

To achieve good indoor air quality enforceable rules and close monitoring are indispensable.

In order to avoid Covid-19 infections via aerosol clouds, the government is focusing on ventilation and a limited use of CO<sub>2</sub> monitoring. However, safeguarding good indoor air quality is much more complex than installing CO<sub>2</sub> sensors. It requires a well-considered approach, which imposes enforceable rules for indoor air quality that are actually monitored. That is the view of Nico Seymus of the TIC company Vinçotte. Vinçotte offers customers an objective assessment and delivers advice on the best risk reducing ways to fight covid-19 in indoor environment. After a positive audit, certifying all actions to mitigate risks for indoor spreading of corona-virus, they certify as Safezone.

The Belgian government is slowly releasing the most stringent limitations, but keeps a focus on ventilation to prevent the transmission of the Covid-19 virus via aerosol in indoor spaces. The CO<sub>2</sub> concentration can be used as a parameter to determine the density of aerosols in indoor spaces. A high aerosol density does not necessarily mean that there is a risk of contamination. This would require an infected person effectively shedding virus particles, which then spread via aerosol and a receivable other human at the other end.

But good air quality is more than just an optimal CO<sub>2</sub> concentration, explains Nico Seymus. Within Vinçotte, an expert team is involved in determining indoor air quality and performing risk analyses for a safe working environment. In addition to measuring CO<sub>2</sub>, this also includes measuring pollen, volatile organic compounds, resins, viruses, bacteria, fungi and gases. For all these parameters there are guidelines in place within the EU, but these are not binding. There are

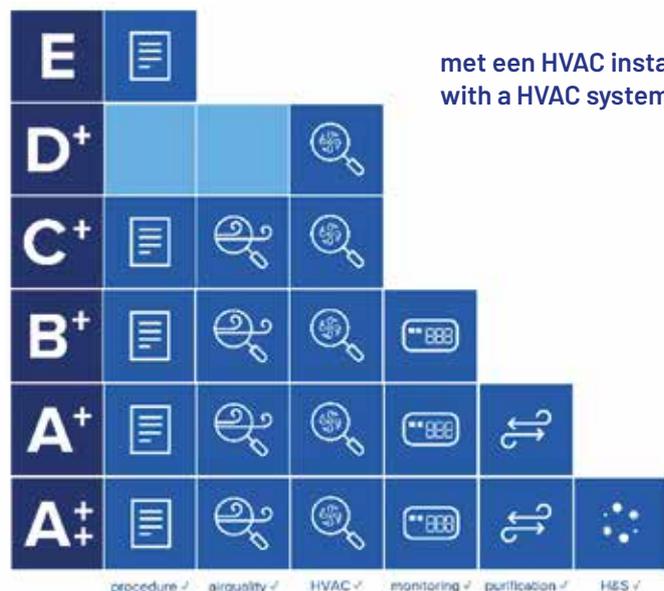
therefore no binding rules and no required monitoring in Flanders and, by extension, in Belgium as a whole. In May, the government consolidated in its Ministerial Decree that the indoor CO<sub>2</sub> concentration should be lower than 900 ppm, although the Health Counsel recommended 800 ppm CO<sub>2</sub>. "That is relative and it largely depends on where exactly the CO<sub>2</sub> meter is placed. If you place it near an open window, a high value will rarely be measured, while a higher concentration can certainly arise in other places in the room especially when it's crowded," says Nico Seymus. Vinçotte has a safe zone certificate that provides a scale of different gradations and focuses firstly on organisational measures. Higher levels include ventilation and even the use of bio-organisms.

All building regulations focus on energy efficiency which means that airtight buildings are being constructed. Ventilation is part of the EPB regulations, but good IAQ is not guaranteed. Another factor is the air exchange rate of a room, which, converted, must always remain below the maximum threshold of 900ppm CO<sub>2</sub>. Due to the Covid-19 pandemic, the need for proper ventilation has suddenly become an issue on the agenda. Existing ventilation systems often have no, or decent filtration of the recirculated air; it was never really a point of attention that recirculated air also needs to be of good quality. In light of the pandemic the guidelines from international experts were that recirculation should be turned off. To make indoor spaces safe, sufficient ventilation must be provided, preferably in such a way that 100% of the air is discharged outside and 100% fresh air is drawn in. This means that under cold winter temperatures, you will be taking in air at 5°C (41° F), which you have to warm

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up to 20°C (68° F) before it is blown into the room or space. This is a process that consumes a huge amount of energy and has a high impact on the carbon footprint. "That can be solved by equipping ventilation systems with the right filters, which are replaced at regular intervals. Yet this, too, is not straightforward: there are no crystal-clear rules and independent monitoring is not mandatory", explains Nico Seymus.

of Covid-19, is being placed on adequate ventilation. The Belgian task force responsible for advising on air quality proposes a ventilation rate of 40 m<sup>3</sup> per person per hour. This can be achieved through mechanical ventilation as well as through natural ventilation by opening windows and doors. With mechanical ventilation via HVAC devices, it is possible to meet the required standard, yet it does not guarantee the quality of the ventilated air. "A periodic check is essential

## **"It is incomprehensible that there are regulations concerning the availability of clean water and food quality, but not about air quality"**

In Scandinavian countries, there is much greater awareness about indoor air quality and the government is pursuing a vigorous policy. Could this be an example? "In Scandinavian countries, much more attention is paid to this aspect and there is an effective market for companies that sell 'healthy air'. We are not there yet. But the Covid-19 pandemic should nevertheless be an alarm signal and should generate momentum that will lead to far-reaching reflection and action. Vincotte is in favour of clear and well-considered legislation that sets unambiguous standards for indoor air quality, enforced through monitoring.

There are many examples of situations that have gone wrong in buildings. Errors that are made in design, construction and periodic renovations (landscape offices) that do not take into account the building's history. The life cycle of a ventilation system and its effectiveness over that entire period, is never guaranteed. Even at the very onset, upon commissioning, many errors remain undiscovered. Unbeknownst to the user and often the owner as well. A mandatory commissioning process would already represent an enormous improvement, but full process monitoring over the entire asset life cycle, taking into account life cycle costs and modifications, would be a truly sustainable policy. Without the government enforcing rules, the industry will move very slowly. If building owners really want to guarantee good air quality, they will require engineers and construction companies to improve design and delivery, with quantifiable results in the field of dynamic control, acoustics, flow and monitoring of indoor air quality.

A step in the right direction is the focus that, in the context

to determine whether the devices work properly, ventilate sufficiently and whether the filters have been replaced at the proper interval. If not, you can achieve the necessary flow rate, but there is a chance that you will be pumping polluted air into the indoor spaces. If the choice is made to open windows, this can lead to excessive concentrations of particulate matter, depending on the geographical location of the building, for example in cities or near busy arterial roads. It is essential that the entire process is examined and all factors are taken into account. Is there a financial cost associated with such an exercise? Undoubtedly, but it can reduce absenteeism due to illness. "We want to cooperate in developing these protocols so that such pandemics can no longer gain a foothold.", continues Nico Seymus.

"We advocate teams of multidisciplinary experts who carry out a risk analysis of certain situations and advise on the necessary measures. Our goal: a guaranteed safe air environment for everyone. How you achieve this can differ and can depend on the situation."

Due to the Covid pandemic, policy makers are increasingly aware of the impact of indoor air quality on health. Many initiatives are being launched in the field in which a multidisciplinary approach is very important. We have shifted up a gear in terms of focus on this issue and hopefully this is the start of a sustainable process towards an enforceable high standard for indoor air quality. There is a danger that vaccination and group immunity will cause attention to wane and that, if we fail to consider the future, we will make the same mistake with the next airborne pathogen. Sustainable investment in the future is necessary now.



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Nico Seymus

Nico Seymus is responsible for the consultancy services at Vincotte. He works in the industrial environment and has broad experience in asset management, maintenance management, engineering and advises companies on how to optimise business processes. Currently he is also the project leader of a group of experts on HVAC and IAQ.

More than just inspections, Vincotte invests heavily in innovation and has the ambition to become a true customer-centric solutions provider. In this ambition separated services are being aligned in order to focus more on the user side of equipment, like guaranteeing IAQ.

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