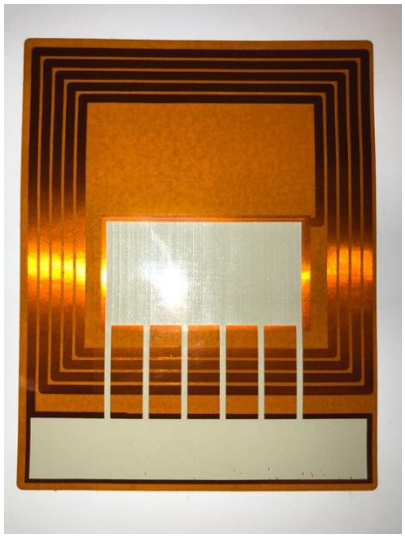
A unique way to measure moisture

InviSense's extremely thin moisture sensor allows you to measure moisture without destructive action. E.g. inside the waterproofing layer in a tiled bathroom, where you usually have to wait several months without use before it is sufficiently dry in the seam and in the tile-glue so that you can measure the moisture behind the waterproofing layer using traditional methods.



Introduction

InviSense has, after many years of research and development, succeeded in manufacturing a product that allows to measure relative humidity without physical impact. The problem of moisture damage in building constructions is large, which entails huge costs and poor environments. So far, it has often been necessary to break the construction to measure the moisture properly, which has meant that measurement may not been performed and sometimes incorrectly, which gives a poor decision base for the property manager.

Everyone is a winner with InviSense concepts

- The contractor will get an immediately respond if the installation has gone as planned
- The client's responsibility person can follow up the moisture in the construction during the warranty period
- The aftermarket can check the property for a long time and catch the issues before they become too big

With the extremely thin, durable and wireless readable sensor, you can control the environment inside the design, such as under the layer of waterproofing in a wet room, where it is impossible to measure without waiting for several months to tile-glue and seam to dry out, destroy the waterproofing layer or open up the other side of the wall.

How to place them

The sensors are installed when building new constructions or renovate, they are located in places where there is a risk of moisture damage, both in the short term and over time. For example, in wet rooms, they are placed around the floor drain, which is a common place for leakage, where the pipes penetrate the constructions, at the threshold, in the kitchen in front of the sink, inside the balcony door under the parquet, in the façade of the corners of all perforations (such as windows) and on other places where it is important to be able to control the moisture.

How does it work

The sensors consist of a moisture sensitive material as we know how it works with the surrounding environment, i.e. how it absorbs water molecules. When the sensor absorb water molecules (getting in balance with the surrounding environment), it sets itself at a frequency in a given range. With InviSense moisture scanner, the given frequency range is swept and when the sensor and the scanner end up in resonance (find each other's frequency), we read the relative humidity percentage (RF%) between 20 - 95% with high accuracy.

An additional feature is that it is possible to read if there is liquid in liquid phase (over 100 RH%, i.e. above the dew point).

How durable is a sensor?

All material in the sensor has extremely long durability, the only thing that could possibly limit the life span is corrosion of copper or silver, they are therefore protected with lacquer. Our assessment is that they have at least one bathroom's lifetime and there is nothing that speaks for an "ending".

Can you see trends over time?

With the help of an easy-to-use cloud solution, all measurement data is stored at the sensor level, i.e. that it is possible to see how that sensor is affected by the surrounding environment over time. This may mean that new knowledge is created and it is possible to make decisions about material choices that are better suited to weather, usage and climate change.

Where can the sensors be installed?

You can install the sensor in all places where you want to measure RF% inside a construction

Are there limitations?

The limits we know today with the sensor design we have now is that it should not be placed too close to metal, because it is an inductive measurement.

Can anybody measure?

Have the sensor been installed properly and they have been placed according to the drawings and installation instructions, so can anyone measure it after reading a brief instruction, it's almost like reading a price with a barcode handheld in the grocery store.

It is important to distinguish between measuring and deciding on action. Depending on the surrounding material, the results are different. E.g. a screed surface has a higher critical acceptable RF% than a plasterboard. This means that if you e.g. have 80% RF under a plastic mat on a concrete floor, it is in the good side, if you have 80% RF under the waterproofing in a bathroom on a plasterboard, then it should be examined more carefully by a moisture expert who can make decision whether to take actions or not.

Is it a unique technique?

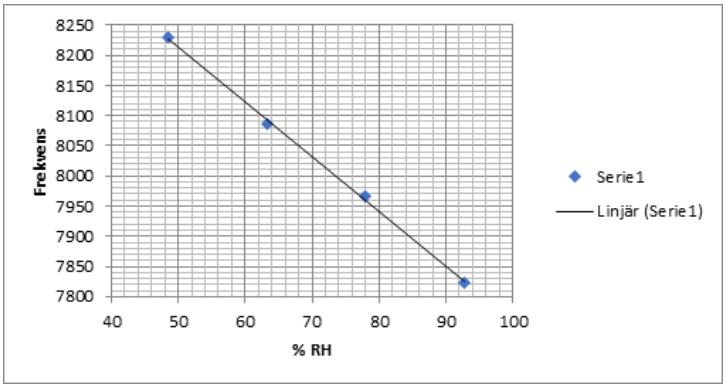
The technology is completely unique, the products and the concept are of course patented, it’s also design-protected and brand-protected.

Why should the sensors be installed?

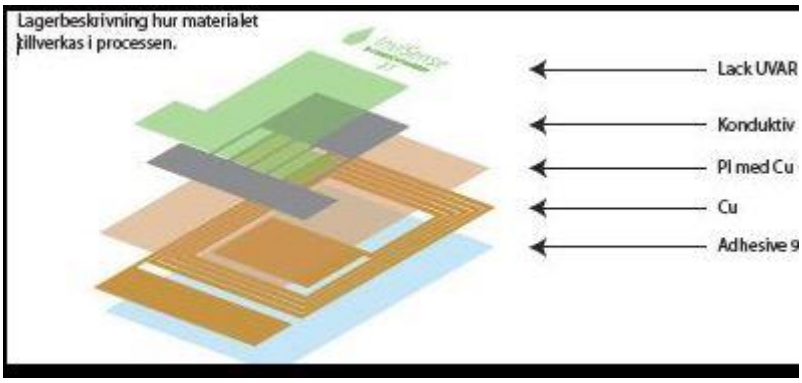
The utility and the possibility of the solution only arise after the sensors have been installed, which must be done when the construction is open. They have a low price, which means that you can always have them installed by default. This makes the construction measurable without destructive interference. The installation itself is not destructive.

Technical description

As described above, we measure a frequency and we know what it means in RF%, the figure below shows that the frequency and RH% are linear, the measurements have been made in Rise (www.ri.se) test facility PEA Manufacturing in Norrkoping.



The product consists of a number of layers described in the figure below, the exact dimensions and material selection are not described.



About the author

We who wrote this have worked to create a solution that will increase the security of your properties. Our background is entrepreneurship, industrial processes, research in printed electronics, project management and the realization of newly developed industrial projects.

About InviSense AB

InviSense is a company that aims to become a world-leading smart solutions provider to measure moisture properly. Which will provide good knowledge and decision-making for entrepreneurs, facility owners and managers about the well-being of the property.
We are constantly looking for better and more efficient solutions and never really satisfied but go on to reach where no thought it was possible to go.