VILPE® Sensë

Sensë

LEAK DETECTION

MOISTURE MONITORING SYSTEM FOR BUILDING CONSTRUCTIONS



SENSE LEAK DETECTION HELPS SAVING ON MOISTURE DAMAGE REPAIR

Moisture damage is a common problem in buildings of all types and ages, and early detection is crucial to limit the extent of the problem. Developed for early detection, Sense monitors the condition of structures by providing real-time insight and alerts in the event of elevated moisture values. This allows for early intervention, so that small moisture problems do not cause large and costly damage.

Causes of moisture damage are both leaks and structural defects. Structural causes include air leaks in vapor barriers, building moisture in materials such as wet insulation, and inadequate ventilation. The VILPE Sense leak detector monitors the moisture content in structures, warns of excessive levels and locates leaks (even on larger roofs) for faster and cheaper intervention.

Easy to install
Suitable for new construction and existing roofs.

Wireless moisture measurement
Continuous monitoring of your roof structure.

Automatic notifications
Receive instant notification when there is too much moisture.

Targeted repairs
Save costs by making timely and targeted repairs.

Durable solution
The detector is easy to remove and the detector battery lasts up to 15 years.





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MONETARY VALUE

SENSE LEAK DETECTION

DATA

EUROFAST®

Indumastraat 18
5753 RJ Deurne, Netherlands

E leakdetection@eurofastgroup.com
T +31 6 44 12 66 82

Contact sales

› EUROFASTGROUP.NL/SENSE

VILPE® Innovative and Easy

THE SENSE LEAK DETECTOR HELPS TO LOCATE THE LOCATION OF A LEAK

Roof damage occurs for a variety of reasons, but the most common is human error. This includes errors or damage during construction, poor maintenance, or activities on the roof where damage goes unnoticed—such as during maintenance work. Minor damage is normal on roofs, but the repair costs can quickly add up to several thousand euros.

Because most leaks are not immediately visible, they can develop into larger and costly damage unnoticed.

The Sense leak detection system has been specially developed to detect even the smallest leaks at an early stage and prevent further damage. The system continuously monitors the roof structure and warns if the moisture content is too high. In addition, a digital map in the system indicates where the problem is located, so that quick action can be taken and expensive renovations can be prevented. The batteries of the detectors are designed to last 15 years.

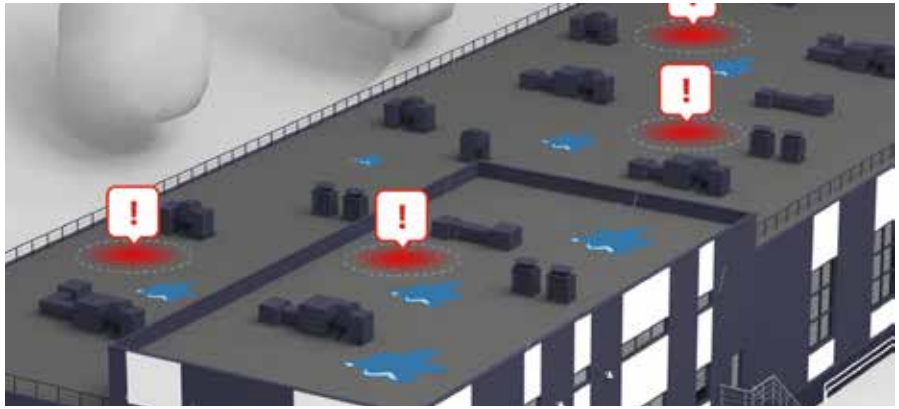


Applications

The Sense leak detection system is primarily designed for use on roofs, but can also be used for monitoring other structures, such as walls. Sense is particularly valuable in new construction and renovation projects, but it is also suitable for retrofitting. For example, the system can be used to map the extent of moisture damage on a roof..

Sense leak detection system: detects leaks in the structure

- Continuously monitors the construction for excessive moisture
- Warns of a possible leak so that it can be fixed immediately
- Displays the leakage position on the system's moisture map
- Allows targeted repair of only the damaged area
- The condition of the structure is easy to follow via the Cloud service, accessible via computer or smartphone



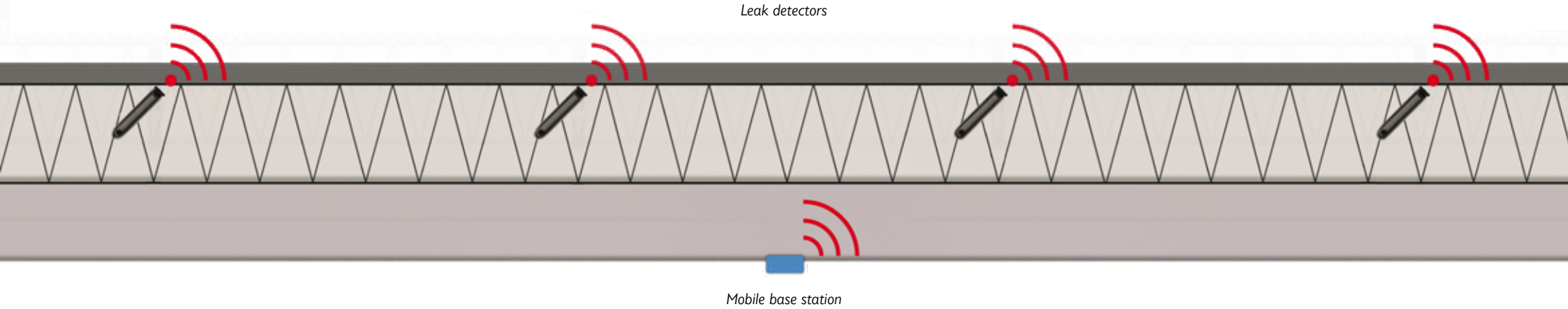
The Sense system locates possible leakages quickly.

Products

Sense leak detector, RHT-1, (735045), 10 pieces

Sense Mobile base station, (735044), 1 pc.

Eurofast tubes are available separately





DESIGNING AND INSTALLING THE SENSE LEAK DETECTION SYSTEM ON A BITUMEN ROOF WITH A SLIGHT SLOPE.

The system consists of moisture detectors that are placed in the insulation layer of the roof. Planning the installation locations of the leak detectors requires a visual representation of the area to be monitored, such as a roof plan or other type of image. Based on this image, a digital map is drawn up, which can be used to locate possible leakage areas.

Producten

- **Sense leak detectors:** Measure the moisture content within the monitored structure. Its main function is to detect moisture that may indicate a leak, allowing early warning to prevent further damage.
- **Sense mobile base station:** The system requires a Sense mobile base station, which can be installed indoors. The Mobile Base Station receives data from the detectors and transmits it to the Cloud Service. One Mobile base station can be connected to up to 200 detectors.
- **Eurofast tubes:** Can optionally be used to ensure that the detectors of the leak detection system are installed at a consistent depth. This is not required and should only be applied if the thickness of the roof structure allows it (>150 mm). A uniform installation depth contributes to more accurate data comparison on the humidity map, as all detectors measure moisture levels from the same position within the structure.

Planning and Installing

User accounts: If you don't have a user account yet, there are two ways to create one:

If you already own a Mobile base station, you can create your own login details via www.sense.vilpe.com.

If you don't have a Mobile base station yet, you can request a link by sending an email to Eurofast Sales (leakdetection@eurofastgroup.com).

Detector planning

- Density of the detectors: Adjust the detector density based on the location. For example, the distance between two detectors can be 5-10 meters. The smaller the distance, the more accurate the measurement data. For sensitive or high-risk areas, it is recommended to install additional detectors.
- Layout on the moisture map: Plan the placement of the devices in advance on a moisture map. Any image of the roof that accurately reflects its actual dimensions can be used for this purpose. After the planning phase, a device overview can be created with the required number of products.

Device registration: Devices can be registered in the Cloud service before or during installation. It is essential that every registered device is placed in the right location exactly as scheduled

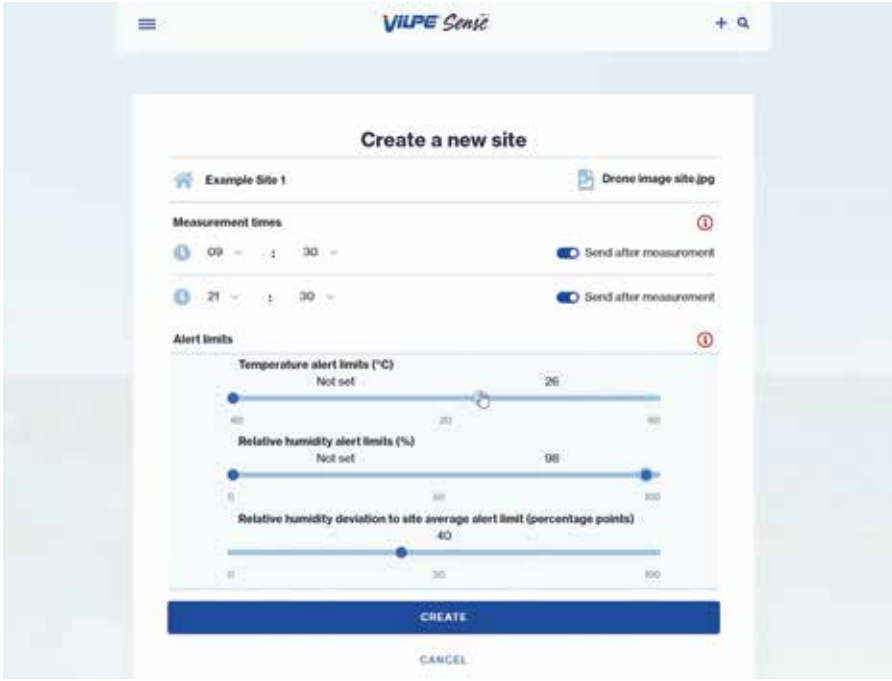
Installation: Install the devices in the structure according to the plan and the corresponding installation instructions.

Settings: Set the alarm thresholds via the Cloud service. Detailed instructions and recommendations can be found in the installation manual. The system sends new readings twice a day, which should be taken into account when setting the alarm delay.

Link with building management system: The measurement data can be integrated into building management systems via a REST API. To do this, contact the supplier or designer of the building management system. A description of the interface is available from Eurofast Technical Support.

Leak detection: The owner receives a warning by e-mail in the event of elevated moisture values. With the help of the digital floor plan in the VILPE Sense cloud service, leaks can be located. On this map, blue areas indicate that the moisture content there is elevated.

It is important to know that moisture values can fluctuate in the short term, for example during rainfall. However, if the moisture level in a certain area remains high for several days, this indicates a possible problem. The moisture map thus helps to accurately detect damaged parts of the roof.







Finland's largest indoor arena has been struggling with costly leaks in the roof for a long time.

FIGHTING LEAKS ON THE ROOF OF BOTNIAHALL WITH VILPE SENSE SMART LEAK DETECTION

Finland's largest indoor arena, Botniahall, has long suffered from expensive and difficult-to-repair leaks on the roof. These leaks not only caused high costs for the repair, but also operational disruptions. To address this issue, management decided to deploy Sense leak detection.

Sense offers an innovative solution for monitoring and locating leaks in roofs. By using the Sense leak detection system, the leaks could be detected quickly, significantly reducing repair costs. The detectors, which continuously measure moisture levels, alerted the maintenance team to elevated moisture levels, so they could intervene immediately and prevent further damage.

The VILPE Sense system used an accurate digital floor plan that visualized the problem areas of the roof in real-time, which drastically reduced repair time. Thanks to Sense's technology, Botniahall's roof can now be maintained more efficiently, contributing to long-term cost savings and increased operational efficiency.

This approach demonstrates how innovative technologies such as Sense leak detection can help reduce maintenance costs and improve the sustainability of buildings, even in environments with complex roof structures such as the Botniahall.

'The Sense products are the most effective leak detection solution on the market.'

A roof renovation was inevitable, as the old PVC roofing had reached its lifespan and there were numerous leaks. The large roof covers a total of 17,000 m^2. Initially, the roof had several leaks that were difficult to repair, the insulation wool was partially wet, and water leaked into the hall. Michael Lyyski, director of the municipal consortium of the Vaasa Region Arena, indicates that the Botniahall roof had been experiencing leaks for a long time and that the repair costs were high.

"All in all, we're talking about costs in the six-digit figures," says Lyyski.

The repairs are particularly challenging due to the curved shape of the roof, as access via a crane is required, and the roof slope makes it impossible to walk on the roof. In addition, locating leaks on the large roof is very difficult. Jyrki Tyynelä, regional manager of TEP Roof Oy, has repaired the Botniahall roof many times.

"It is rare to see so many leaks. In repair situations, we have usually only been able to find and fix the worst and clearly visible leaks. Repairing a leak usually took at least a day's work," says Tyynelä.

Savings through leak detection

Because locating leaks on the large roof was a challenge, it was decided to install the Sense leak detection system on the roof. The leak detectors continuously monitor the moisture values of the roof, warn of excessive humidity and locate leaks on the roof. By limiting the leakage to a small area, the repair work is accelerated. Lyyski, fed up with the leaks and the high repair costs, was immediately enthusiastic about the VILPE Sense leak detectors.

"We are realistic and realize that no matter how new and advanced a roof is, damage will always occur over time. It is clear to us that investing in smart products will give us savings in roof maintenance. If the roof remains in good condition, it extends its lifespan," says Lyyski.

'We are realistic and recognise that no matter how new and advanced a roof is, there will always be breaches over the years.'





"The most effective solution on the market"

Jyrki Tyynelä of TEP Roof Oy is responsible for the roof renovation of the Botniahall. As a roofing professional, Tyynelä is following with interest the introduction of new smart products to the market.

"In my opinion, the Sense leak detection system is the most effective solution on the market for detecting leaks. The roof repairs to the Botniahall will undoubtedly become easier. Previously, we looked for leaks on thousands of square meters of roof, but with the new system, locating them is a hundred times easier," says Tyynelä.

Tyynelä recommends VILPE Sense products especially for roofs that are difficult to access. "Detecting leaks under solar panels or green roofs is also difficult, because these roofs are difficult to inspect. Random repairs can be very expensive in the long run," says Tyynelä.



THE BENEFITS OF OPTIMIZING DATA WITH SENSE

Sense provides valuable insights into humidity levels and the condition of structures. The detector data – including temperature, relative and absolute humidity – is securely stored in the cloud service and is available to users there.

Unlike the building owner or owner of the system, third parties do not automatically have access to the measurement data. However, the main user of the Cloud Service can choose to share a link to the data, for example with residents of an apartment complex or users of a public building, so that they gain insight into the moisture condition of the structure. This is especially useful in situations such as the sale of a property, where potential buyers may value such information.

The data can be monitored in one or more locations, and the interface is compatible with PCs, smartphones and tablets.

The VILPE Sense system's data can be transmitted to building automation systems via REST API.

Maintaining buildings: the best environmental strategy

The construction and renovation of buildings typically require significant environmental resources. That is why the proper maintenance of existing structures is an important environmentally conscious choice. By choosing sustainable products and materials, and by investing in proper maintenance, the need for renovation can be significantly reduced.

VILPE Sense is revolutionizing building maintenance by making it possible to repair proactively and keep buildings healthier. In doing so, the system takes environmentally conscious management to a smarter and more sustainable level.

Data transfer from Sense to a building management system

A building management system makes it easy to monitor the condition of a building and supports decision-making. The data from the VILPE Sense system can be forwarded to building management systems via a REST API.

Because every building management system functions in a unique way, a custom solution is required for every installation. However, once a solution has been developed for a specific building management system, data transfer for other properties with the same system is greatly simplified.

Sense data integrated into Schneider's building management system

Schneider Electric offers a variety of building management and automation solutions, one of the most well-known of which is EcoStruxure Building Operation. EcoStruxure is an integrated platform that enables building energy management, automation, and optimization. It is designed to improve the performance of buildings, minimize energy consumption and increase the comfort of occupants.

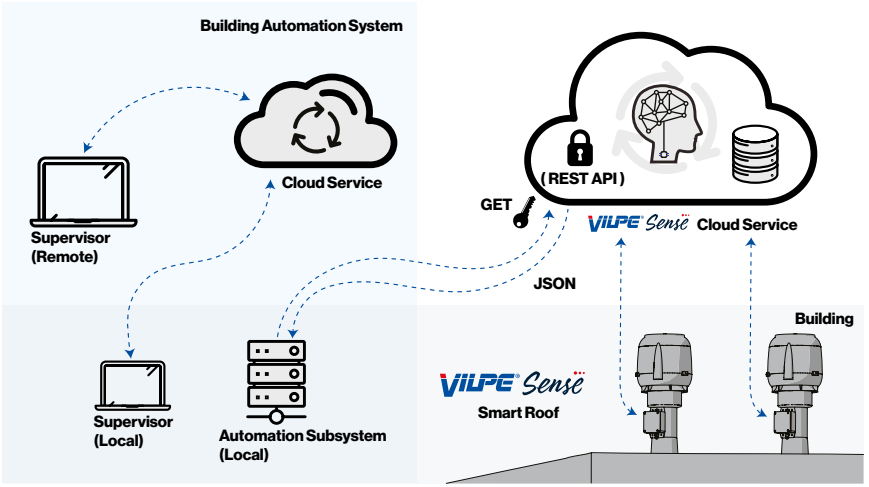
The integration solution for this building management system was developed by maintenance engineer Roope Leppänen from Schneider Electric, in collaboration with Kimmo Kujala, product manager at VILPE.

"The goal was to create a solution that provides the customer with a familiar interface in which all information about the building is available in one central place," says Leppänen.

The solution works as follows: The detectors from VILPE Sense send data about the structural condition of a building to the VILPE Sense cloud service. The local automation system (PLC) then retrieves the desired data via a REST API. The VILPE Sense cloud service then delivers the requested information back to the automation system.

This API can be used to read system messages, temperature and humidity measurements, the mould index (according to the Finnish standard) and the fan speed of the roof, among other things. The automation system, in turn, is linked to Schneider's cloud service for building management, making the data available there (see image).

"This is not the most traditional way to connect devices to a building management system, but the implementation went smoothly. Some adjustments had to be made to the data processing because it was a completely new solution, but I didn't think those were complex obstacles," says Leppänen



The path of the VILPE Sense data in Schneider's building management system



The VILPE Sense data is easily accessible in the VILPE cloud service.

OUR STORY

The story of our company started with a single innovation. During the summer of 1973, Eero Saikkonen — then a student at Vaasa Technical Institute — started looking for a solution to a practical building problem.

He had noticed that roofing felt and insulation, which at the time were glued together with bitumen, did not stay in place, and the heads of screws often penetrated and damaged the felt layer. To solve this problem, he developed a new type of fastener that would adjust to the weight which was applied to it. This innovation was the start of our company.

Since that day, we have been at the cutting edge of product development and have continued to challenge the building industry with new innovations. Many of these innovations, such as exhaust ventilation pipes, roof fans and ventilation poles have become a part of everyday building practice since we introduced them to the market.
VILPE Oy's factory and headquarters are in Korsholm, Finland.
VILPE has always promoted healthy structures through innovations, and VILPE Sense is a natural continuation of this work. Since 2017, we have been developing products equipped with smart technology to combat moisture problems. Nowadays, VILPE Sense protects an increasing number of buildings from excessive moisture.

VILPE Sense



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EUROFAST®

Indumastraat 18
5753 RJ Deurne, Netherlands

E leakdetection@eurofastgroup.com
T +31 6 44 12 66 82

› EUROFASTGROUP.NL/SENSE

Contact us