

**Company:**

In 1997, the Seine-Eure community of communes consisted of three communes (Louviers, Incarville and Val-de-Reuil). Having become an agglomeration in 2001, it now includes 60 communes.

Project:

Installation of Halo devices in the dormitories of Cascadine childcare centre, a designated "Écolo crèche", to reduce the risk of airborne infection and particulate pollution in order to protect the children.

Designer:

Erlab provided support to the Seine-Eure Agglomeration for this project.

Location:

Cascadine childcare centre
Louviers – Eure – France

The Erlab ecosystem:

1 Halo 25 Bifiltration
air purifier

Integration partner:

SAPIAN

Environment/activity:

The Halo 25 Bifiltration will be used to treat the particulate, viral and molecular load in the dormitory to reduce the risk of airborne infection (particularly Covid-19) and reduce particulate pollution to protect the children while they sleep.



CASE STUDY

HALO

How can we reduce the risk of airborne infection and manage dust levels in childcare centre dormitories while improving the building's ventilation (HVAC*) and energy performance?

**Heating, ventilation and air conditioning*

SCOPE

Childcare facilities are subject to indoor air pollution of various origins: it is generated by human behaviour and activity (cleaning products, art supplies, bacteria, viruses, etc.) and air pollution (fine particles, pollen, industry, vehicle exhaust gases, etc.). However, children are much more sensitive and vulnerable to air pollution.

Concerned about the well-being of the children under their care, elected officials in the Seine-Eure region raised the question of the risk of virus transmission within childcare centres. They began to explore the existing preventative solutions that could help reduce this risk by improving the Indoor Air Quality (IAQ) and energy performance of childcare facilities.

This led them to ask Erlab to install a Halo 25 Bifiltration air purifier in one of the dormitories of the Cascadine childcare centre in Louviers. The aim was to carry out an initial test to measure the Indoor Air Quality following the installation of a Halo 25, and then to roll out the installation to the rest of the establishment's dormitories if the results of this first test were conclusive.

CHALLENGES/REQUIREMENTS

As this was a childcare facility, it was important to find a solution that would protect the occupants **without taking up floor space** required for daily activities and without disturbing the children's sleep.

To correctly calculate the scale of this project, **Erlab provided support to the Seine-Eure Agglomeration** and prepared a risk analysis – taking into account the high-risk areas, surface areas, volumes and occupancy levels of the rooms – in order to install the Halo 25 air purifier and carry out a sufficient number of filtered air changes.

SOLUTION

Following the risk analysis carried out by Erlab, it was determined that a Halo 25 Bifiltration with three air changes per hour would be best suited to this particular situation. Following installation, a particulate concentration reading was taken with and without the Halo 25 Bifiltration.

The Halo standalone smart air purifier, installed on the ceiling, was found to be perfectly suited to the Seine-Eure Agglomeration's requirements for the Cascadine childcare centre.

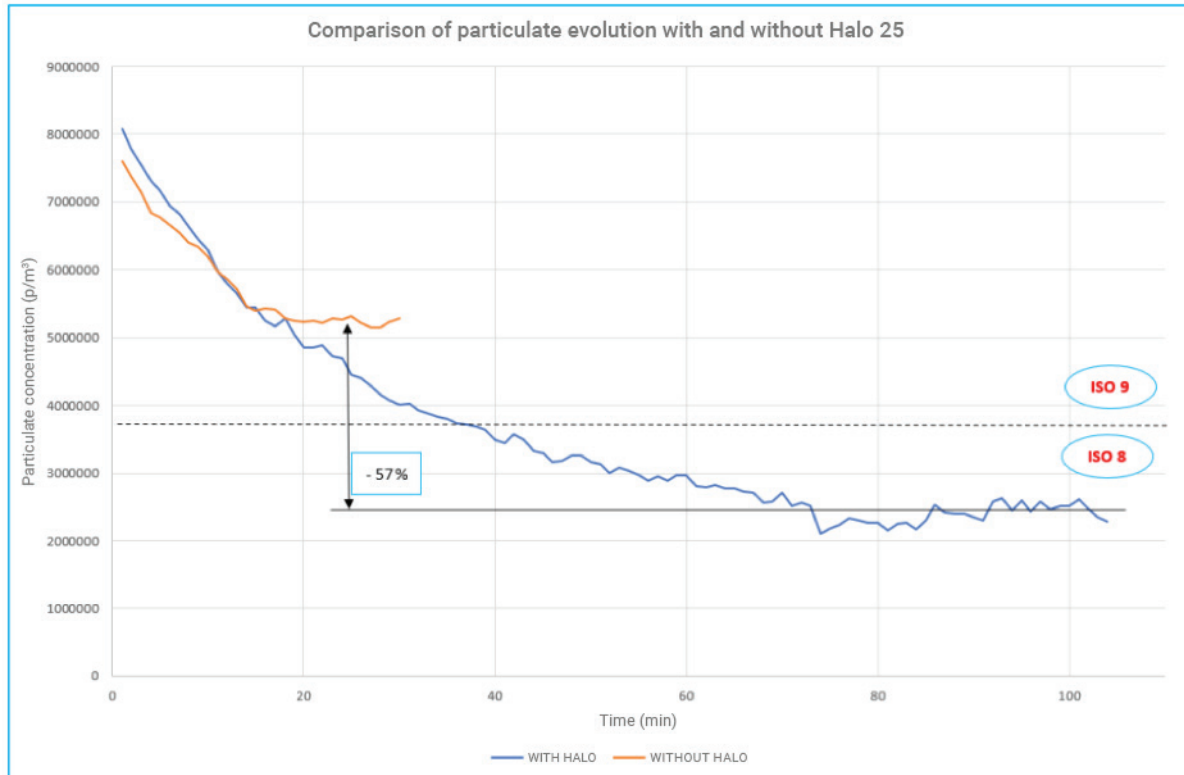
The Halo includes a HEPA H14 filter (compliant with the EN 1822 safety standard) offering a very high level of filtration of aerosols larger than 0.1 microns with 99.995% efficiency, as well as an activated carbon filter (compliant with the NF X 15-211 safety standard), which guarantees complete molecular filtration of a wide variety of air pollutants such as Volatile Organic Compounds (VOC).

In addition, **the Halo has no impact on the building's ventilation (HVAC^{*})** since it is **not connected to an extraction system**. It thereby considerably reduces the infrastructure costs that would have arisen from modifying the existing system and also reduces the building's energy consumption (35W energy consumption).

**Heating, ventilation and air conditioning*



RESULTS



----- : Particulate class change threshold (ISO 9 to ISO 8)

The impact of the Halo 25 Bifiltration is shown by a reduction in the $\geq 0.5 \mu\text{m}$ particulate concentration of up to 57% between the two stabilisations (with and without Halo 25). A very low particulate concentration of 2.3 million $\geq 0.5 \mu\text{m}$ particles was reached, which corresponds to ISO 8 according to the ISO 14644-1 standard for particles sized $\geq 0.5 \mu\text{m}$.

The dormitory now has a sufficient number of filtered air changes to **reduce the particulate load in the room by up to 57%**.

The **three filtered air changes** per hour provided by the Halo 25 Bifiltration **considerably reduce the risk of airborne infection and particulate load in the dormitory**. The Seine-Eure Agglomeration was therefore able to deliver a solution for managing dust levels and providing additional protection against the risk of airborne infection for the children while they sleep, while also improving the building's energy performance.

This solution provided:

- Control of particulate, viral and molecular pollution in the dormitory with due regard to the building's requirements and the established budget.
- Safety and protection for children and staff at the Cascadine childcare centre.



The Erlab Research and Development laboratory

About Erlab

Since 1968, **Erlab** has been a specialist, inventor and world leader in **ductless, zero-emission filtering fume hoods for laboratories** to provide total safety in chemical handling.

1 Erlab filtration

We provide technologies to protect laboratory staff from inhaling chemicals. This is made possible thanks to our **Research and Development (R&D) department**, which has continuously improved our filtration technology **for more than 50 years**. That's why, in 2009, we invented the **ERLAB ABOVE** label for tried and tested filtration technology.

2 The AFNOR NF X 15-211: 2009 standard

Erlab's filtration technology conforms to the **NF X 15-211: 2009 standard**, the industry's most demanding standard for molecular filtration, developed by a committee of independent scientists and specialized manufacturers.

This text imposes performance criteria linked to:

- Filtration efficiency
- Containment efficiency
- Air face velocity
- Documentation: **chemical listing**

3 The ESP programme

A set of three services included with the purchase of each device designed to ensure your safety.



eValiQuest Risk analysis – Determination of protection needs – Determination of ergonomic needs.



ValiPass Certified installation – Total safety for handling.



ValiGuard Ongoing monitoring – Preventative and maintenance inspections – Device reconfiguration based on protection needs – Development of handling.

4 Flex technology

The combination of molecular and particulate filtration technologies allows a single device to meet laboratories' protection needs. This innovation from Erlab's R&D department offers unprecedented **flexibility, versatility and value**. A single device can be reconfigured over time and easily reassigned to other applications.

5 Smart technology

Smart technology is a **simple and innovative** means of communication that improves safety. This technology uses a light and sound signal to indicate the user's level of protection. The advantages of the technology are:

- 1/ Light pulsation:** Real-time communication via LED light pulses intuitively alerts the user to the device's operating status.
- 2/ Simplicity:** One-touch activation.
- 3/ Detection system:** The exclusive detection system continuously monitors filtration performance.
- 4/ Built-in monitoring:** This service provides direct access to the **status, settings and history** of your device.

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