

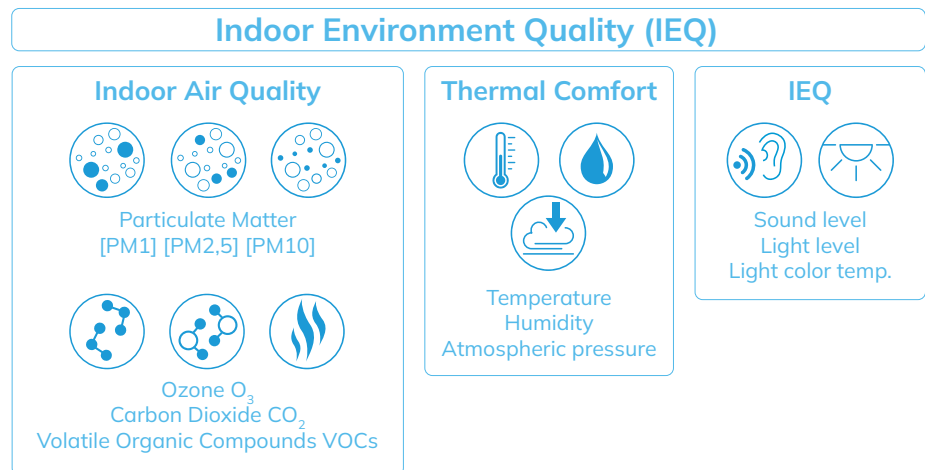
# Halton AirWatch

The Indoor Environment Quality  
Sensor Elevating Wellbeing Alongside  
Significant Energy Savings





# The First of its Kind Multi-Factor Sensor to Assess the Indoor Environment Quality of Commercial Kitchens



Let's go straight to the point. Cooking is recognized as a heavy source of indoor pollution in commercial kitchens, just as the cleaning operations.

Some researches have shown that for every 1000 pounds (454 kg) of hamburger cooked on conveyor broilers, 25 pounds (11 kg) of emissions are created. Fatty foods cooked with high heat (especially with open flames) or frying are the cooking processes that create the most emissions but, all things being equal, all cooking appliances release pollutants.

What's at stake? VOCs (Volatile Organic Compounds), fine particles, CO<sub>2</sub> (gas combustion) and other substances and pollutants that are harmful to health.

When the kitchen is equipped with highly efficient hoods or ventilated ceilings, the vast majority of them are captured and removed. However, as efficient the capture devices are, they are never at 100%. Unusual use of the cooking appliances may also lead to abnormally pollutants emissions. Some small cooking or preparation equipment are not "covered" by any exhaust device, and yet they can emit pollutants. How to address these facts?

The growing needs to save as much energy as possible makes the airflow optimization technologies close to be a must in any commercial kitchen. Again, as efficient and reactive they are, how to be sure the savings are not made at the expense of the air quality?

At last, cleaning products also release pollutants, mainly VOCs. And yet, they are often used when the ventilation works at low level.

Halton's AirWatch Sensor was designed to address all these challenges and place the Indoor Environment Quality and health of the kitchens' staff to the forefront. When combined with M.A.R.V.E.L. airflow optimization technology, Halton AirWatch enables reaching the best balance between energy savings and IEQ.

**Good to know:** Our Air Quality Index model and sensors selection is based on recommendations of various environmental authorities, including World Health Organization (WHO), EU Air Quality Directive, EU Common Air Quality Index, and WELL V2 Air Quality Monitoring and Awareness standard.



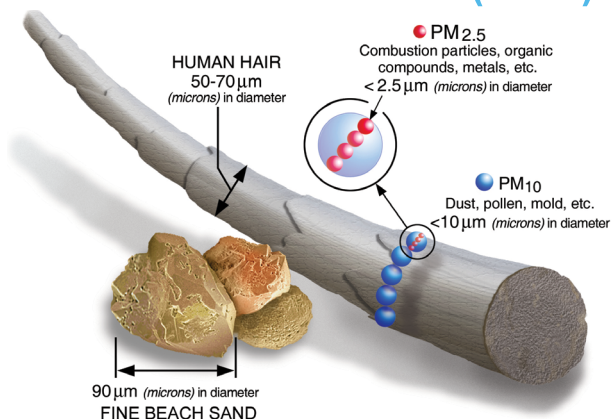
## Health Impacts of Particulate Matter (PM)

**PM<sub>10</sub>** : Inhalable particles, with diameters that are generally 10 micrometers and smaller.

**PM<sub>2.5</sub>** : Fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.

How small is 2.5 micrometers?

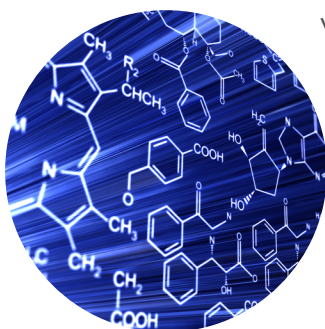
Think about a single hair from your head. The average human hair is about 70 micrometers in diameter – making it 30 times larger.



Exposure to such particles can affect both your lungs and your heart. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including:

- Premature death in people with heart or lung disease
- Nonfatal heart attacks
- Irregular heartbeat
- Aggravated asthma
- Decreased lung function
- Increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.

## The Volatile Organic Compounds (VOCs)



Volatile organic compounds, or VOCs, are gases that are emitted into the air from products or processes [...] Some can react with other gases and form other air pollutants after they are in the air (American Lung Association).

Breathing VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system and other organs. Some VOCs can cause cancer (American Lung Association).

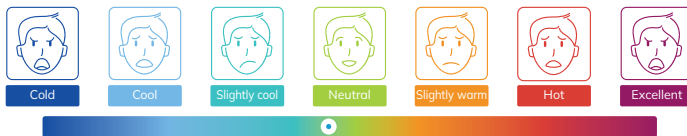
In commercial kitchens, the odors are mainly carried by the VOCs (in addition to particles).



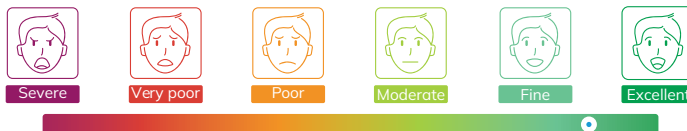
# When Halton AirWatch Meets M.A.R.V.E.L. your Kitchen Ventilation « Senses » and « Sees »



## Thermal Comfort Index



## Air Quality Index



**Halton AirWatch sensor monitors Indoor Environment Quality (IEQ) and « senses » whether its quality is improving or declining**

Halton AirWatch monitors no fewer than 9 factors that are representative of thermal comfort and potential exposure to pollutants in commercial kitchens.

It provides clear and simple indexes for Thermal Comfort and Air Quality levels, which are two of the key components of good Indoor Environmental Quality and working conditions. They can also be considered reliable indicators of efficient ventilation design and airflow optimization technologies.

Optimizing airflows is precisely what the M.A.R.V.E.L. airflow and energy optimization technology excels at - and now it expands its capabilities to a new dimension: Indoor Environmental Quality and staff wellbeing.

**M.A.R.V.E.L. monitors cooking activity and « sees » when airflow can be reduced or needs to be increased**

Equipped with the Halton Thermal Imaging sensor, M.A.R.V.E.L. scans the surface of cooking blocks with precision, even allowing it to distinguish between the appliances they contain.

This capability enables M.A.R.V.E.L. to adjust ventilation requirements based on real-time kitchen activity.

M.A.R.V.E.L. offers the highest energy-saving potential of any kitchen ventilation system.



# Benefit from the Best Balance Between Massive Energy Savings and Staff's Wellbeing by Combining M.A.R.V.E.L. and Halton AirWatch



Thanks to Halton AirWatch, M.A.R.V.E.L. delivers substantial energy savings while continuously monitoring Air Quality, a key factor in Indoor Environmental Quality and the kitchen staff's working conditions and wellbeing.

All these innovative technologies are monitored 24/7 via the Halton Connect web portal. Between energy savings and Indoor Environmental Quality, priority can always be safely given to IEQ.

If ventilation levels frequently need to be increased due to declining Air Quality, it often indicates that one of the factors affecting pollutant capture is not optimal and requires adjustment. This could

also result from changes in kitchen organization. In any case, our technicians can remotely make all necessary adjustments.

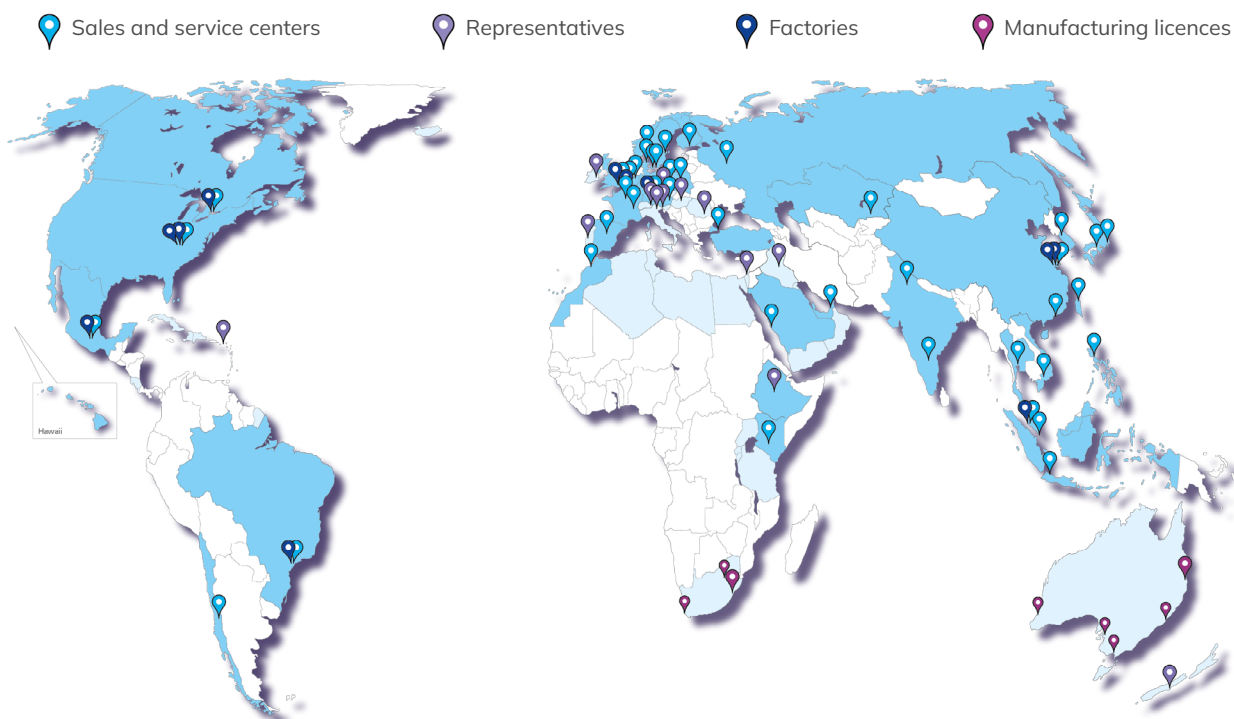
With Halton AirWatch and M.A.R.V.E.L., energy savings are never achieved at the expense of staff health and comfort - and vice versa.

It's truly about striking the ideal balance between energy savings, staff wellbeing, and productivity.





## Halton Manufacturing and Sales Facilities in the World



## Halton Foodservice Partnerships



Halton has a policy of continuous product development, therefore we reserve the right to modify design and specifications without notice.  
For more information, please contact your nearest Halton agency.

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