

Energy Efficiency of Buildings Building (Energy Efficiency) Regulation

Introduction

The Building (Energy Efficiency) Regulation (B(EE)R) imposes energy efficiency requirements for buildings. It aims at reducing heat transfer through the building envelope thus saving the electricity consumption for air-conditioning by requiring the external walls and roofs of a commercial or hotel building to be designed and constructed to have a suitable Overall Thermal Transfer Value (OTTV). The suitable level of OTTV and the methodology of OTTV calculations are specified in the Code of Practice for Overall Thermal Transfer Value in Buildings 1995 (the OTTV Code) published by the Buildings Department (BD).

2. Pursuant to the Energy Saving Plan for Hong Kong's Built Environment 2015~2025+ promulgated by the Environment Bureau¹ in May 2015, the OTTV standards for commercial and hotel buildings would be reviewed twice before 2025. In this respect, the first review was undertaken by BD's Technical Committee on Design and Construction Requirements for Energy Efficiency of Buildings (TC).

Review of OTTV Control

3. On the advice of the TC, the OTTV control specified in the OTTV Code is amended as follows:

- (a) in the case of a building tower, the OTTV should not exceed 21 W/m²; and
- (b) in the case of a podium, the OTTV should not exceed 50 W/m².

Notional Height of Podium

4. For buildings with varying site coverage at different levels allowed under PNAP APP-132, the notional height of the podium for the purpose of calculating OTTV can be regarded as 20 m above the mean street level of the site².

/Alterations ...

¹ <http://www.eeb.gov.hk/sites/default/files/pdf/EnergySavingPlanEn.pdf>

² To simplify computation, the notional height of the podium may be demarcated at a level lower than 20 m.

Alterations and Additions Proposals

5. For alterations and additions (A&A) proposals to the existing buildings, B(EE)R will be applicable to:

- (a) Horizontal or vertical extension which constitutes a new building; and
- (b) New external walls/facades covering the entire tower or podium.

Open-front Shops

6. Open-front shops or the like on G/F may be disregarded from the OTTV calculation, if the usable floor area (UFA) of the shop is not more than 50 m² and any air-conditioning system to be installed for the shop should be separated from the air-conditioning system of the main building. For open-front shop with UFA more than 50 m², demonstration of compliance of paragraph 3 by a notional OTTV calculation based on clear glass construction for shopfront may be acceptable.

Procedures

7. It is recognised that the design of the facade of a building may not have been finalised when building plans for new development or A&A proposal are first submitted. Accordingly, the Building Authority (BA) would accept that the first submission of building plans needs not be accompanied by the information and calculations as required by regulation 5 of the B(EE)R. However, after the approval of building plans and prior to the application for consent to commence building works, submission of an OTTV Summary Sheet in Appendix A is required under regulation 10 of the Building (Administration) Regulations (B(A)R). The OTTV provided in the Summary Sheet should be calculated in accordance with the OTTV Code.

8. Prior to the application for an occupation permit (OP) or submission of certificate of completion for the A&A works (Form BA14), the finalised OTTVs of the external walls and roofs of the building and the shading coefficient of glass should be incorporated into the general building plans for record. Upon application for OP or submission of Form BA14, an OTTV Report containing the detailed OTTV calculations and information on the standard forms (Form OTTV1 to OTTV4) set out in the schedule to the OTTV Code, the record plans, test certificates or published specifications for the building materials used (such as glass used for fenestration and façade), and the finalised OTTV Summary Sheet in Appendix A should be submitted under regulation 10 of B(A)R.

/Acceptance ...

Acceptance of Building Materials

9. If building materials other than those listed in the OTTV Code are used, their OTTV related properties should be obtained from reliable sources. It would facilitate the processing of the consent, OP application or submission of Form BA14 if full background to the source of information and the suitability of the materials for use in local conditions are detailed in the submission.

Sunshading and Innovative Designs

10. Genuine sunshades used to assist in the reduction of the OTTV are not accountable for gross floor area and, by virtue of regulation 6 of the B(EE)R, shall not be included in site coverage calculations, if they project 1.5 m or less from the external walls. In determining whether the sunshades will assist in the reduction of the OTTV, quantitative assessment should be submitted to the BA for consideration, if the sunshades project over 750 mm from the external walls. In addition, sunshades with a projection of not more than 750 mm are regarded as not causing obstructions to prescribed windows. Sunshades will not be allowed to project over streets under section 31(1) of the Buildings Ordinance, but exemptions may be considered in individual cases if special circumstances so justify.

11. The BA may accept designs other than those stipulated in the OTTV Code provided that these designs are comparable or better in terms of energy efficiency. Innovative designs which aim at reducing OTTV would not be penalised in terms of plot ratio and site coverage if they could be demonstrated to be effective.

Implementation

12. The requirements in paragraph 3 above shall apply to all new building plans or major revision of building plans for development proposals or A&A proposals submitted for approval on or after 31 December 2019.

(YU Po-mei, Clarice)
Building Authority

Ref. : BD GP/LEG/22
BD GR/1-50/84 (V)

This PNAP is previously known as PNAP 172

First issue May 1995

Last revision March 2023

This revision July 2024 (AD/NB1) (Paragraphs 7 and 8 amended)

OTTV Summary Sheet

Address :			BD Ref. No.		
Building Type		<input type="checkbox"/> 1. Hotel			
		<input type="checkbox"/> 2. Office (including industrial/office)			
		<input type="checkbox"/> 3. Shops			
		<input type="checkbox"/> 4. Others*, please specify :			
OTTV calculated by		<input type="checkbox"/> 1. Registered Professional Engineers (Building Services/Mechanical)			
		<input type="checkbox"/> 2. Architect			
		<input type="checkbox"/> 3. Others, please specify :			
Classification		Podium		Tower	
Designated Use		<input type="checkbox"/> 1. Shops		<input type="checkbox"/> 4. Cinema	
		<input type="checkbox"/> 2. Offices		<input type="checkbox"/> 5. Plant Rooms	
		<input type="checkbox"/> 3. Restaurants		<input type="checkbox"/> 6. Others	
		<input type="checkbox"/> 1. Office		<input type="checkbox"/> 2. Hotel Rooms	
		<input type="checkbox"/> 3. Others			
No. of Storeys (excluding ground floor)					
Gross Floor Area		m ²		m ²	
Usable Floor Area		m ²		m ²	
Total External Wall Area (including windows)		m ²	Window to Wall Ratio = :	m ²	Window to Wall Ratio = :
Total Window Area		m ²		m ²	
Total Skylight Area		m ²		m ²	
*Weighted Average U-value (W/m ² K)	Opaque Wall	W/m ² K		W/m ² K	
	Window	W/m ² K		W/m ² K	
	Opaque Roof	W/m ² K		W/m ² K	
	Skylight	W/m ² K		W/m ² K	
Window	Glass Type	<input type="checkbox"/> Reflective, Area = m ² , SC= VLT =		<input type="checkbox"/> Reflective, Area = m ² , SC= VLT =	
		<input type="checkbox"/> Tinted, Area = m ² , SC= VLT =		<input type="checkbox"/> Tinted, Area = m ² , SC= VLT =	
		<input type="checkbox"/> Clear, Area = m ² , SC= VLT =		<input type="checkbox"/> Clear, Area = m ² , SC= VLT =	
	Double Glazing	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
	External Shading	Overhang <input type="checkbox"/> Yes <input type="checkbox"/> No		Overhang <input type="checkbox"/> Yes <input type="checkbox"/> No	
		Sidefin <input type="checkbox"/> Yes <input type="checkbox"/> No		Sidefin <input type="checkbox"/> Yes <input type="checkbox"/> No	
Skylight	Glass Type	<input type="checkbox"/> Reflective, Area = m ² , SC= VLT =		<input type="checkbox"/> Reflective, Area = m ² , SC= VLT =	
		<input type="checkbox"/> Tinted, Area = m ² , SC= VLT =		<input type="checkbox"/> Tinted, Area = m ² , SC= VLT =	
		<input type="checkbox"/> Clear, Area = m ² , SC= VLT =		<input type="checkbox"/> Clear, Area = m ² , SC= VLT =	
	Double Glazing	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
	External Shading	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
**Weighted Average Absorptivity	Wall				
	Roof				
**Weighted Average Density	Wall	kg/m ²		kg/m ²	
	Roof	kg/m ²		kg/m ²	
OTTV	Wall	W/m ²		W/m ²	
	Roof	W/m ²		W/m ²	
	Overall average	W/m ²		W/m ²	
Additional information/views on energy efficiency control :					

SC = Shading Coefficient

VLT = Visible Light Transmittance

*Other commercial buildings may include : department stores, places of public entertainment, places of public assembly, restaurants etc.

**Weighted by area

Note :

1. Please tick in the box as appropriate
2. Window and skylight data should represent the major proportion of its use in the development.