

ND NTech Villa Balcony door

Calculation of U-value in accordance to NS-EN ISO 10077-1, 10077-2 and the programme "Therm".
Centre U-value of glass is calculated in accordance to NS-EN 673.
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Report of standard model

Date: 06.09.2022

Version: TE/BE 92

Type: Outward opening sash

Model: ND NTech Villa 92

Glass configuration: 4ES+12G+4+12G+4ES Planitherm Ultra N*, TGI*, Argon

Main results and dimensions

U-value: 1,1W/m²K

Width: 988mm

Height: 2088mm

Area: 2,063m²

Percent glass: 34,5%

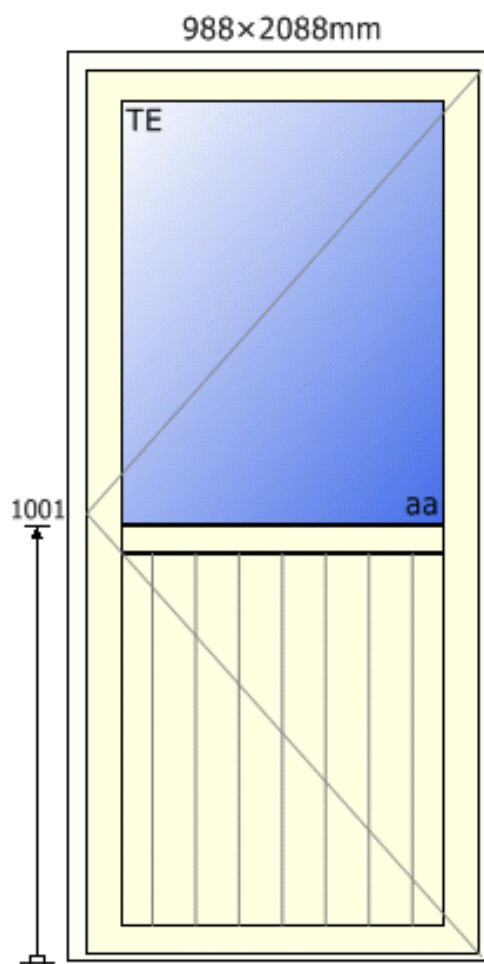
Percent panel: 30,2%

g-value: 0,39

LT-value: 0,64

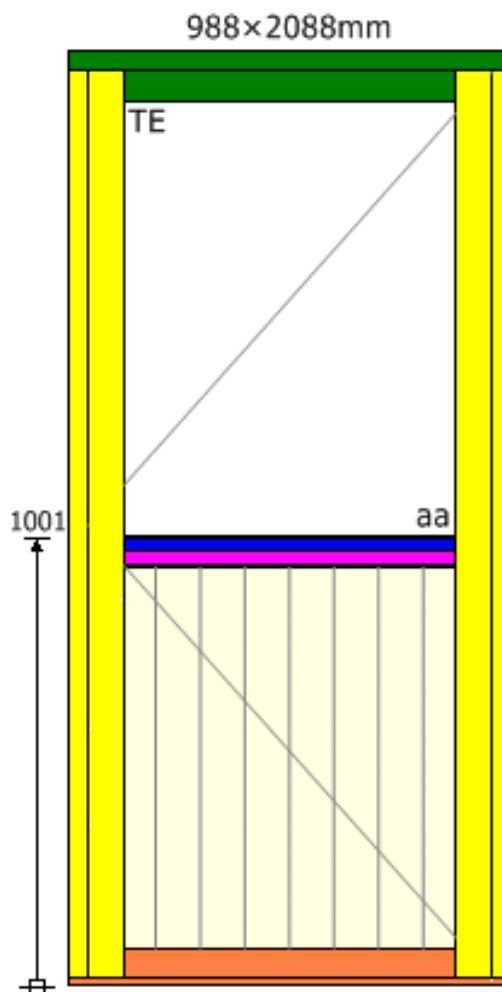
Ug-value: 0,67W/m²K

Up-value: 0,85W/m²K



Karm: 92

Glass: 3-glass

 Gælder for produktkoder:
BE, TE


Colour	Uf (W/m ² K)	Width (m)	Name
	1,36	0,124	Jamb profile
	1,29	0,125	Head profile
	1,85	0,031	Midrail profile
	1,09	0,031	Midrail profile
	1,99	0,096	Sill profile

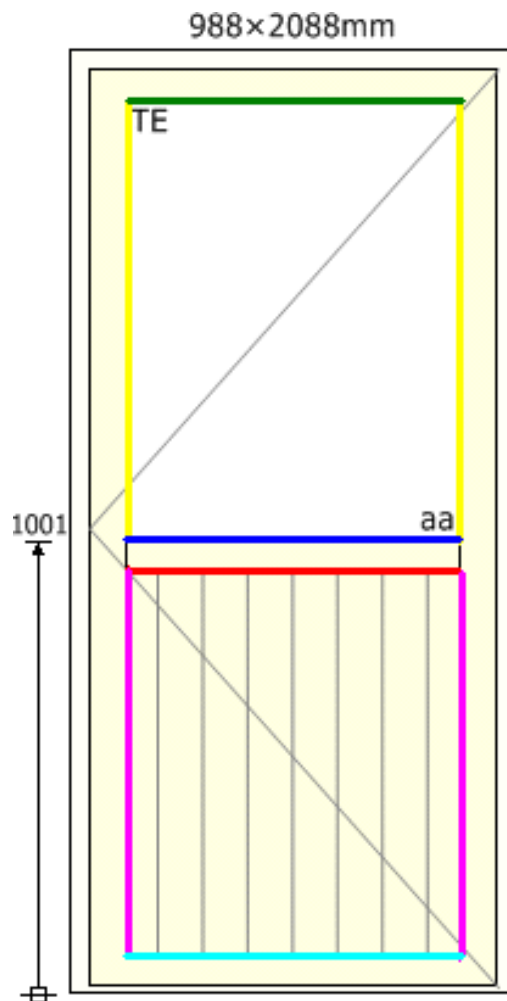
Color	Uf (W/m ² K)	Element area (m ²)	*Percent element (%)
	1,36	0,245	11,90
	1,29	0,107	5,20
	1,36	0,245	11,90
	1,85	0,023	1,15
	1,09	0,023	1,15
	1,99	0,083	4,00
Sum		0,726	35,30





*: Figure in relation to the whole window





Karm: 92

Glass: 3-glass

Gælder for produktkoder:
 BE, TE



Colour	PSI	Length (m)	Name
	0,040	1,924	TGI Jamb
	0,040	0,740	TGI Head
	0,040	0,740	TGI Sill
	0,000		Ins.Panel

Color	Spacer length (m)	L Psi spacer (W/K)	*L Psi spacer (%)
	0,962	0,038	28,5
	0,740	0,030	21,5
	0,962	0,038	28,5
	0,740	0,030	21,5
Sum	3,404	0,136	100

*: Figure in relation to the spacer

U-Value window frame (U_f) Calculation according to EN ISO 10077-2

ND NTech Villa Balcony door Head

This example shows glas thicknes 39 - 51mm:

$$U_t = 1,0127 \text{ W/m}^2\text{K}$$

$$B_f = 125 \text{ mm}$$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$

$$L_f^{2D} = U_t * L$$

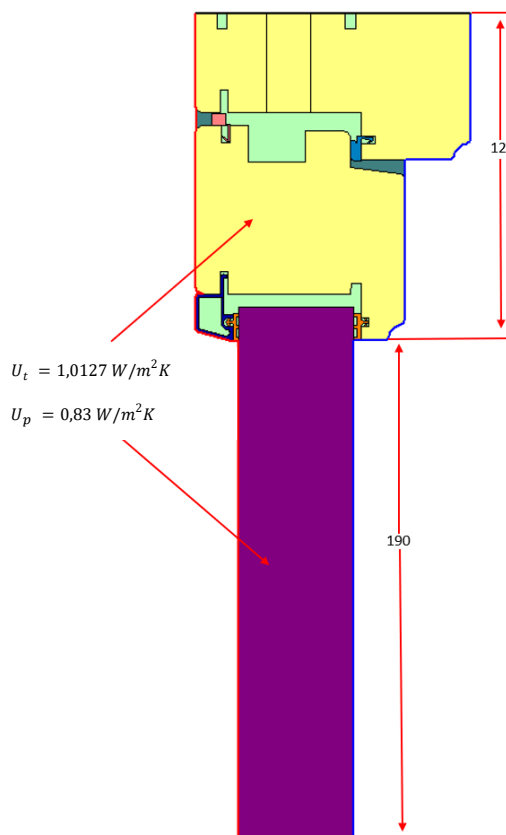
$$L_f^{2D} = 1,0127 * (0,125 + 0,19) = 0,319 \text{ W/mK}$$

$$U_f = \frac{0,319 - (0,83 * 0,19)}{0,125} = 1,29 \text{ W/m}^2\text{K}$$

Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	ϕ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Brush gasket DX1466	0,15	0,9
Gasket QL	0,03	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		

U _t	U _p	L _f ^{2D}	U _f
Glas thicknes 20-32mm			
Glas thicknes 33-37mm			
1,0127	0,83	0,319	1,29



ND NTech Villa Balcony door Jamb by glass

This example shows glas thicknes 39 - 51mm:

$$U_t = 1,0382 \text{ W/m}^2\text{K}$$



$$B_f = 124 \text{ mm}$$








$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$

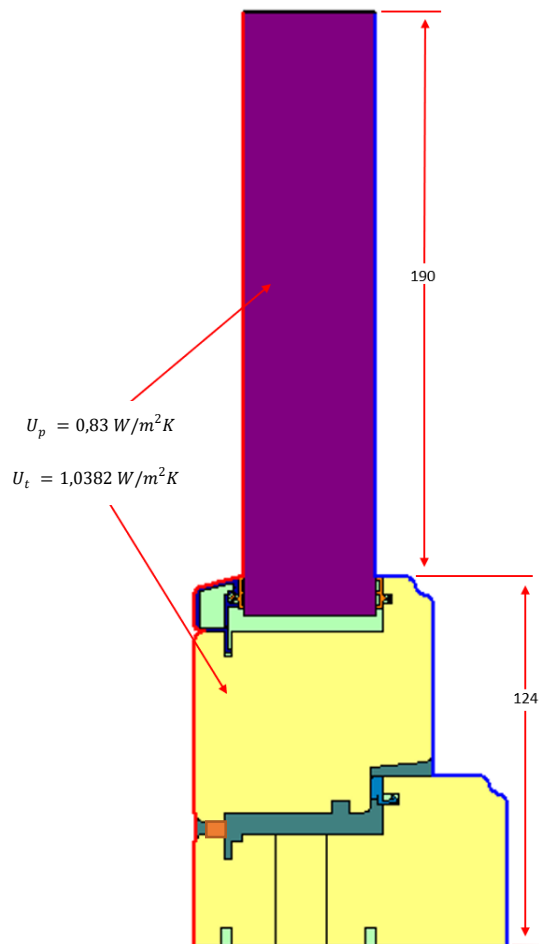
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 1,0382 * (0,124 + 0,19) = 0,326 \text{ W/mK}$$

$$U_f = \frac{0,326 - (0,83 * 0,19)}{0,124} = 1,36 \text{ W/m}^2\text{K}$$

Boundary Conditions	Temp: °C	Hc: W/m²K
 Exterior	0	25
 Interior	20	7,69

Material:	λ(W/mK)	ρ
 Pine	0,12	0,9
 Aluminium	160	0,9
 Panel	0,035	0,9
 Gasket EPDM	0,25	0,9
 Gasket QL	0,03	0,9
 Frame cavity- Cen slightly ventilated		
 Frame cavity-Cen Simplified		



U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-37mm			
1,0832	0,83	0,326	1,36

ND NTech Villa Balcony door Jamb by panel

This example shows glas thickness 39 - 51mm:

$$U_t = 0,9586 \text{ W/m}^2\text{K}$$

$$B_f = 124 \text{ mm}$$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$

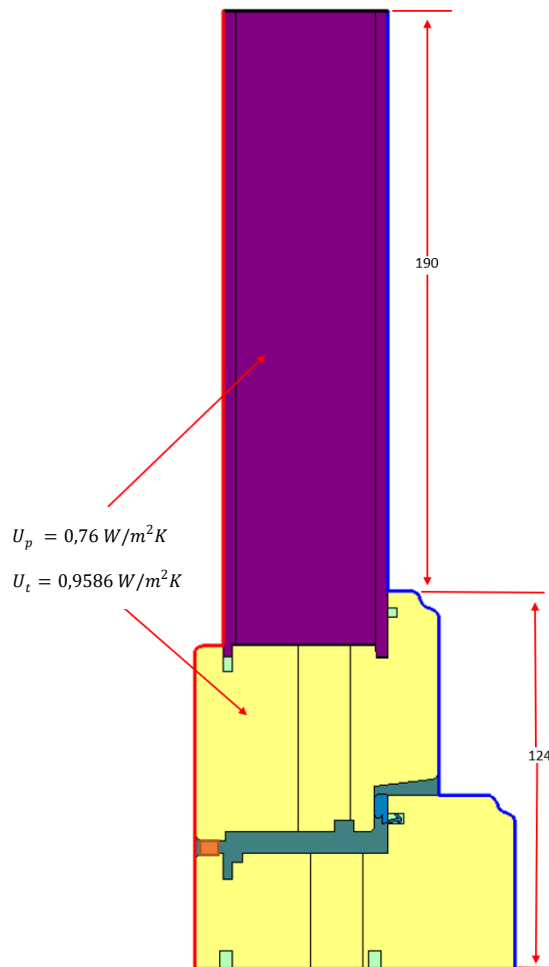
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0,9586 * (0,124 + 0,19) = 0,301 \text{ W/mK}$$

$$U_f = \frac{0,301 - (0,76 * 0,19)}{0,124} = 1,26 \text{ W/m}^2\text{K}$$

Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	e
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Gasket QL	0,03	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		



U_t	U_p	L_f^{2D}	U_f
Glas thickness 20-32mm			
Glas thickness 33-37mm			
0,9586	0,76	0,301	1,26

ND NTech Villa Balcony door Over panel

This example shows glas thicknes 39 - 51mm:

$$U_t = 0,9733 \text{ W/m}^2\text{K}$$

$$B_f = 31 \text{ mm}$$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$

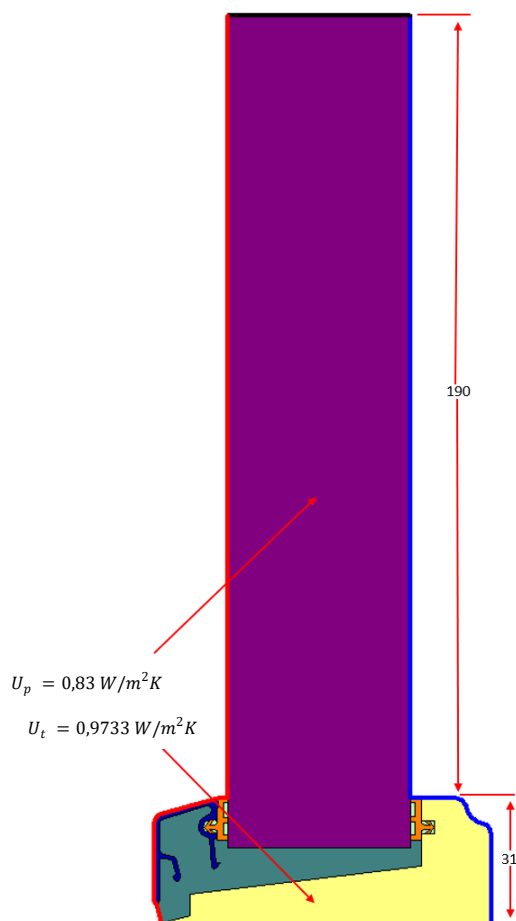
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0,9733 * (0,031 + 0,19) = 0,2151 \text{ W/mK}$$

$$U_f = \frac{0,2151 - (0,83 * 0,19)}{0,031} = 1,85 \text{ W/m}^2\text{K}$$

Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	ρ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		



U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-37mm			
0,9733	0,83	0,2151	1,85

ND NTech Villa Balcony door Under panel

This example shows glas thicknes 39 - 51mm:

$$U_t = 0,8063 \text{ W/m}^2\text{K}$$

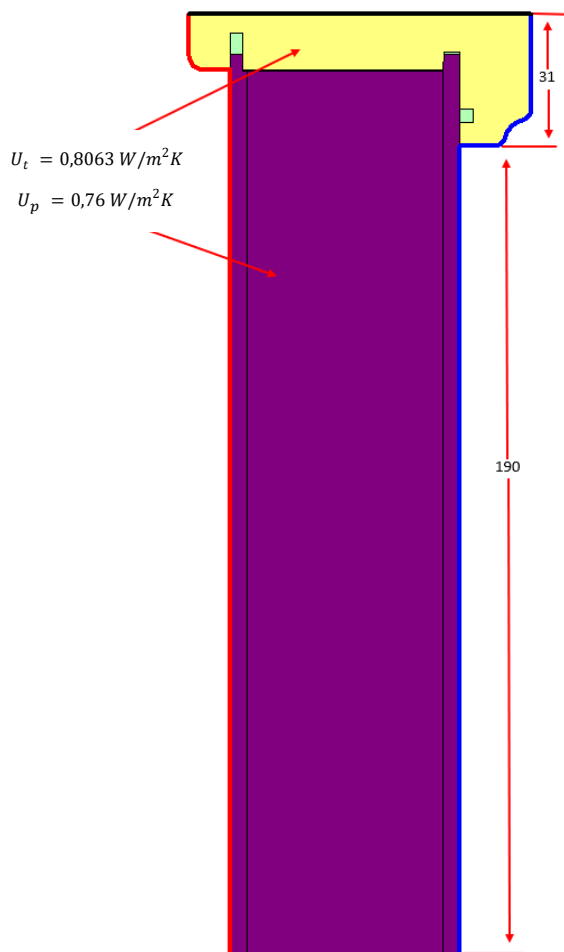
$$B_f = 31 \text{ mm}$$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$

$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0,8063 * (0,031 + 0,19) = 0,1782 \text{ W/mK}$$

$$U_f = \frac{0,1782 - (0,76 * 0,19)}{0,031} = 1,09 \text{ W/m}^2\text{K}$$



Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ (W/mK)	ρ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		

U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-37mm			
0,8063	0,76	0,1782	1,09

Karm: 92

Glass: 3-glass

Gælder for produktkoder:
 BE, TE

ND NTech Villa Balcony door Cill panel

This example shows glas thicknes 39 - 51mm:

$$U_t = 1,1713 \text{ W/m}^2\text{K}$$



$$B_f = 96 \text{ mm}$$









$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$

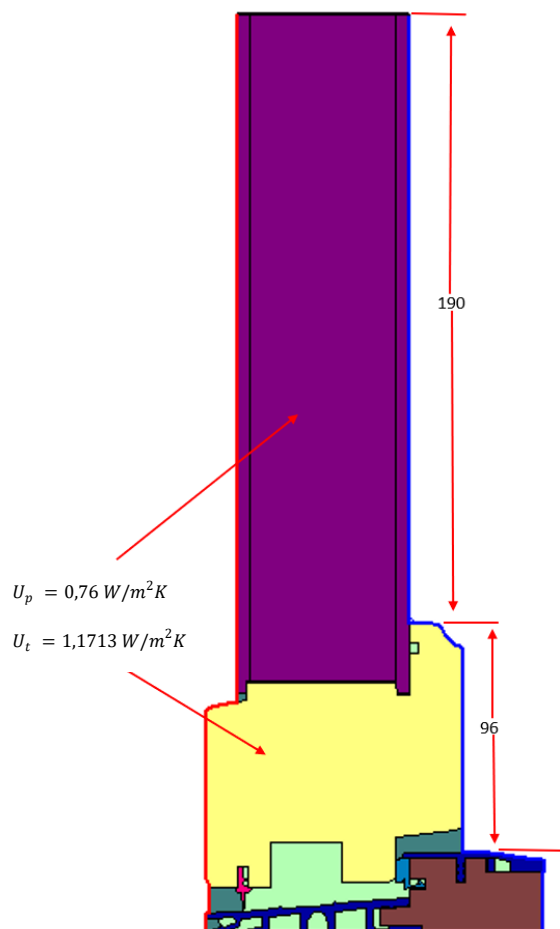
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 1,1713 * (0,096 + 0,19) = 0,335 \text{ W/mK}$$

$$U_f = \frac{0,335 - (0,76 * 0,19)}{0,096} = 1,99 \text{ W/m}^2\text{K}$$

Boundary Conditions	Temp: °C	Hc: W/m²K
 Exterior	0	25
 Interior	20	7,69

Material:	λ(W/mK)	ρ
 Pine	0,12	0,9
 Aluminium	160	0,9
 Panel	0,035	0,9
 Gasket EPDM	0,25	0,9
 Gasket QL	0,03	0,9
 Climate gasket DX1466	0,15	
 Frame cavity- Cen slightly ventilated		
 Frame cavity-Cen Simplified		



U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-37mm			
1,1713	0,76	0,335	1,99

ND NTech Villa Balcony door Cill MP

This example shows glas thicknes 39 - 51mm:

$$U_t = 1,2883 \text{ W/m}^2\text{K}$$

$$B_f = 136 \text{ mm}$$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$

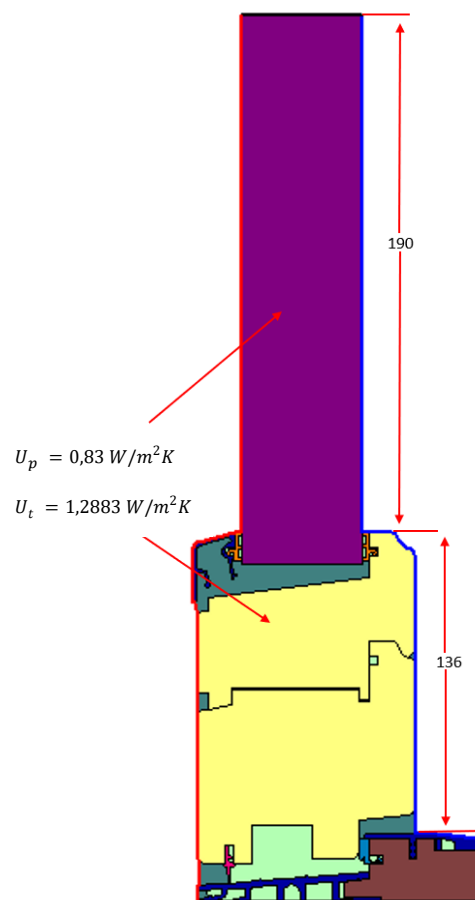
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 1,2883 * (0,136 + 0,19) = 0,420 \text{ W/mK}$$

$$U_f = \frac{0,420 - (0,83 * 0,19)}{0,136} = 1,93 \text{ W/m}^2\text{K}$$

Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	ϕ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Gasket QL	0,03	0,9
Climate gasket DX1466	0,15	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		



U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-37mm			
1,2883	0,83	0,420	1,93