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At Spæncom in Aalborg, factory manager Morten Adler Kjærgaard Andersen had been wanting to do something about the air in his office-cum-meeting room for some time.

It is a nice, bright office of 24 m², which, in addition to office facilities, also has an area with a meeting table. Morning meetings lasting around 15–30 minutes – sometimes longer – are often held here with 5–6 people.

East facing with large windows, the office can become quite hot in the morning. But the temperature was not his main concern when the factory manager requested an Airmaster for the office. He was looking for an improvement in the air quality.

“The most important thing for me was to improve the air replacement. Cooling was not a priority at that point. Should it become relevant, we can always retrofit a cooling module,” says Morten, and continues “There is a clear difference in the air quality now that the Airmaster has been installed.”

The air is totally different now - a lot fresher.

CONSULTANT VISIT

An Airmaster consultant visited Spæncom to discuss their needs and to check out the physical conditions on site. Based on the client’s wishes and the size and usage pattern of the room, Airmaster dimensioned an AM 300 ventilation unit for the job.

The Danish Working Environment Authority’s requirements regarding noise emitted by technical installations have been more than met. Research and development in sound are very much in focus at Airmaster, which also involves sound attenuation from the outside. So, outside noise is attenuated to virtually nothing thanks to the unit’s sound insulation.

EASY IMPLEMENTATION

The ventilation unit was installed in just one day. The “plug-and-play” solution meant that it was not only quick and easy to install it, but unit was also ready for use immediately – as soon as it was connected to the power. “Operation air quality” was a straightforward project with fast implementation. There was no drawn-out design or installation period.

Airmaster’s ventilation units are based on the principle of balanced ventilation where the same volume of air is supplied to and exhausted from a room, without causing negative pressure or positive pressure in the room. An efficient heat exchanger converts the heat from the exhaust air into energy, which then heats the supply air. With heat recovery of around 85% and very low energy consumption, it is an extremely energy efficient solution for optimising the indoor climate in the office.



Factory manager, Morten Adler Kjærgaard Andersen

DAY-TO-DAY OPERATION

The supply temperature and operating times can be set on the control panel supplied, which is mounted on the wall.

Morten occasionally checks how and when the units runs.

“It’s been nice to be able to see actual readings of the air quality in the office, and to compare it to how it was. As I said before, I can really notice a difference in the quality of the air. On the other hand, I don’t notice the unit – there are no draughts and no noise, so even though it’s visible in the room, it’s very discreet. Visually, however, I think it’s a plus that it can be integrated into the ceiling, so it’s hidden away a little.”



Without ventilation

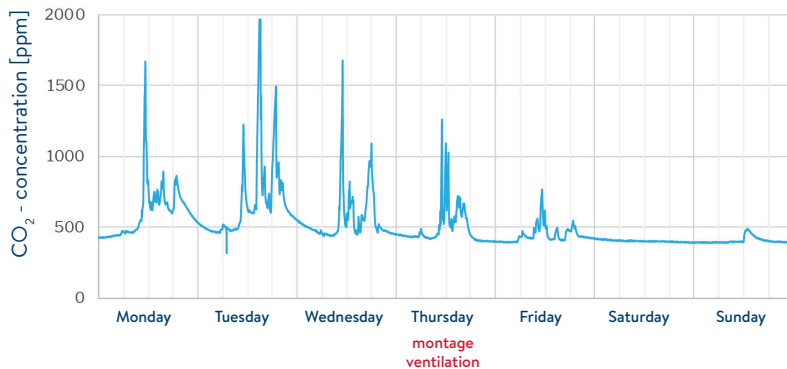


Figure 1: CO₂ level week 37

the ventilation unit will be installed on Thursday, so it is primarily a week without ventilation with peaks at just under 2,000 ppm.

With ventilation

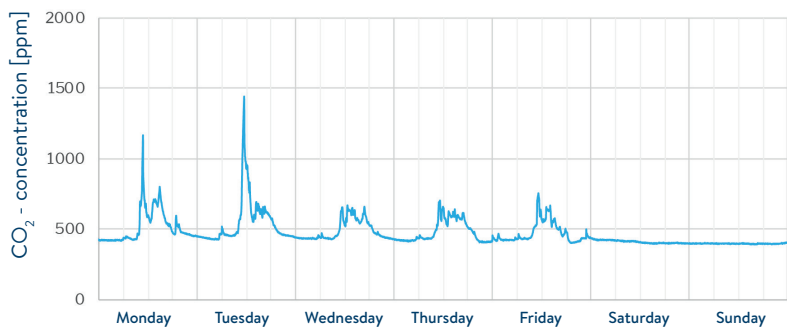


Figure 2: CO₂ level week 39.

It has been a week of mixed activity in the office – both the usual morning meetings and some longer meetings. On both Monday and Tuesday, the office has functioned as a meeting room with longer meetings, when the CO₂ level has risen.

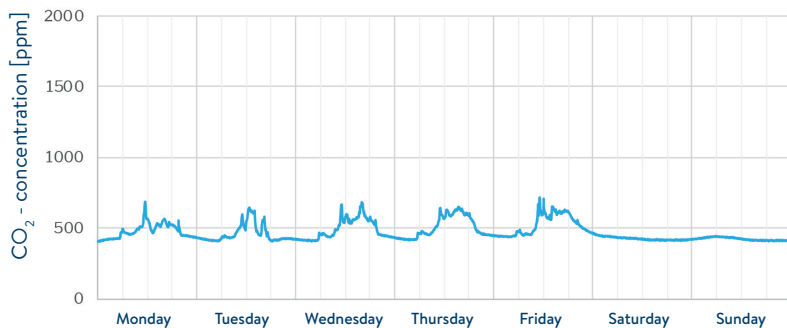


Figure 3: CO₂ level week 40.

A typical week with the regular meetings and no major fluctuations.

CO₂ READINGS

The ventilation unit has a built-in CO₂ sensor which is used for automatic on-demand control of the airflow, which can also be used to monitor the CO₂ level.

But in order to be able to compare it to what it was like before installation, a CO₂ monitoring station was placed in the office for 4 weeks – before and after.

The graphs below are all from this monitoring station.

WEEK SCHEDULE AND DEMAND CONTROL

The Airmaster is controlled according to a weekly schedule, i.e. it runs on weekdays between 06.00 and 17.00 with a minimum capacity set to 30%. With a built-in CO₂ sensor and on-demand control according to this, the Airmaster will run at higher capacity when the CO₂ level rises above the desired level.

If the CO₂ level and airflow curves are superimposed, it is clear that the on-demand control causes the Airmaster to run at higher capacity as the CO₂ levels rise.

When used as an office for just one person and the short daily meetings, it is sufficient for it to run with an airflow of 30% from an Airmaster AM 300, but when there is a significant change in the number of people as well as the length of the meetings, well, you need a lot more air. The unit manages this by running at higher capacity, with brief peaks in CO₂ levels.

Perception that the air quality has changed, supported by the CO₂ readings, which are a good indicator of the quality of the indoor air.

DEMAND CONTROLLED VENTILATION

If you put the CO₂ and the air flow graph on top of each other, it is clear that the demand control increase the capacity when the CO₂ level rise.

Air flow [%]

CO₂ - concentration [ppm]

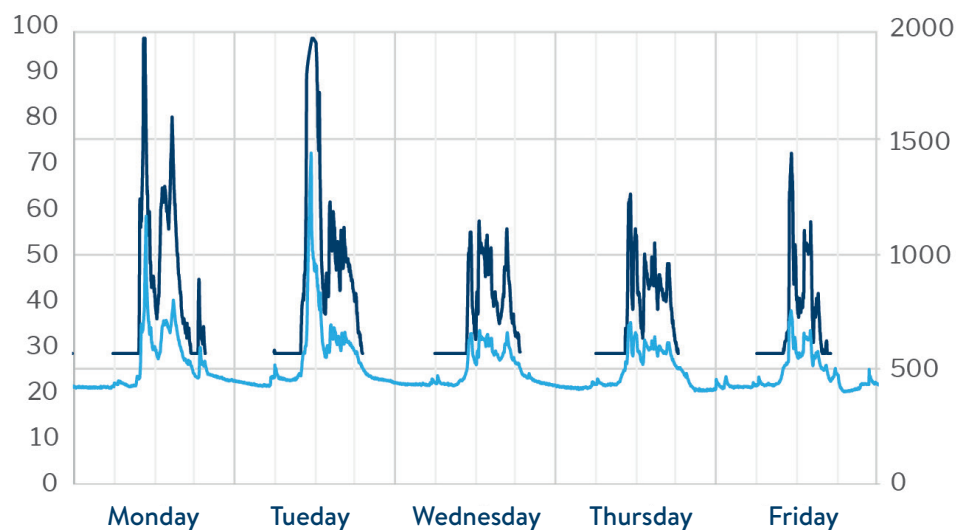


Figure 4: CO₂ level [ppm] and air flow [%] in week 39.

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ventilation in balance

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