6 IEQ

6.4 VENTILATION

IEQ 11 LOCALISED VENTILATION

EXCLUSIONS

Item b) is excluded for residential buildings.

OBJECTIVE

Prevent exposure of building occupants to concentrated indoor sources of pollutants.

CREDITS ATTAINABLE

2

PREREQUISITES

Compliance with CAP 123J Building (Ventilating Systems) Regulations.

CREDIT REQUIREMENT

a) Source control

1 credit for the provision of an adequate ventilation system for rooms/areas where significant indoor pollution sources are generated.

b) Local exhaust

1 credit for the provision of a general exhaust system for future tenants.

ASSESSMENT

a) Source control

The Client shall provide evidence in form of a report prepared by a suitably qualified person detailing the design criteria that have been adopted and details of the ventilation system designs providing local exhaust where concentrated pollutant sources are likely to be present. A1

The report shall provide details of tests and the results demonstrating that the design performance is achieved. A2

Where the design ventilation rate specified is lower than that specified in a recognised international or national standard the client shall demonstrate through appropriate testing that there is 99% isolation between areas with concentrated pollutant sources and occupied areas. A3

b) General exhaust system

The report shall provide technical details to demonstrate how the ventilation system design(s) may be temporarily adapted so that air from any areas undergoing fit out or renovation can be exhausted to the outside without re-circulation or entrainment to occupied areas. B1

The ventilation provisions shall be adequate to exhaust to outside air any material off-gassing, combustion products, excess moisture, etc., and the exhaust is discharged such that it does not re-enter the premises or enter adjacent premises under typical wind conditions. Compliance may be demonstrated by conducting appropriate tests in a sample of units. B2

Where it can be demonstrated that source control measures can meet the performance requirements the credit(s) shall be awarded.

BACKGROUND

Concentrated pollution sources are best managed at source. The provision of localised ventilation, segregated from the general ventilation, is an appropriate strategy. In commercial and similar premises sources such as photocopying equipment, smoking lounges, etc. should be provided with dedicated exhaust systems. It is also appropriate to provide a system that allows for localised exhaust of premises during fit-out and redecoration, to avoid entrainment to occupied areas. It could be part of the fixed ventilation system, or a simple approach that allows temporary exhaust provisions. In other buildings local exhaust is intended to remove contaminants from specific rooms such as kitchens, in which concentrated sources are expected.

DOMESTIC KITCHENS

PNAP No. APP-130 [1] specifies performance based criteria for kitchen ventilation as an alternative means of satisfying Building (Planning) Regulations (B(P)Reg.) 30, 31 and 32. These criteria are 1.5 ACH under natural ventilation, plus 5 ACH from mechanical means i.e. these values are by definition the minimum legal requirement. Whilst these are performance based alternatives to the prescriptive criteria they are considered worthy of credit. It should be noted that specifying higher values may result in negatively pressurizing the building and causing other IAQ problems with in flow of air from other spaces.

Elsewhere, ASHRAE 62.2 [2] states that kitchen fans are mandatory as this standard considers that windows do not provide sufficient ventilation, although this standard specifically applies to low rise residential units (3 storeys or less above grade) and wind conditions may not be as favourable for ventilation as in the case of high rise buildings. The basic requirement is that a vented cooker hood can exhaust 100 cfm (approx 50 l/s). An alternative approach is that ventilation (either continuous or intermittent) of 5 ACH be achieved.

COMMERCIAL KITCHENS

In commercial kitchens a mechanical ventilation rate of 20 ACH may be appropriate [3] for the cooking styles found in Hong Kong.

BATHROOMS AND TOILETS

The Building Authority will give favourable consideration to an application for modification of Building (Planning) Regulation 36 in respect of bathrooms and lavatories in domestic buildings [4] where the following criteria are met :

- the room is part of a unit of accommodation for domestic use;
- the room is of a reasonable size; and
- the modification to be granted is unlikely to result in standards of public health and safety being compromised.

Upon the grant of a modification of the Regulation, the Building Authority will impose the following conditions:

- mechanical ventilation producing 5 air changes per hour (ACH) is in operation at any time when the room is in use. The change of air shall be with the outside of the building and to achieve this, the use of ventilation ducting is acceptable;
- there is permanent ventilation to the ‘open air’, the ‘external air’ or with another room which is provided with a window meeting the area requirement for the combined windows. The permanent ventilation may be in form of an air duct, an aperture in a wall or a door suitably located and permanently open or protected with louvers having a minimum size of 1/20 of the floor area of the room; and
- the requirements of Building (Planning) Regulation 35A and PNAP No. APP-27 [5] regarding water heaters are complied with, where applicable.

1 Buildings Department. Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers, PNAP No. APP-130. Lighting and Ventilation Requirements - Performance Based Approach. http://www.bd.gov.hk/english/documents/pnap/APP/APP130.pdf
2 ASHRAE 62.2-2003. Ventilation and Acceptable Indoor Air Quality in Low Rise Residential Buildings. American Society of Heating, Refrigerating and Air Conditioning Engineers. Atlanta. 2003.
3 Singapore Standard SS CP13. Code of Practice for Mechanical Ventilation and Air Conditioning in Buildings. 1999.
4 Buildings Department. Practice Note for Authorized Persons, Registered Structural Engineers and Registred Geotechnical Engineer PNAP No. APP-98. Lighting and Ventilation for Bathrooms and Lavatories in Domestic Buildings. http://www.bd.gov.hk/english/documents/pnap/APP/APP098.pdf
5 Buildings Department. Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers, PNAP No. APP-27. Gas Water Heaters - Building (Planning) Regulation 35A. http://www.bd.gov.hk/english/documents/pnap/APP/APP027.pdf

Where mechanical ventilation in form of an extractor fan is provided in bathrooms and lavatories, care should be taken to ensure that plumbing seals are intact and operate according to the design intent [6]. In addition, consideration should be given to the quality and quantity of air intake, air-flow path and fan capacity. The Environmental Health Team of the World Health Organization (WHO) has advised that the optimum flow rate for bathroom ventilation is 2 cfm/sq ft (10.2 l s^{-1} m^{-2}). WHO is of the view that a larger flow rate does not add much on the comfort side and has the hidden risk of building up negative pressure in the room. It is recommended to provide an opening to bathrooms and lavatories for air relief, such as an undercut to the door or an opening with louvre at the door or wall, in order to minimise the build-up of negative pressure if an extractor fan is provided for ventilation.

UTILITY AND LAUNDRY ROOMS

ASHRAE 62.2 [2] makes no requirement for mechanical ventilation although it stipulates an opening not less than 4% of the room floor area nor less than 0.15 m^2. However it does stipulate that clothes dryers must be directly exhausted to outside.

REFUSE AREAS

Exhaust from refuse storage areas and material recovery centres (RS & MRC) should follow the principles of PNAP No. APP-35 [7]. In the cases where a centralised ventilation system is adopted, a single air purifier may be installed prior to the air being exhausted to the atmosphere. If there is no odour problem then a mechanical fan and filter can be used. The main exhaust outlet for a centralised system should be located at roof level away from other buildings. If the building is surrounded by taller buildings then the air may be exhausted at the main RS & RMC location.

The noise level of the system should conform to the Technical Memorandum published under the Noise Control Ordinance (Cap 400). Fire dampers should be provided if the system has exhaust grilles and ducting at each floor.

DOMESTIC GARAGES

ASHRAE 62.2 states that for low rise residential buildings where air handlers or return ducts are in an attached garage the ductwork should be tested for air tightness. A ductwork air leakage test conforming to test procedure DW 143 [8] or similar authority should be performed.

CHIMNEYS AND FLUES

The siting and height of chimneys and flues should follow PNAP No. APP-8 [9]. In particular, chimneys and flues should be situated so that products of combustion cannot enter windows, ventilation openings, supply air intakes.

6 Buildings Department. Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers, PNAP No. ADV-25 Extractor Fans in Bathrooms and Lavatories in Domestic Buildings. http://www.bd.gov.hk/english/documents/pnap/ADV/ADV025.pdf

7 Buildings Department. Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers, PNAP No. APP-35. Refuse Storage and Collection Building (Refuse Storage and Material Recovery Chambers and Refuse Chutes) Regulations. http://www.bd.gov.hk/english/documents/pnap/APP/APP035.pdf

8 DW 143. A practical guide to Ductwork Leakage Testing. Heating and Ventilating Contractors Association. 1994.

9 Buildings Department. Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers, PNAP No. APP-8. Chimneys and Flues. http://www.bd.gov.hk/english/documents/pnap/APP/APP008.pdf

Circular Letter No.: 2020.168

Issue Date: 5 June 2020

Application: BEAM Plus NB Version 1.1 and 1.2

Effective Date: 5 June 2020

Updated Exclusion Clauses for IEQ Credits

1. **Technical Circular Letter No. 2016.134 dated 09 August 2016 will be withdrawn on the effective date.**

2. This Circular Letter clarifies the exclusion clause for the following credits:

Credits	New Exclusions
IEQ P1 IEQ 9	Residential premises, or Premises without any fresh air provision[1].
IEQ 3	Residential premises, or Premises without any provision of air-conditioning equipment.
IEQ 5	Residential premises, or Premises without any fresh air provision[1] and HVAC system.
IEQ 6	Residential premises, or Premises without any fresh air provision[1].
IEQ 7a IEQ 7b	Residential premises without any interior decoration, or Premises without any fresh air provision[1] and interior decoration.
IEQ 10	Premises with fresh air provision[1].
IEQ 11b	Residential premises, or Premises without any future tenant (for example, single owner occupier premises).
IEQ 12	Premises without any enclosed common area in the main circulation route.
IEQ 13a	Normally occupied premises[2] without any air-conditioning equipment installed and provided by the project proponent, or without any fresh air provision[1].
IEQ 13b	Normally occupied premises[2] without any installation of air diffuser in the air-conditioning system.
IEQ 14a	Normally occupied premises[2] with fresh air provision[1].
IEQ 14b	Normally occupied premises[2] with fresh air provision[1], or without any air-conditioning equipment installed and provided by the project proponent.

B3

Ir SK Ho
Chairperson of Standards Sub-committee

[1] Fresh air provision means any fresh air equipment such as PAU, AHU, FAU, FAP, FAF, etc.; and/or premises with fresh air louvers, etc.

[2] Normally occupied premises are enclosed spaces / areas where people normally stay there for more than 1 hour per person per day on average.

Q11. IEQ 7, For BEAM Plus New Buildings Version 1.1 and 1.2, is it necessary to demonstrate that the measurement is taken at background mode?

Q12. IEQ 8 (second Bonus credit), for BEAM Plus Existing Building Version 2.0 Comprehensive Scheme, whether the "Indoor Air Quality Certification Scheme for Office and Public Place" certificate should cover the whole development or part of the development:

Q13. IEQ 10, For BEAM Plus New Buildings Version 1.1 and 1.2, should domestic kitchen be considered as normally occupied premises?

Q14. IEQ 11a, for BEAM Plus New Buildings Version 1.1 & 1.2, if the Applicant does not provide any ventilation equipment for kitchen and toilet areas, should these areas be included in the assessment?

A4

Under this circumstance, kitchen and toilet areas should be excluded from the assessment under IEQ 11a. (Released on 26 February 2016)

Q15. IEQ 11a, For BEAM Plus New Buildings Version 1.1 and 1.2, should T&C records of window fan/propeller fan without air duct required to be submitted in the Final Assessment?

Q16. IEQ 11b, For BEAM Plus New Buildings Version 1.1 & 1.2, is clubhouse applicable to this credit?

Q17. IEQ 12, For BEAM Plus New Buildings Version 1.1 and 1.2, can lift lobby served by firemen's lift be exempted from the assessment?

Q18. IEQ 12a, For BEAM Plus New Buildings Version 1.1 and 1.2, is enclosed common areas ventilated via "fresh air louver + EAF" / "transfer air duct" comply with BEAM Plus requirement?

Q19. IEQ 14b, For BEAM Plus New Buildings Version 1.1 and 1.2. what should be the duration of temperature measurement?

Q20. IEQ 14b, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the representative sampling points be selected?

Q21. IEQ 14b, For BEAM Plus New Buildings Version 1.1 and 1.2, can T&C records of split type A/C for residential portion be accepted as evidence to demonstrate the performance of the air-conditioning units?

Q22. IEQ 14b, For BEAM Plus New Buildings Version 1.1 and 1.2, is it necessary for an SQP to endorse the measurement records?

Q23. What features can be considered as glare control under IEQ 15 in BEAM Plus Version 1.1?

Q24. IEQ 15, For BEAM Plus NB V1.1 and 1.2, there are a number of methodologies in the computation of the average daylight factor from various software. Will it be acceptable if the output provides the average daylight factor for the entire area of a room?

Q25. IEQ 16&17, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the representative sampling points be selected and what is the percentage of compliance of the sampling points in order to achieve thecredit?

Q26. IEQ 16&17, For BEAM Plus New Buildings Version 1.1 and 1.2, should decorative lighting be assessed?

Q27. IEQ 18, 19, 20 & 21, For BEAM Plus New Buildings Version 1.1 and 1.2, what is the definition of "suitably qualified person" (SQP)?

Q28. IEQ 18, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the representative sampling points be selected?

Q29. IEQ 19, For BEAM Plus New Buildings Version 1.1 and 1.2, how should the representative sampling points be selected?

Q30. IEQ 19, For BEAM Plus New Buildings Version 1.1 and 1.2, in normal credit, is impact noise isolation (IIC) between floors required for Office, Hotel and Residential premises?

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No.

(Released on 29 November 2019)

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Under normal circumstance, clubhouse should be considered as NA since it is the area under the landlord's control and no tenant is anticipated. However, if there is tenant such as restaurant or canteen within the clubhouse, credit under IEQ 11b shall be applicable. (Released on 26 February 2016)

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