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European Union



Mitigation Enabling Energy Transition in the MEDiterranean region

Thermal Standard Building Compliance Software

ALMEE - LIBAN

Formation sur GRASSMED – meetMED II

WP3_A3.1.6
2024

Thermal Standard Building Compliance Software - TSBC

- 1. TSBC est un logiciel simplifié qui peut produire des évaluations cohérentes et fiables de la demande prévisionnelle d'énergie des bâtiments, principalement dans le but d'évaluer la conformité avec les réglementations thermiques des bâtiments et pour la certification des performances des bâtiments.**
- 2. TSBC est adaptable pour couvrir la demande en énergie primaire du bâtiment, y compris ses systèmes et équipements énergétiques.**
- 3. TSBC peut être adapté à d'autres codes de construction énergétiques dans les pays du sud de la Méditerranée comme la RTCM au Maroc.**

Use of the TSBC Software Hotel Sky Line Marrakech

Component	Area (m ²)
Windows East & West	40.8 x 2
Windows North & South	61.2 x 2
Wall East	199.2
Wall West	199.2
Wall North	298.8
Wall South	298.8
Roof	600
Floor semi-exposed	600
	$U_{Env-Ref} \left(\frac{W}{m^2K} \right)$
	$U_{Fac-Ref} \left(\frac{W}{m^2K} \right)$



Application du TSBC – Hotel Sky line Marrakech

**Envelope Compliance Certificate
According to the Thermal
Standard for Buildings 2010**

Permit no: 76849
Checked by: Dalbani
Date: 5/2/2024

Section 1: Project Information

Project Name: Sky Lane Hotel
Address: Marrakech
Owner: AMEE
Designer/Contractor: Amine Ahmarras
Compliance Form Author: Mourtada- Jouni
Telephone:
Date: 4/2/2024

Section 2: General Information

Building Location (for weather data):

Mohafaza	Qadaa	Real-estate District
Marrakech		
Climatic Zone:	Zone 3	Inland Plateau

Project description:

- 1. New Construction
- 2. Addition
- 3. Unconditioned (never heated and never
- 4. Residential
- 5. Non-Residential

Murs-Toitures- Planchers

Ref. Nbr.	Component	Material	Thick. (cm)	Conduct. W/m.K	Th. Resist. m ² .K/W	Area m ²	U-Value W/m ² .K
1	Wall 1	Concrete block Lightweight Thickness : 14 cm	14.00		0.09	996.00	0.50
		Expanded polystyrene extruded, Cut cell surface Density : 29	6.00	0.036			
		Concrete block Lightweight Thickness : 10 cm	10.00		0.08		
2	Wall 2						
3	Wall 3						
4	Roof 1	Cement mortar Density : 1860	6.00	0.730		600.00	0.36
		Expanded polystyrene extruded, Cut cell surface Density : 29	8.00	0.036			
		Hollow block Concrete "Hourdis" Thickness : 25 cm	25.00		0.23		

Murs-Toitures- Planchers

Ref. Nbr.	Component	Material	Thick. (cm)	Conductivity W/m.K	Th. Resist. m2.K/W	Area m2	U-value W/m2.K
6	Semi Exposed Floor 1	Cement mortar Density : 1860	6.00	0.730		600.00	0.62
		Hollow block Concrete "Hourdis" Thickness : 20 cm	20.00		0.20		
		Glass fiber, organic bonded Density : 64 to 144	4.00	0.036			

Fenêtres

Ref. Nbr.	Component	Description	SHGC	Area m2	U-value W/m2.K
11	Windows 1	Double Glazing	0.75	204.00	3.30
12	Windows 2				
13	Windows 3				
14	Skylight 1				
15	Skylight 2				

U : Window / Skylight Selection To

Ref. Nbr.	Component Area, PF and ASF	N, NE, NW		E, EN, ES			S, SE, SW			W, WN, WS		
		m ²	ASF	m ²	PF Fins	ASF	m ²	PF Over	ASF	m ²	PF Fins	ASF
16	Windows 1	61.20	0.70	40.80		1.00	61.20	0.4	1.00	40.80		1.00
17	Windows 2		0.70			1.00			1.00			1.00
18	Windows 3		0.70			1.00			1.00			1.00
19	WWR by orientation	0.051		0.034			0.051			0.034		
	Window to Wall Ratio by Orientation = A_{wi} / A_v A_{wi} : Areas of windows on orientation (i), (m ²). A_v : Area of all vertical surfaces (opaque walls + windows) (m ²) in all orientations											
							<input type="button" value="Calculate WWR"/>		Total Area of Windows m2		Total Area of Skylights m2	
									204.00		0.00	

Statistiques et résultats de calcul

Ref. Nbr.	Component	Description	SHGC	Area m2	U-value W/m2.K
11	Windows 1	Double Glazing	0.75	204.00	3.30
12	Windows 2				
13	Windows 3				
14	Skylight 1				
15	Skylight 2				

U : Window / Skylight Selection To

Ref. Nbr.	Component Area, PF and ASF	N, NE, NW		E, EN, ES			S, SE, SW			W, WN, WS		
		m ²	ASF	m ²	PF Fins	ASF	m ²	PF Over	ASF	m ²	PF Fins	ASF
16	Windows 1	61.20	0.70	40.80		1.00	61.20	0.4	1.00	40.80		1.00
17	Windows 2		0.70			1.00			1.00			1.00
18	Windows 3		0.70			1.00			1.00			1.00
	WWR by orientation	0.051		0.034			0.051			0.034		
19	Window to Wall Ratio by Orientation = A_{wi} / A_v A_{wi} : Areas of windows on orientation (i), (m ²). A_v : Area of all vertical surfaces (opaque walls + windows) (m ²) in all orientations											
	<input type="button" value="Calculate WWR"/>						Total Area of Windows m2		Total Area of Skylights m2			
						204.00		0.00				

Section 5 : Verification of conformity

Building-Envelope Trade-off Option

A.1. Thermal Transmittance of Envelope

Calculation of Uenv and Uref	U-value W/m2.K
$U_{env} = (\sum U_i \times A_i) / A$	0.73
$U_{ref} = (\sum U_{i-ref} \times A_i) / A$	0.99
$U_{env} \leq U_{ref}$	<input checked="" type="checkbox"/> Yes
	<input type="checkbox"/> No

A.2. Thermal Transmittance of Facades

Calculation of UF and URef	U-value W/m2.K
$U_F = \sum (U_i \times A_i) / A$	0.97
U_{Fref} From Table 5	1.30
$U_F \leq U_{Fref}$	<input checked="" type="checkbox"/> Yes
	<input type="checkbox"/> No

A.3. Equivalent Window to Wall Ratio

Calculation of WWR-eq & WWR-ref	WWR-eq & WWR-ref
$WWR_{eq} = \sum (A_{wi} \times SHGC_{wi} \times ASF_{wi}) / A_v + 2 \sum (A_{si} \times SHGC_{si}) / A_h$	0.12
WWR-ref from Table 9	0.19
$WWR_{eq} \leq WWR_{ref}$	<input checked="" type="checkbox"/> Yes
	<input type="checkbox"/> No

Verification of conformity: Performance Path

Walls' Insulation: Exterior insulation Interior insulation

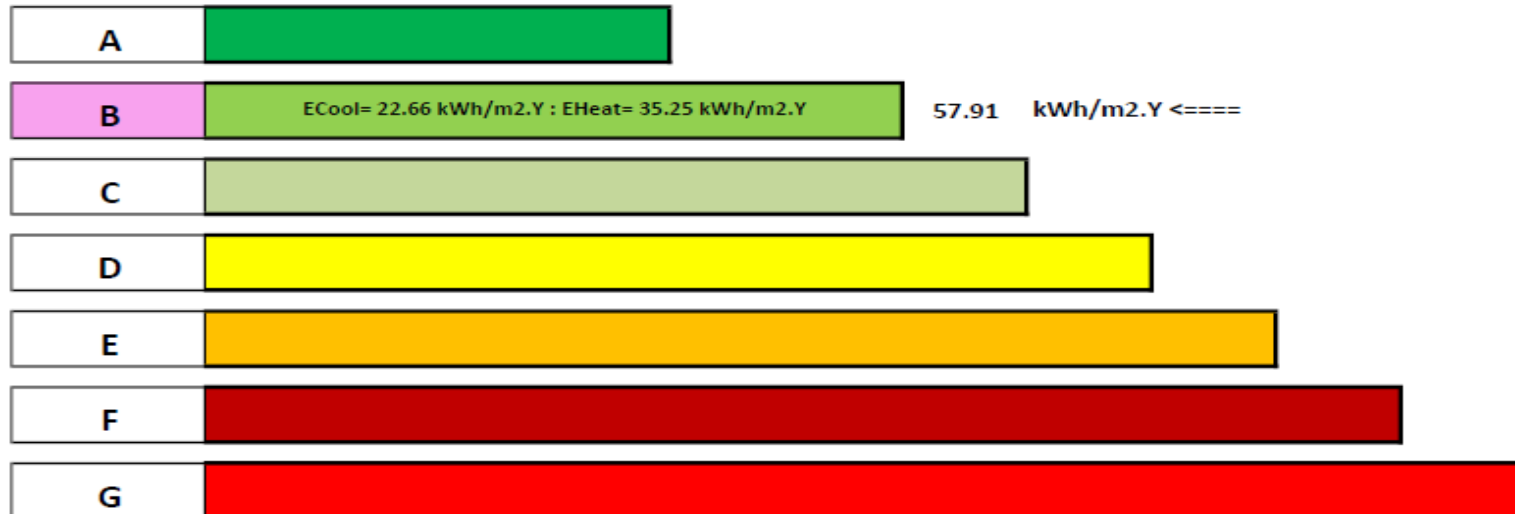
Insulation between double walls, thermal block or light concrete

Total area of heated or cooled Floors (m2) :

Detailed results of compliance check

	ECool kWh/m2.year	EHeat kWh/m2.year	Ebuild kWh/m2.year
Reference Values	36.00	54.00	90.00
Ebuild Project	22.66	35.25	57.91
Proposed ≤ Requirements			<input checked="" type="checkbox"/> Yes
			<input type="checkbox"/> No

Energy Label



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Mitigation Enabling Energy Transition in the MEDiterranean region
Together We Switch to Clean Energy

Pour toute demande ou
commentaire, n'hésitez pas à
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