

A photograph of a modern office interior, overlaid with a semi-transparent red filter. The office features large windows, a long wooden table with chairs, and a large pendant light hanging from the ceiling. A television screen is visible in the background.

We helped HB REAVIS, a development company, to **create ideal working conditions**

The international developer HB REAVIS has internally set its mission: designing office premises where employees will feel good and enjoy spending time. They design premises around the world that support personal development, reduce stress and improve health. It is not possible to achieve optimum working environment without fresh air, and, therefore, they asked us to **develop an air quality meter.**



The brief: we need to measure the quality of air

Office employees spend at least **8 hours** indoors, which is a substantial part of the day. In order to create an environment at **HB REAVIS** where employees will feel good throughout their working day, there is a need to **measure the quality of air**. According to the continuously obtained data, they **regulate the oxygen supply** or room temperature.

According to the research pursued by Harvard Medical, the level of **CO₂** (carbon dioxide) has a significant impact on work performance. At a **low level of CO₂ in the room**, i.e. in an environment that is not airless, employees feel good, focus more on work and **deliver** at least **15% better performance**. In addition to CO₂, other air values affect enthusiasm at work as well.

At HB REAVIS, they are aware of this, so they asked us for a **device to be placed in the interior to measure:**

- + CO₂ (carbon dioxide)
- + VOC (volatile organic compounds)
- + air temperature
- + and air humidity

Our client wanted to use our devices in a **socially responsible manner**, so we were keen to solve these challenges in the best way possible.

Our solution: radio communication boxes placed in a smarter way

Following the given requirements, we chose the **COOPER** hardware platform from our BLOX system . It measures all the monitored indoor ambient quality parameters and, **using local radio communication** (Sub-GHz), it is connected to a single-board computer gateway meeting the industry standard.

We put the finished devices in industrial **cases designated with the customer's logo**, which we have adapted to optimize the passage of air through the sensors. The developer will affix the devices **to the walls in individual offices**, where they will capture the required quantities and send the data **to the central cloud** through radio transmission.

This allows users to check the **current level of CO₂** or other values on monitors connected to the IoT and, based on these data, the system **will adjust** the air conditioner, windows, blinds and other equipment itself to make for ideal working conditions

In addition, low power design and optimized firmware ensure that **the device will run on 3 AA alkaline batteries for approximately two years**. Then just buy new batteries in any store and simply replace them. As a result, the management simply includes replacement of batteries in regular maintenance work.

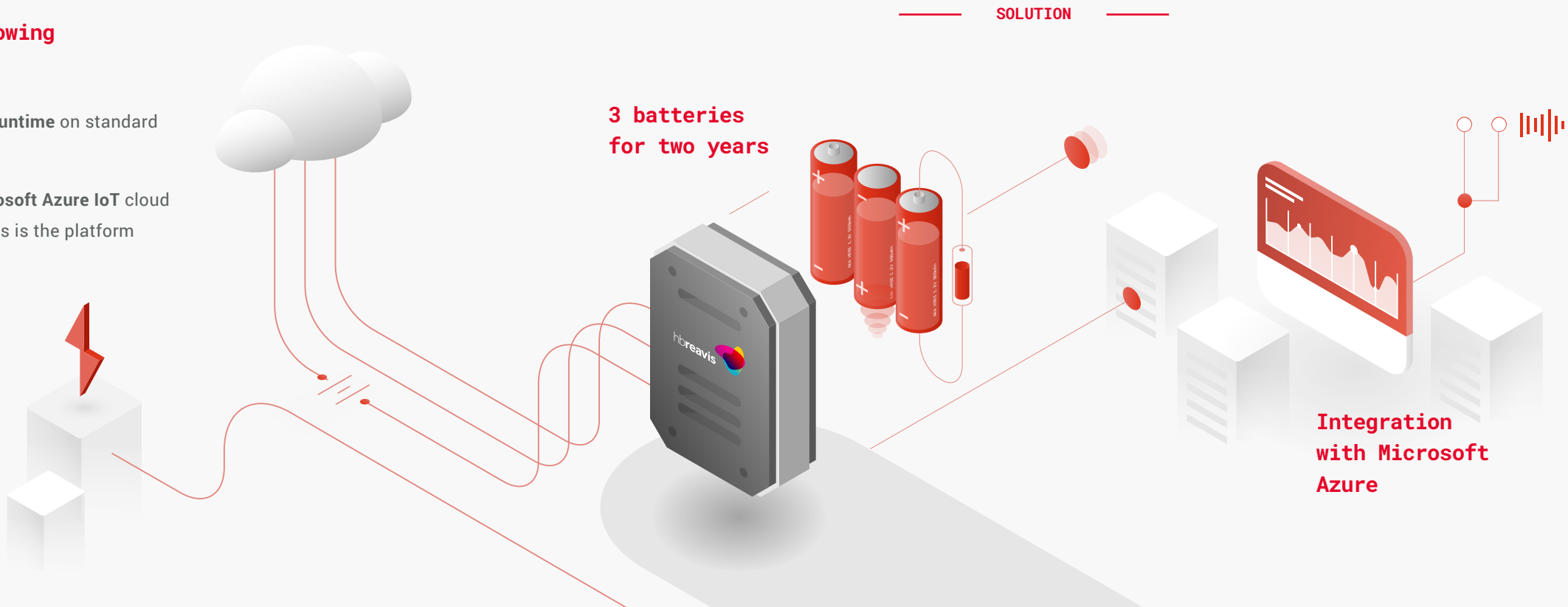


We used the following technologies to run this device:

Our **indoor COOPER IoT platform**, Sub-GHz **radio transmitter** (868 MHz), **industrial gateway** equipped with USB dongle with radio communication and **integration** with Microsoft Azure.

We had to face the following challenges:

- + The device must have a **long runtime** on standard AA batteries.
- + Interconnection with the **Microsoft Azure IoT** cloud platform must be ensured. This is the platform which HB REAVIS uses for its internal systems already.





"Partial custom delivery of multi-sensors from HARDWARIO has fitted in our eco-system in HB REAVIS as a reliable data source built on a low power wireless infrastructure. We rely on it in monitoring, evaluating and optimizing the quality of the indoor ambient. We are looking forward to further iterations!"

HB REAVIS

The result: smart offices that create ideal working conditions

We implemented the first device in the **HB REAVIS headquarters in Bratislava**. Developers affixed inconspicuous boxes with the company logo to the walls of all the offices. They were enthusiastic about the results and, subsequently, equipped their office buildings in London.

Not only **will the device create ideal working conditions** for the employees in which they will feel good, avoid health problems and increase their performance, but will also make it easier for the office staff to work more productively. Thanks to the IoT cloud connection, they **do not have to deal with the excessive amounts of CO₂ themselves**, but a smart office **itself will automatically adjust the** climate conditions.

By monitoring data about indoor ambient **on a long-term basis**, users may optimize internal technologies, work processes, future construction standards, as well as significantly save operating costs of the buildings. Moreover, long-term measuring of indoor ambient quality (CO₂) is

a mandatory **precondition for obtaining the green building certificate**. Therefore, the devices are valuable not only for the current employees working in HB REAVIS buildings, but also for developers themselves and their future projects.

Would you like to experience a similar IoT story with HARDWARIO?

Let us know on aks@hardwario.com



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