the flood sensors or other smart home system gateways. The flood sensor is placed in convenient locations to determine water leakage, and the motor servo, both ball valve and gate valve, are placed on top of an already existing shut-off valve.



EMBRACING NEW TECHNOLOGIES FOR INNOVATIVE PRODUCT IDEAS

Under the leadership of Paetz, Aqua-Scope has been continually growing over the years. Paetz, a former professor at the Chemnitz University of Technology, has also been active in the educational field and published several scientific papers and books. Aqua-Scope’s success can be largely attributed to Paetz’ insights and innovative ideas and an incredible team of hardware engineers, software developers, product designers, and marketers.

“EVERY LEAK STARTS WITH THE FIRST DROP OF WATER LEAVING THE PIPE AND EVERY CONNECTION IN THE WATER PIPE SYSTEM IS A POSSIBLE LEAK POINT. AND THE SOONER YOU FIND OUT SOMETHING IS WRONG, THE LESSER DAMAGE YOU BEAR

The company also has an office in Hong Kong that is gaining huge traction in the marketplace due to the ongoing COVID-19 pandemic. On the technical front, the Aqua-Scope Monitor will soon be available as a battery-powered version, further increasing the flexibility of installation. The company is moving from a traditional ceramic resistive pressure sensor element to a more modern silicon-based sensor element with stainless steel diaphragm since this gives a much better signal/noise ratio. This enables Aqua-Scope to now measure the water temperature right inside the water with less energy and higher precision for freeze detection. “We’re a 21st century company with people that share the same vision and work together. We steer ahead with our goal to provide the best water leak protection possible through super-easy installation,” notes Paetz.

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*The annual listing of 10 companies that are at the forefront of providing
Sensor Technology solutions and transforming businesses*