



CW-50

THERMAL CONDUCTIVITY
CALCULATION

ALUMEG

Integrated Façade Solutions



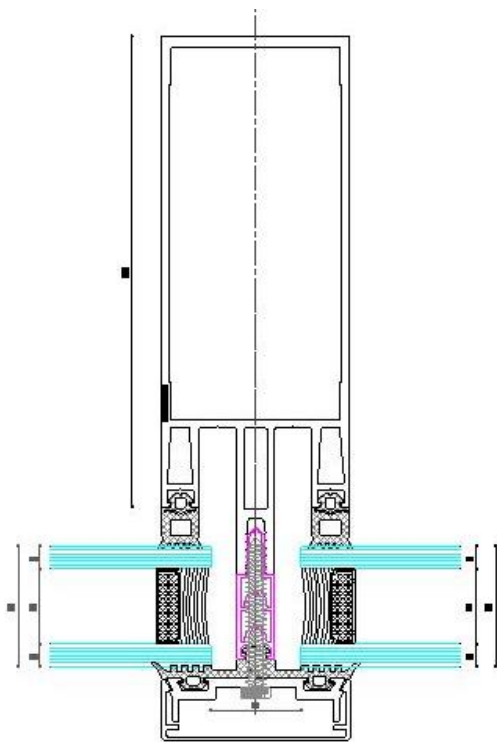
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THERMAL CONDUCTIVITY

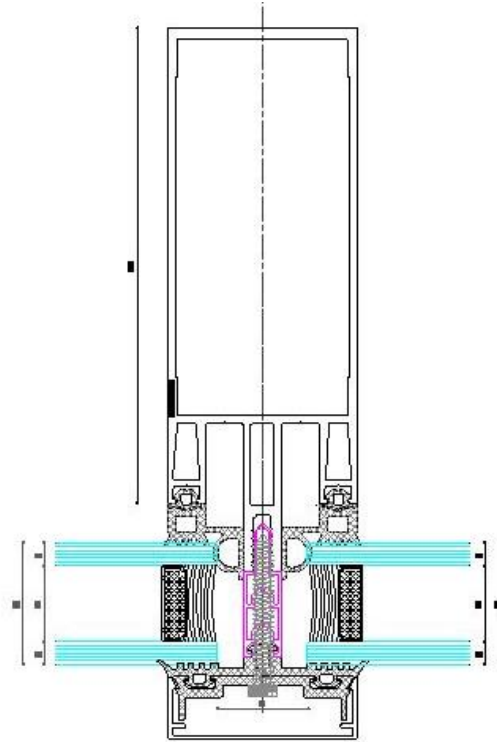
UF Values for CW 50

Fully Captured Curtain Wall (FC)

No;	Glass Thickness	Mullion	Transom	Internal Glazing Gasket	Thermal Break	Cover Cap	Uf Value	Report Number
1.1	32 mm	125 mm		10.5 mm	18.5 mm	16.5 mm	2.75	AM-2020-001.1-00
1.2	32 mm		124.5 mm	10.5 mm	18.5mm	13.5 mm	2.29	AM-2020-001.2-00
2.1	32 mm	125 mm		10.5 mm HI	18.5 mm	16.5 mm	2.17	AM-2020-002.1-00
2.2	32 mm		124.5 mm	10.5 mm HI	18.5 mm	13.5 mm	2.17	AM-2020-002.2-00

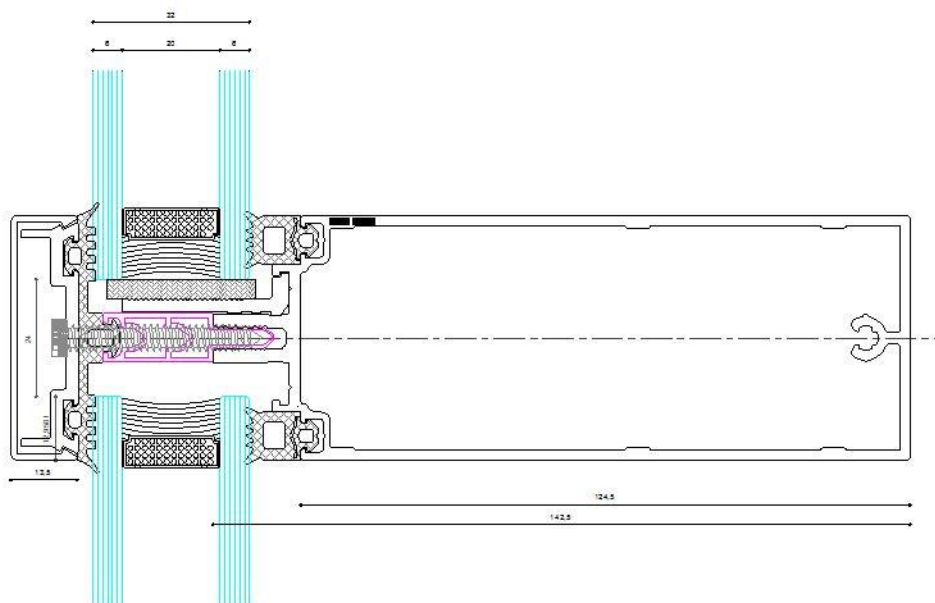


CONFIG. 01

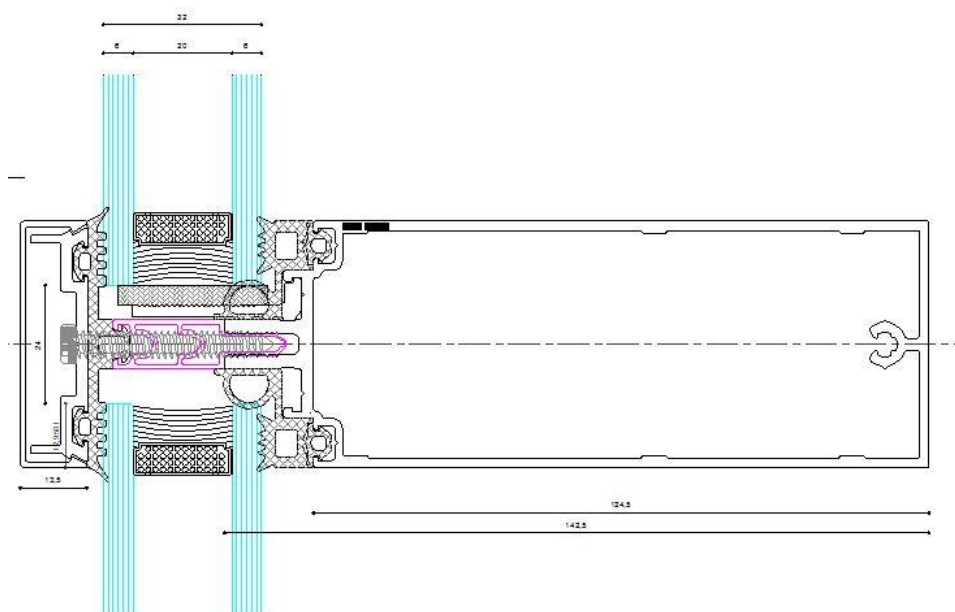


CONFIG. 03

Material	λ [W/(m·K)]	ϵ	Boundary Condition	q [W/m ²]	θ [°C]	R [(m ² ·K)/W]	ϵ
Aluminium (Si Alloys)	160.000	0.900	Epsilon 0.9				0.900
EPDM (ethylene propylene diene monomer)	0.250	0.900	Exterior, frame	0.000	0.040		
PVC-U (polyvinylchloride), rigid	0.170		Interior, frame, normal	20.000	0.130		
Panel	0.035	0.900	Interior, frame, reduced	20.000	0.200		
Polyamid 6.6 with 25% glass fibre	0.300	0.900	Symmetry/Model section	0.000			
Unventilated air cavity	anisotropic						



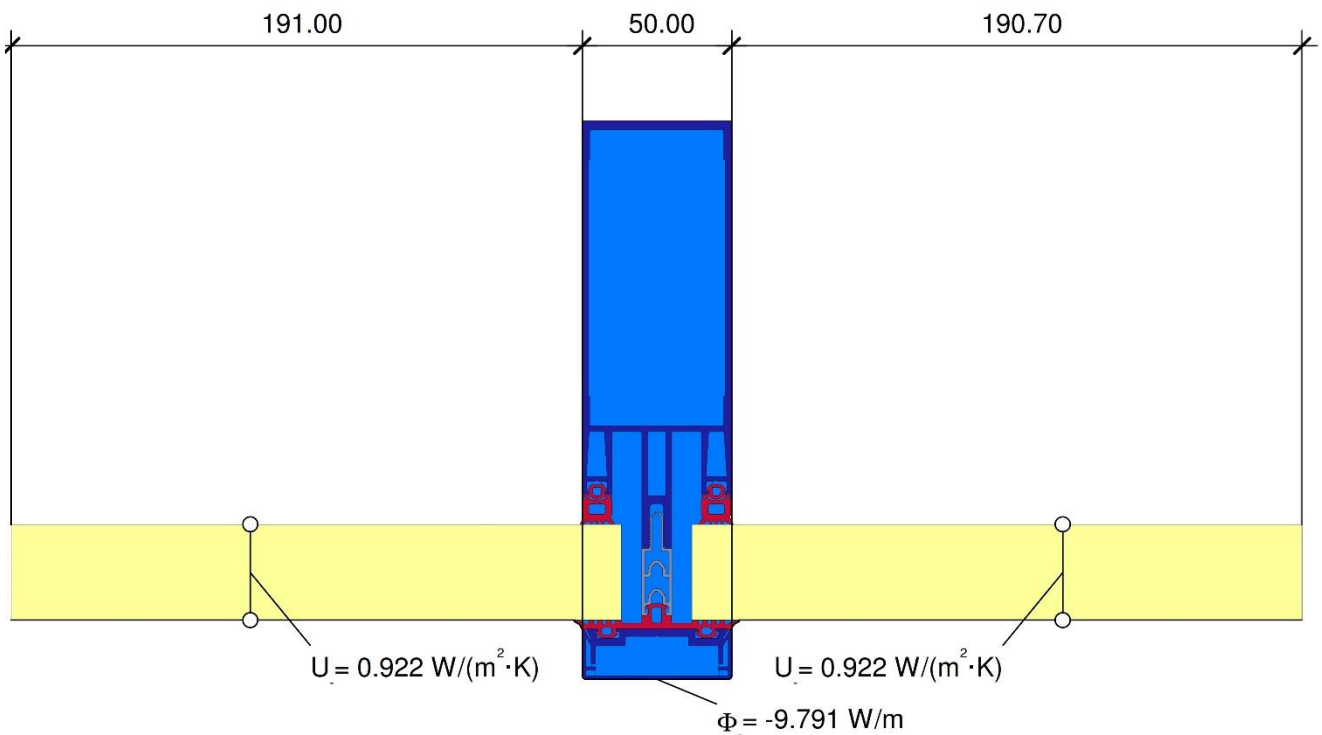
CONFIG. 01



CONFIG. 03

MULLION CONFIGURATION 01: Using Normal Gasket

- 32 mm THK. Glass Thickness
- 125 mm mullion Depth
- Aluminum Pressure Plate
- 16 mm Cover Cap



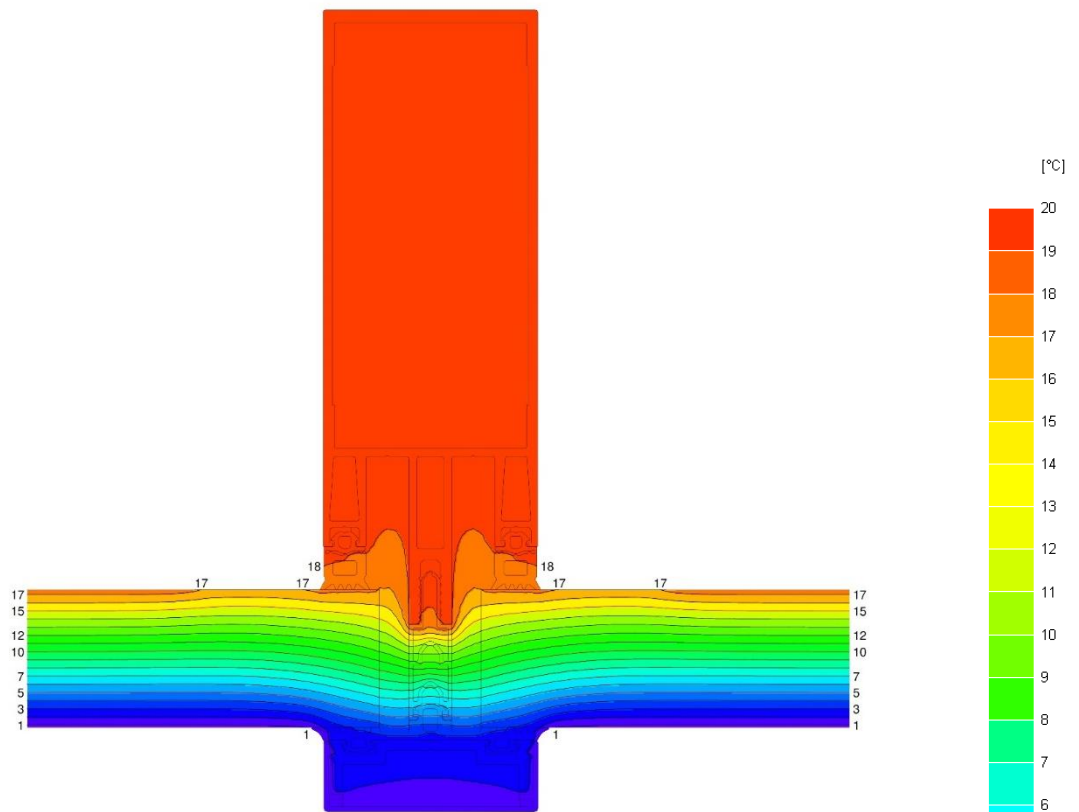
$$U_f = \frac{\frac{\Phi}{\Delta T} - U_{p1} \cdot b_{p1} - U_{p2} \cdot b_{p2}}{b_f} = \frac{\frac{9.791}{20.000} - 0.922 \cdot 0.191 - 0.922 \cdot 0.191}{0.050} = 2.75 \text{ W}/(\text{m}^2 \cdot \text{K})$$

Uf-value of frame (U_f) 2.75 W/m²K

MULLION CONFIGURATION 01: Using Normal Gasket

- 32 mm THK. Glass Thickness
- 125 mm mullion Depth
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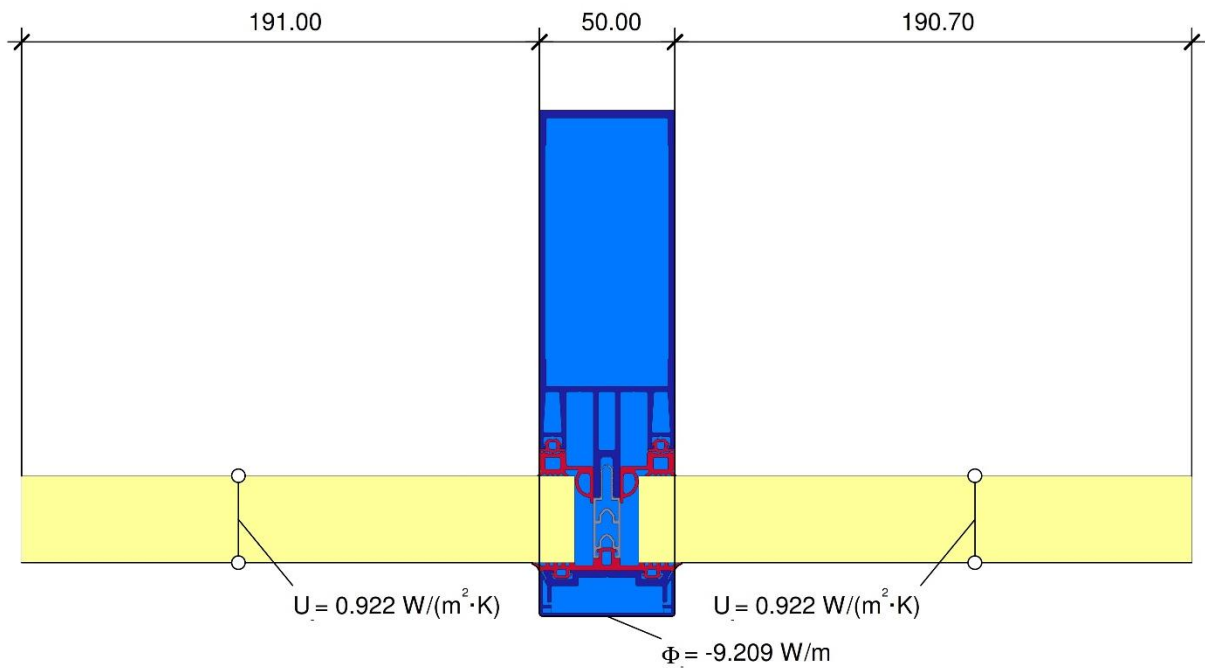
Isotherms (colour increment of 1°C)

$$U_f = \frac{\Phi}{\Delta T} = \frac{U_{p1} \cdot b_{p1} + U_{p2} \cdot b_{p2}}{b_f} = \frac{9.791}{20.000} - \frac{0.922 \cdot 0.191}{0.050} - \frac{0.922 \cdot 0.191}{0.050} = 2.75 \text{ W/(m}^2 \cdot \text{K)}$$

Uf-value of frame (U_f) 2.75 W/m²K

MULLION CONFIGURATION 03: Using Special Gasket

- 32 mm THK. Glass Thickness
- 125 mm mullion Depth
- Aluminum Pressure Plate
- 16 mm Cover Cap



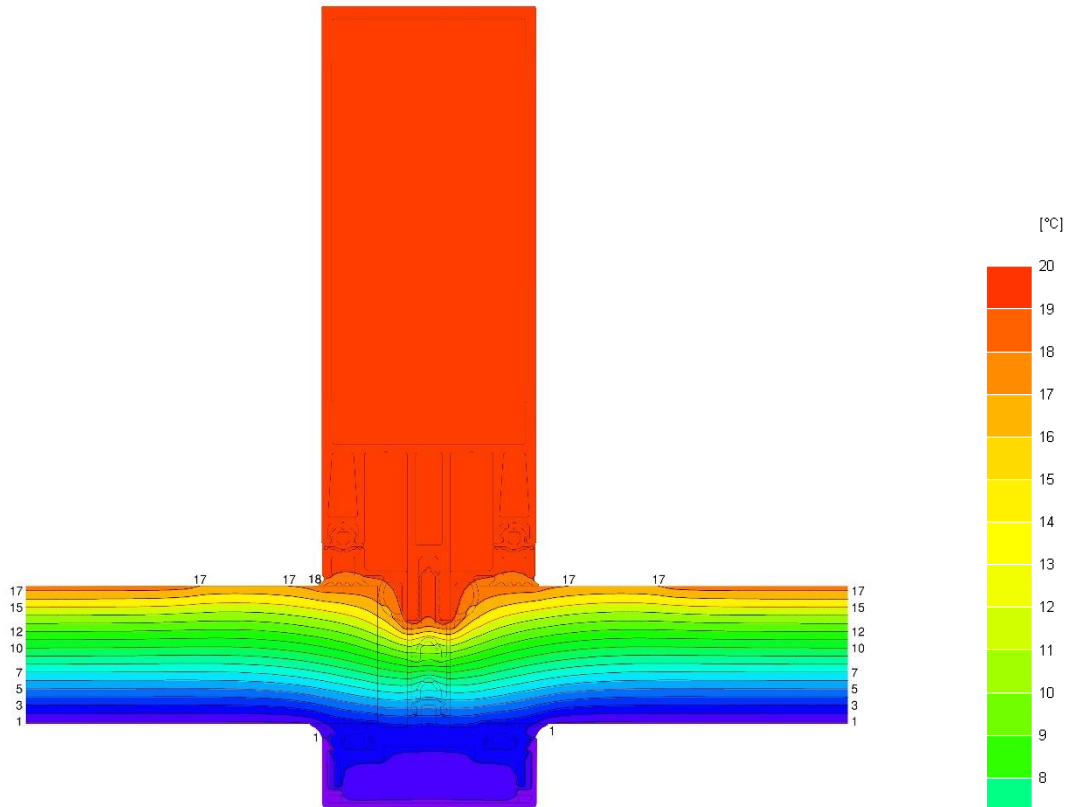
$$U_f = \frac{\frac{\Phi}{\Delta T} - U_{p1} \cdot b_{p1} - U_{p2} \cdot b_{p2}}{b_f} = \frac{\frac{9.209}{20.000} - 0.922 \cdot 0.191 - 0.922 \cdot 0.191}{0.050} = 2.17 \text{ W/(m}^2 \cdot \text{K)}$$

Uf-value of frame (Uf) 2.17 W/m2K

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- 32 mm THK. Glass Thickness
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Isotherms (colour increment of 1°C)

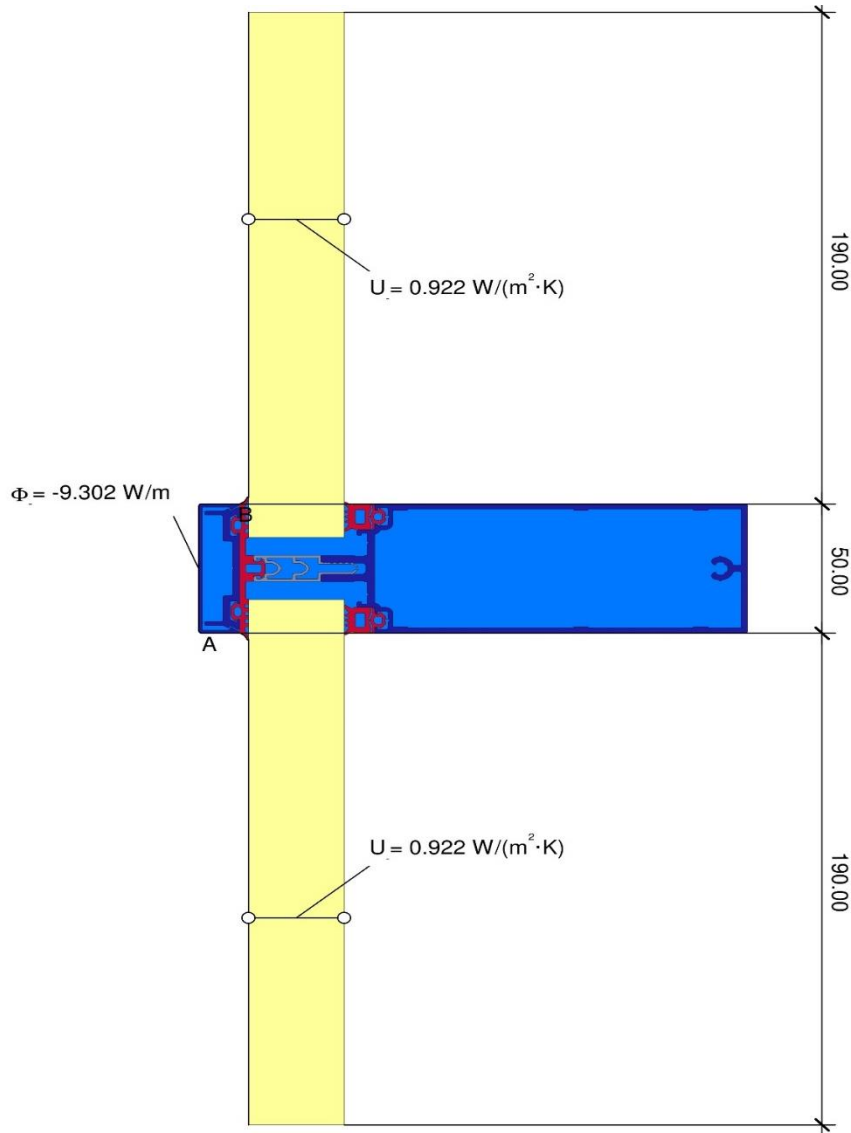
$$U_i = \frac{\Phi}{\Delta T} = \frac{U_{p1} \cdot b_{p1} + U_{p2} \cdot b_{p2}}{b_i} = \frac{9.209}{20.000} = \frac{0.922 \cdot 0.191 + 0.922 \cdot 0.191}{0.050} = 2.17 \text{ W}/(\text{m}^2 \cdot \text{K})$$

Uf-value of frame (Uf) 2.17 W/m2K

TRANSOM CONFIGURATION 01: Using Normal Gasket

- 32 mm THK. Glass Thickness
- 124.5 mm transom Depth
- Aluminum Pressure Plate
- 16 mm Cover Cap

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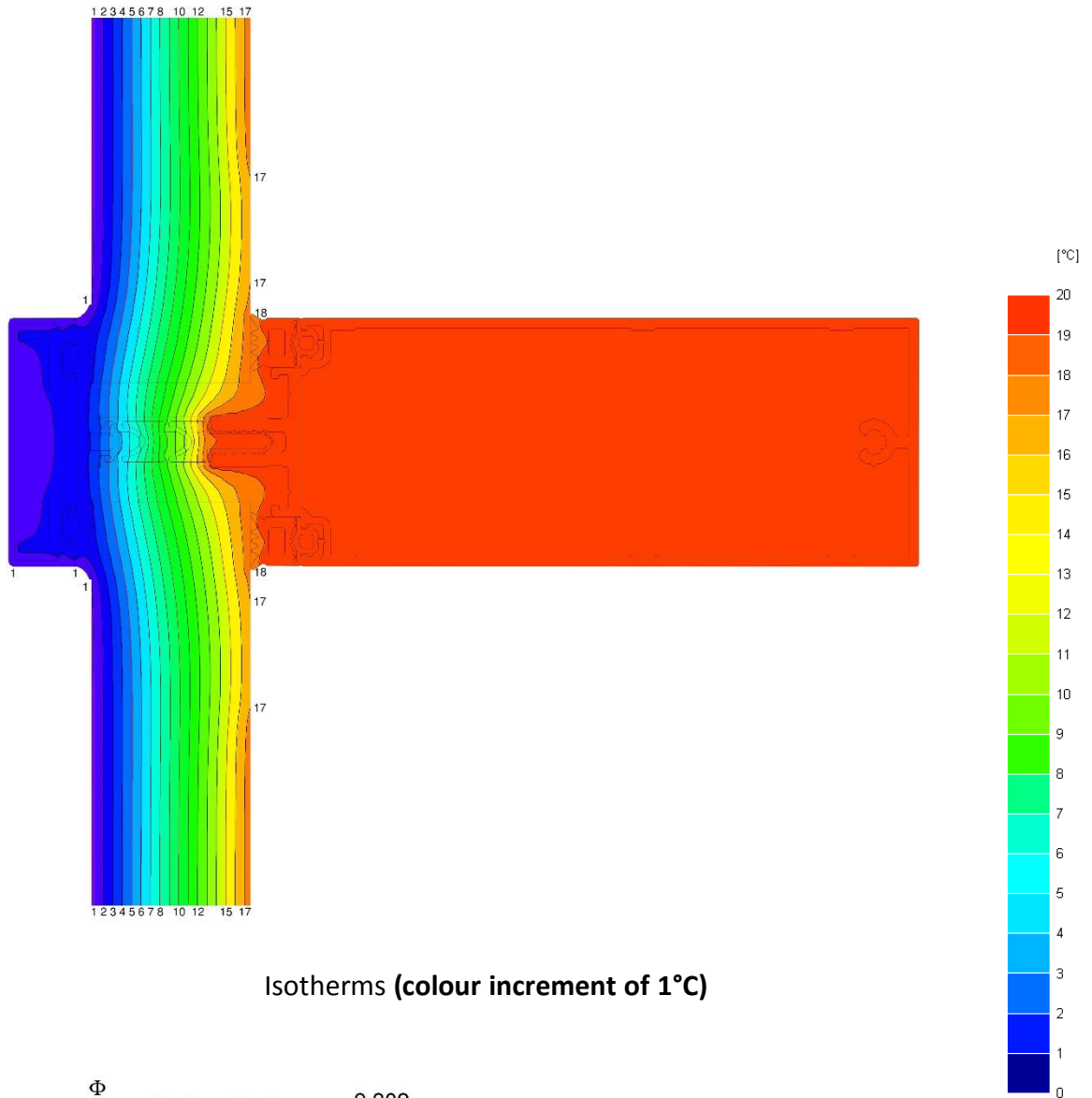
$$U_{f,A,B} = \frac{\Phi}{\Delta T} = \frac{U_{p1} \cdot b_{p1} + U_{p2} \cdot b_{p2}}{b_f} = \frac{9.302}{20.000} = \frac{0.922 \cdot 0.190 + 0.922 \cdot 0.190}{0.050} = 2.29 \text{ W}/(\text{m}^2 \cdot \text{K})$$

Uf-value of frame (U_f) 2.29 W/m²K

TRANSOM CONFIGURATION 01: Using Normal Gasket

- 32 mm THK. Glass Thickness
- 124.5 mm transom Depth
- Aluminum Pressure Plate
- 16 mm Cover Cap

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Isotherms (colour increment of 1°C)

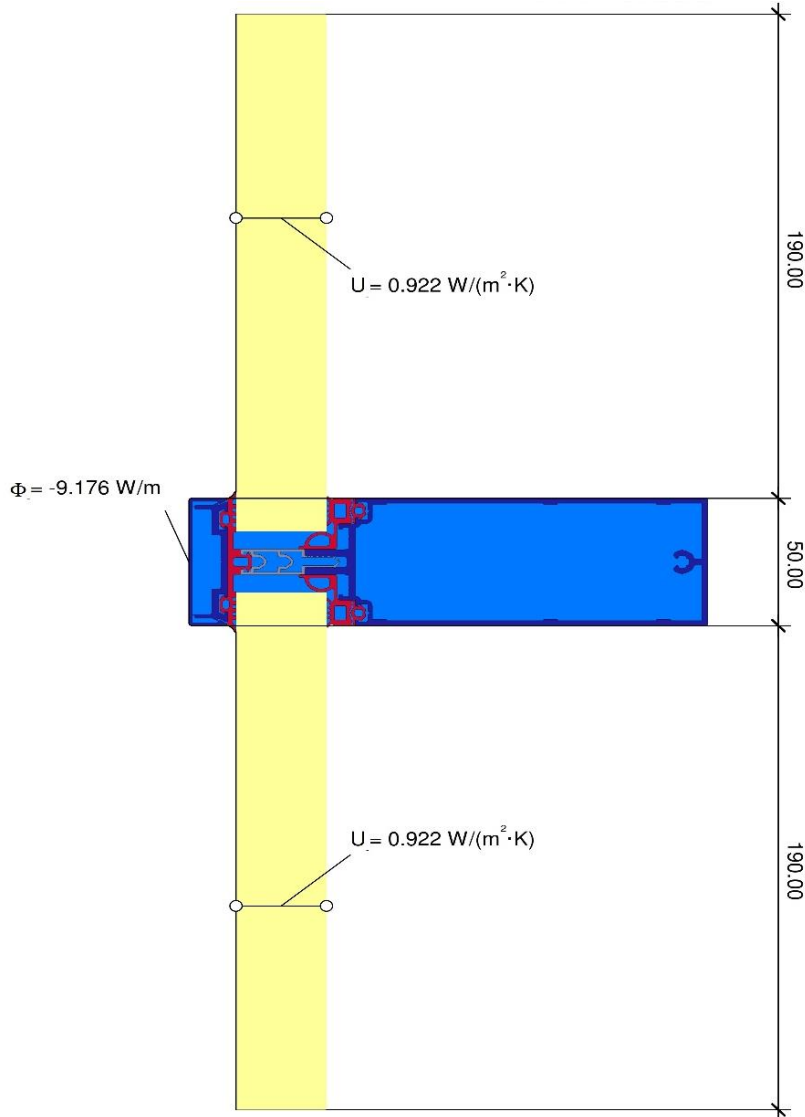
$$U_{f,AB} = \frac{\frac{\Phi}{\Delta T} - U_{p1} \cdot b_{p1} - U_{p2} \cdot b_{p2}}{b_f} = \frac{9.302}{20.000} - \frac{0.922 \cdot 0.190}{0.050} - \frac{0.922 \cdot 0.190}{0.050} = 2.29 \text{ W}/(\text{m}^2 \cdot \text{K})$$

Uf-value of frame (U_f) 2.29 W/m²K

TRANSOM CONFIGURATION 03: Using Special Gasket

- 32 mm THK. Glass Thickness
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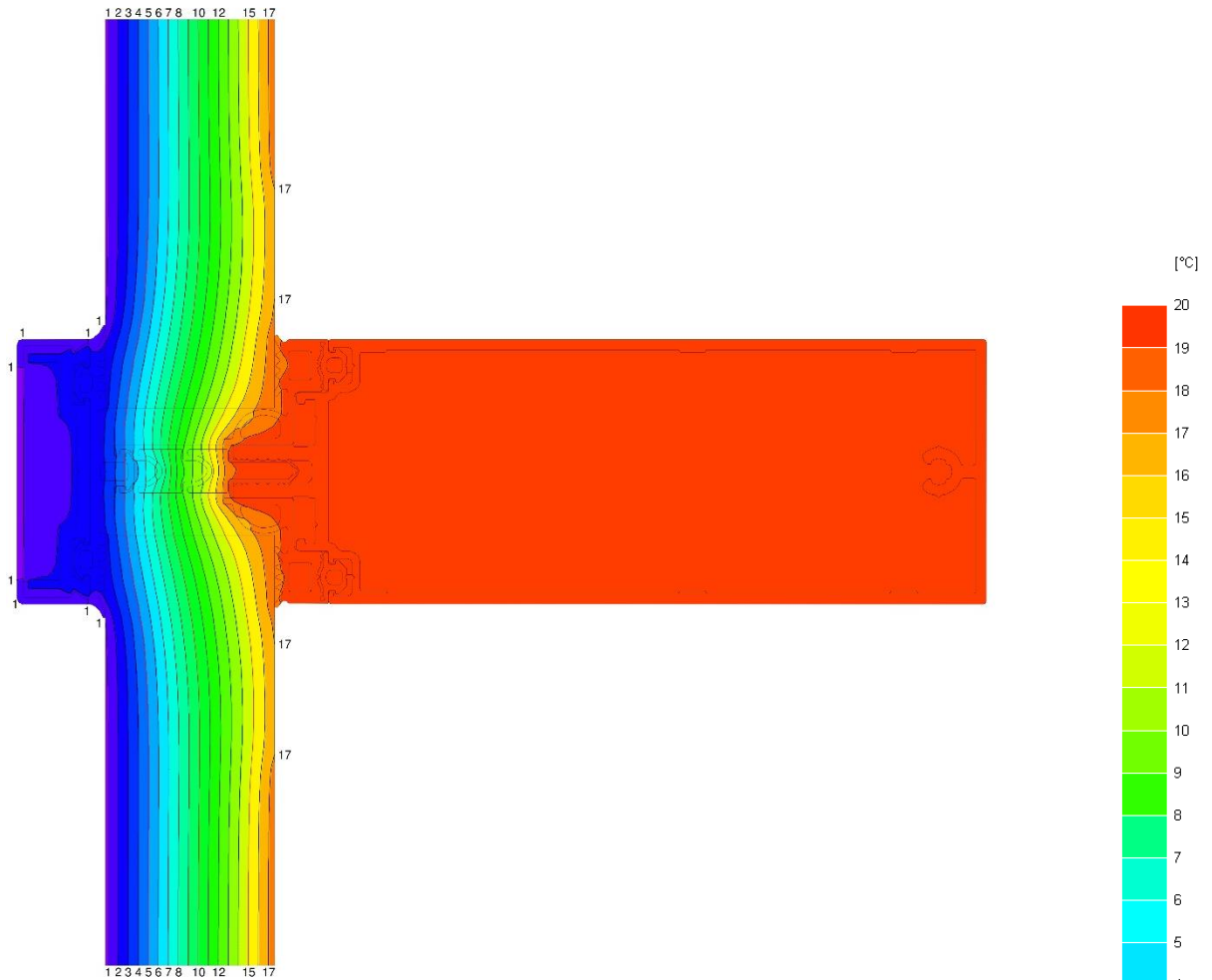
$$U_f = \frac{\Phi}{\Delta T} - \frac{U_{p1} \cdot b_{p1} - U_{p2} \cdot b_{p2}}{b_f} = \frac{9.176}{20.000} - \frac{0.922 \cdot 0.190 - 0.922 \cdot 0.190}{0.050} = 2.17 \text{ W/(m}^2 \cdot \text{K)}$$

Uf-value of frame (Uf) 2.17 W/m2K

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Isotherms (colour increment of 1°C)

$$U_f = \frac{\Phi}{\Delta T} = \frac{U_{p1} \cdot b_{p1} + U_{p2} \cdot b_{p2}}{b_f} = \frac{9.176}{20.000} + \frac{0.922 \cdot 0.190 + 0.922 \cdot 0.190}{0.050} = 2.17 \text{ W/(m}^2 \cdot \text{K)}$$

Uf-value of frame (Uf) 2.17 W/m2K

Material Properties For Use In Thermal Analysis According To EN ISO 10077-2

	Material	kg/m ³	W/mK
		8900	380
Frames	Copper		
	Aluminium	2800	160
	Brass	840	120
	Steel	7800	50
	Stainless Steel	7900	17
	Fibreglass	1900	0.4
	Hardwood	700	0.18
	PVC rigid	1390	0.17
	Softwood	500	0.13
Glass	Soda Lime	2500	1
	Polycarbonate	1200	0.2
	PMMA	1180	0.18
	Insulation (for frame calcs)		0.035
Thermal Break	Polyethylene HD	980	0.5
	Polyethylene LD	920	0.33
	Polyamid reinf.	1450	0.3
	Polyamid nylon	1150	0.25
	Polypropylene reinf.al m	1200	0.25
	PU resin	1200	0.25
	Polypropylene sol.	910	0.22
	PVC rigid	1390	0.17
Weather Strip	Silicone pure	1200	0.35
	EPDM	1150	0.25
	Neoprene	1240	0.23
	PVC flexible	1200	0.14
	Mohair sweep		0.14
	Elastomeric foam	60-80	0.05
Sealant & Glass Edge	Polysulphide	1700	0.4
	Silicone pure	1200	0.35
	PU rigid	1200	0.25
	Butyl hot melt	1200	0.24
	Polyisobutylene	930	0.2
	Polyester resin	1400	0.19
	Silicone foam MD	820	0.17
	Silica gel	720	0.13
	Silicone foam LD	750	0.12
	Molecular sieve	650-750	0.1

Boundary Conditions.

	oC	W/m ² K	oC	W/m ² K
Exterior	0	25	Interior	20
Adiabatic	0	0	Interior (reduced con.)	20
				7.7
				5