What is smart ventilation? Presentation of the AIVC definition

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SUMMARY

In 2017, the Air Infiltration and Ventilation Centre (AIVC) identified smart ventilation for buildings as a new and important topic to be addressed. One of the tasks was to agree on a definition of smart ventilation, which was published in March 2018. The purpose of this presentation is to explain and illustrate the smart ventilation definition by AIVC.

KEYWORDS

Smart ventilation, controls, demand-controlled ventilation, smart grids, sensors

1. CONTEXT

In March 2017, the AIVC (Air Infiltration and Ventilation Centre) Board identified smart ventilation for buildings as a new and important topic to be addressed.

Several actions were defined by AIVC Board about smart ventilation in order to exchange and disseminate information. A working group of AIVC experts from several countries was created (see section 2).

One of the identified tasks was to agree on a definition of smart ventilation. This definition was published in March 2018 by AIVC (Durier, Carrié, Sherman, 2018).

2. DEFINITION

The definition of smart ventilation by AIVC is as follows:

"*Smart ventilation is a process to continually adjust the ventilation system in time, and optionally by location, to provide the desired IAQ benefits while minimizing energy consumption, utility bills and other non-IAQ costs (such as thermal discomfort or noise).*

A smart ventilation system adjusts ventilation rates in time or by location in a building to be responsive to one or more of the following: occupancy, outdoor thermal and air quality conditions, electricity grid needs, direct sensing of contaminants, operation of other air moving and air cleaning systems.

In addition, smart ventilation systems can provide information to building owners, occupants, and managers on operational energy consumption and indoor air quality as well as signal when systems need maintenance or repair.

Being responsive to occupancy means that a smart ventilation system can adjust ventilation depending on demand such as reducing ventilation if the building is unoccupied.

Smart ventilation can time-shift ventilation to periods when a) indoor-outdoor temperature differences are smaller (and away from peak outdoor temperatures and humidity), b) when indoor-outdoor temperatures are appropriate for ventilative cooling, or c) when outdoor air quality is acceptable.

Being responsive to electricity grid needs means providing flexibility to electricity demand (including direct signals from utilities) and integration with electric grid control strategies.

Smart ventilation systems can have sensors to detect air flow, systems pressures or fan energy use in such a way that systems failures can be detected and repaired, as well as when system components need maintenance, such as filter replacement."

The purpose of this presentation is to explain and illustrate this various parts of this smart ventilation definition.

3. ACKNOWLEDGEMENTS

The author would like to thank Max Sherman (LBNL, USA) and Rémi Carrié (ICEE, France), co-authors of the AIVC Ventilation Information Paper n°38, which is the basis of this presentation.

The following persons also contributed to set up the definition of smart ventilation: Iain Walker (LBNL, USA), Pawel Wargocki (DTU, Denmark), Willem De Gids (VentGuide, Netherlands), Wouter Borsboom (TNO, Netherlands), Steven Emmerich (NIST, USA), Andrew Persily (NIST, USA), Carsten Rode (DTU, Denmark), Benjamin Jones (Nottingham University, UK), Karel Kabele (Czech Technical University Prague, Czech Republic), Peter Wouters (INIVE, Belgium), Maria Kapsalaki (INIVE, Greece).

4. REFERENCES

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