

Thermal Performance Calculation Summary Sheet

Simulation No. L3734

Window Profiles Summary

System:	Eurologik 70
Type:	Casement Window
Outerframe:	EWS7006/7706
Sash:	EWS7008/7708
Transom / Mullion:	EWS7003/7703 / 7002/7702
Bead:	EWS7301/7312
Reinforcing Spec:	Full Steel
Outerframe:	EWS616S
Sash:	N/A
Transom:	EWS7621S

Calculation prepared by:

Print: Andy Grosse

Signed:



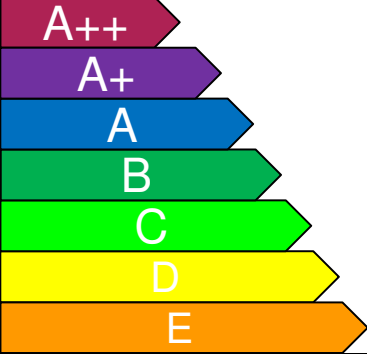
**BFRC Certified
Simulator 022**

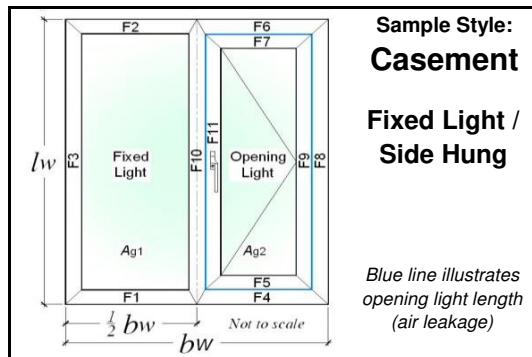
Glazing Unit Summary:

Glazing Overview:	28mm Double Glazed
External Pane:	4mm Saint Gobain Planiclear
Centre Pane:	N/A
Internal Pane:	4mm Saint Gobain Planitherm Total+
Gas Fill Details:	90% Argon + 10% Air
Spacer Bar:	Thermobar

SEL Licence Number

3221

	
energy index (kWh/m ² /year)	-3
thermal transmittance (U window)	1.4
solar factor (g window)	0.43
air leakage (L factor)	0.00



Report Number: L3734 Issue No 22.3: 04/01/2016
 Report Date: 13 May 2020
 Project Details: Eurologik - SG Planiclear / Argon / SG Total+ / Thermobar / Full Steel

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Input Values:
 Yellow input, green intermediary, blue finals X' DP is no. of decimal places to enter

Frame offset: No

Nominal 4mm etc to **ODP**, others **1DP**

Glazing dimensions and properties:

Thickness of pane 1	4	mm
Pane 1/2 distance	20	mm
Gas fill (1/2)	Argon 90%	
Thickness of pane 2	4	mm
Complete next 3 cells for TG IGU		
Pane 2/3 distance		mm
Gas fill (2/3)		
Thickness of pane 3		mm
Glazing Trans. - 3DP	U_g 1.219	W/(m ² ·K)
g-value - 2DP	$g_{\perp}$ 0.73	

Thermal transmittance of window from hot box test

U_w - 2DP W/(m²·K)

Parameter	Symbol	Units
Total window height ODP	l_w	1480 mm
Total window width ODP	b_w	1230 mm

Frame dimensions:

	(b _f)	Frame width, b _f (mm)	Gasket protrusion, b _{gf} (mm)	Frame & gasket widths (mm)	
All frame values round to nearest 1mm, gaskets to 1DP	F1 fixed sill	75	0.0	75.0	Total
	F2 fixed head	75	0.0	75.0	
	F3 fixed jamb	75	0.0	75.0	
F4 + F5 sash sill	F4 fixed sash sill	75	n/a	75.0	122.0
	F5 moving sash sill	47	0.0	47.0	
F6 + F7 sash head	F6 fixed sash head	75	n/a	75.0	122.0
	F7 moving sash head	47	0.0	47.0	
F8 + F9 sash jamb	F8 Fixed sash jamb	75	n/a	75.0	122.0
	F9 moving sash jamb	47	0.0	47.0	
F10 + F11 mullion	F10 fixed mullion	70	0.0	70.0	117.0
	F11 moving mullion	47	0.0	47.0	
Total gasket area				0	m ²

Window Dimensions:

Section	Length (m)	Width (m)	No gasket (m ²)	With gasket (m ²)
Fixed Light	1.3300	0.5050	0.6717	0.6717
Opening light	1.2360	0.4110	0.5080	0.5080
Total glazing, A _g			1.1796	1.1796
Frame	(m)	(m)	(m ²)	(m ²)
F1	0.6150	0.0750	0.0420	0.0420
F2	0.6150	0.0750	0.0420	0.0420
F3	1.4800	0.0750	0.1054	0.1054
F4	0.6150	0.0750	0.0420	0.0420
F5	0.5050	0.0470	0.0215	0.0215
F6	0.6150	0.0750	0.0420	0.0420
F7	0.5050	0.0470	0.0215	0.0215
F8	1.4800	0.0750	0.1054	0.1054
F9	1.3300	0.0470	0.0603	0.0603
F10	1.4800	0.0700	0.0984	0.0984
F11	1.3300	0.0470	0.0603	0.0603
Total Frame			0.6408	0.6408
Total Window, A _w			1.8204	1.8204
Percentage fixed light glass area			36.90%	36.90%
Percentage opening light glass area			27.91%	27.91%
Percentage glass area (total)			64.80%	64.80%

Solar Factor, g-value:

F_w	0.9
g_w	0.43

U_{window}

No bars; or attached bars	1.41
Single cross bar in IGU	1.5
Multiple cross bar in IGU	1.6
Glazing bar (Georgian bar)	1.8

W/(m²·K)

Where a U_w value from hot box testing is available, no $L_{f, 2D}$ or $L_{\psi, 2D}$ values need to be entered

Frame conductance:

Section	W/(m·K)	b _g (mm)	W/(m·K)	b _g (mm)
F1 fixed sill	0.3066	190	0.3698	190
F2 fixed head	0.3066	190	0.3698	190
F3 fixed jamb	0.3066	190	0.3698	190
F4 + F5 sash sill	0.3720	190	0.4354	190
F6 + F7 sash head	0.3720	190	0.4354	190
F8 + F9 sash jamb	0.3720	190	0.4354	190
F10 + F11 mullion	0.5628	380	0.6892	380

Frame:	Frame width, b _f	Frame U-value, U _f	Frame areas, A _f	Frame heat flow, H _U	Linear trans, Ψ	Linear length, l _g	Junction heat flow, HΨ
Section	(m)	(W/(m²·K))	(m²)	(W/K)	(W/(m·K))	(m)	(W/K)
F1 fixed sill	0.0750	1.4763	0.0420	0.0620	0.0275	0.5050	0.0139
F2 fixed head	0.0750	1.4763	0.0420	0.0620	0.0275	0.5050	0.0139
F3 fixed jamb	0.0750	1.4763	0.1054	0.1556	0.0275	1.3300	0.0365
F4 + F5 sash sill	0.1220	1.4436	0.0635	0.0917	0.0277	0.4110	0.0114
F6 + F7 sash head	0.1220	1.4436	0.0635	0.0917	0.0277	0.4110	0.0114
F8 + F9 sash jamb	0.1220	1.4436	0.1657	0.2392	0.0277	1.2360	0.0342
F10 + F11 mullion	0.1170	1.4619	0.1587	0.2319	0.0549	1.2830	0.0705
Totals			0.6408	0.9341	Total		0.1917

Other parameters needed for calculation, taken from simulations:

$\lambda_p = 0.035$ W/(m·K)	$R_{se} = 0.04$ m ² ·K/W	$d_p = d_g = 0.028$ m
$R_p = 0.8000$ m ² ·K/W	$R_{tot} = 0.9700$ m ² ·K/W	$R_{se} = 0.13$ m ² ·K/W
		$U_p = 1.0309$ W/(m ² ·K)

Air Leakage loss:					
Air leakage at 50 Pa per hour & per unit length of opening light (BS 6375-1) - 2DP					
			0.00	m³/(m·h)	
Opening light length	3.6700	m	Total air leakage	0.000	m³/h
L ₅₀	0.00	m³/(m²·h)	Heat loss = 0.0165 L ₅₀	0.00	W/(m²·K)

Energy Window
Energy Index

-3

Window Rating

B

BFRC Rating
kWh/(m²·yr)

≥20	A	++
>10 to 20	A	+
0 to <10	B	
-10 to <0	B	
-20 to <-10	C	
-30 to <-20	D	
-50 to <-30	E	

BFRC Rating =

218.6g_{window} - 68.5 x (U_{window} + Effective L₅₀) = **-3.52**

Climate zone is: **UK**

Thermal transmittance, W/(m ² ·K)	U _{window}	1.4
Solar factor	g _{window}	0.43
Window air leakage heat loss, W/(m ² ·K)	L _{factor}	0.00

Simulator Name: **Andy Grosse**

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BFRC Certified Simulator No

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