



Steam humidification ends winter illness crisis in Bambi Nursery's new building

After outgrowing its first building in mid-2014, the Bambi Nursery moved into a new building in the Klitsberg neighborhood in Paal, Belgium. Expanded capacity and a growing staff fueled euphoria and optimism during the new start. However, the joy turned to gloom during the winters of 2015 and 2016, when a remarkably high number of illnesses spread through the children and staff.

Despite their best efforts, including disinfectants, the illnesses persisted, and the cause remained a mystery to An Derijck, in charge of children's daycare, and her team.

"At one moment, 9 of the 15 employees were sick, all with similar symptoms," Derijck recalls. Even the children couldn't get away from it. "Yes, it's winter, and you know that a person can get sick easier," Derijck allows, "but there had to be more to it; moreover, both winters we faced the same amount of sick leaves. And in the past we never had to record

as many absences." It was as if there was something in the air.

Marc Vanhees, head of technical service at OCMW Beringen, joined Derijck in seeking a solution. In his spare time, Vanhees studied the air quality of buildings and completed a training course at Beweging.net.

"The new building is equipped with a ventilation system, a must for the VIPA (Flemish infrastructure fund for care institutions) funds," explained Vanhees. "This balanced ventilation provides inflow of fresh air and outflow of contaminated air. All was

well until winter began. Relative humidity should be between 40 and 60 percent, but ours dropped to 13 percent in some instances."

With all building systems linked to the building management system (BMS), space conditions were monitored and displayed. However, without a humidification system there was neither a call for, nor a display of, relative humidity.

"That's why we didn't immediately make the connection with the indoor climate as a possible cause of the problem," said Vanhees. "We decided

to start monitoring the air, and then a lot became clear.”

The first effort to reach the desired relative humidity range was to install two semi-industrial humidifiers that ran day and night. Although each humidifier dispersed 40 liters of water per day, the humidified air was quickly drained by the ventilation system.

Derijck was not about to give up. “As a member of the World Services Group we asked them for advice.” WSG contacted VIPA about the problem in the air at the Bambi Nursery. In conclusion, the combination of in-floor heating, a ventilation system with very little outside air, and a well-insulated building was the most likely cause of moist air getting drained.

Vanhees explains how the new information was put to use. “We contacted the floor heating and ventilation fitter. He had never faced this problem before, so we gathered information from among his fellow experts. That’s how we eventually found a solution.”

The solution, running since February of 2017, is a humidification system that disperses steam into the air, automatically maintaining 50 percent relative humidity in all occupied spaces.

Does the new system work?

“We immediately saw the positive effects,” Vanhees confirms.

The steam humidification system required additional capital investment and has increased electrical costs, so the nursery

is considering solar panels to help compensate for the energy consumption.

Could the air quality problem have been avoided?

“It is quite a special story,” Derijck admits. “I hope that our case can prevent such problems for other health care institutions. We have experienced two long winters because of this.”

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www.actualcare.be/nl/nl-technics/nl-technics-hvac/luchtvochtigheid-bambi-beringen



The solution, as explained by Marc Vanhees

Steam is injected through a probe into the air ducts, just behind the ventilation units. Because it is steam, the danger of legionella infection is limited; everything is germ free. Too-low humidity was bad for children and staff. Building materials can also be affected. They can dry out and shrink, causing fissures and cracks. From now on, we regularly check air samples.