



Composite profiles for systematic energy efficiency – European technical approved (ETA)

Energy efficiency through:

Composite profiles:

In the basic profile and flap frame as a combination of:

- rigid PVC multi-chamber insulation structure inside
- aluminium covering profile for design and protection outside (patented construction: Patent number DE 10 2010 000 018)
- continuous rooflight and rooflight flaps include no thermal bridges

Kerb connection profile:

- rigid PVC multi-chamber insulation profile for kerb head
- system connection for perfect roof seals

Application of heat insulated glazing:

- e.g. PC 10mm + 10 mm (U_g -value of glazing: 1.50 W/m²K)
- e.g. PC 10mm + PC 4 + PC 10mm (U_g value of glazing: 1.16 W/m²K)

Performance of hail protection glazing:

- PC 16mm 7-skin + 3mm air + PC 3mm (U_g value of the glazing: 1.58 W/m²K) HW5 for water tightness, light transmission and appearance (acc. Testing regulation no. 24, VKF / Bern VKF classification no. 25036)

Energy efficiency equipment:

- thermal decoupling and thermal insulation of the eaves area and the kerb head
- european valid, comprehensible heat insulation certificate
- allows a total heat transmission (U_w -value) of 1.02 W/m²K according to European Technical Assessment

Safety through:

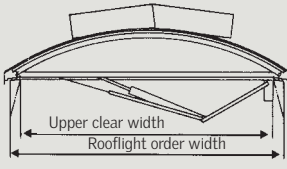
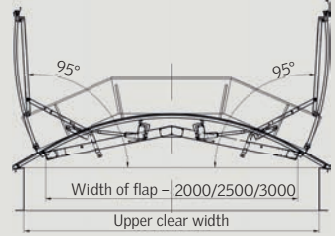
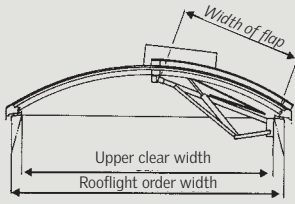
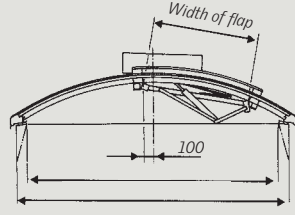
European Technical Assessment (ETA)

- system tested and approved by all European building authorities
- legally secure proof of placing on the market throughout Europe



- structural design according to Eurocode (DIN EN 1991-1-3 and 1991-1-4)
- EC Certificate of Conformity for all NSHEV flaps
- coordinated, BG-certified system accessories with VARIO-PROTECT shading system, LB-DSL and VARIO-SAFEGUARD "fall-through protection" and VARIO-PROTECT 120 VWS traffic ways securing
- Environmental Product Declaration Type II according to DIN EN ISO 14021 for use in sustainability certification e.g. DGNB, LEED, BREEAM
- hard roofing according to DIN 4102, part 7 or DIN EN 13501-5
- general type certification Nr. Z-10.19-739

SHEV flaps for VARIO-THERM continuous rooflights

Flap type	Opening angle	Upper clear width of the kerb	Width/length	A_g	A_a
		cm	cm x cm	m ²	m ²
Full flap 165° 		from 100 to 250	b/100	from 1.000 to 2.500	from 0.700 to 1.998
		from 100 to 250	b/134	from 1.340 to 3.350	from 0.940 to 2.538
		from 100 to 300	b/204	from 2.040 to 6.120	from 1.530 to 4.284
Double flap 95° 		from 200 to 600	200/100	2.00	1.48
		from 200 to 600	200/204	4.08	3.05
		from 250 to 600	250/100	2.50	1.88
		from 250 to 600	250/204	5.10	3.89
		from 300 to 600	300/100	3.00	2.31
		from 300 to 600	300/204	6.12	4.70
		from 350 to 600	350/100	3.50	2.54
		from 350 to 600	350/204	7.14	5.28
		from 400 to 600	400/100	4.00	2.77
		from 400 to 600	400/204	8.16	5.83
Side flap 130° 		from 250 to 350	180/100	1.800	1.158
		from 250 to 350	180/204	3.672	2.387
		from 280 to 410	215/100	2.150	1.384
		from 280 to 410	215/204	4.386	2.851
		from 300 to 480	250/100	2.500	1.609
		from 300 to 480	250/204	5.100	3.315
Beam flap 130° 		from 350 to 1090	180/100	1.800	1.158
		from 350 to 1090	180/204	3.672	2.387
		from 400 to 1090	215/100	2.150	1.384
		from 400 to 1090	215/204	4.386	2.851
		from 480 to 1090	250/100	2.500	1.609
		from 480 to 1090	250/204	5.100	3.315

Note:

A_a values (aerodynamic effective opening surface) and A_g values (geometrical surface)

Composite profiles

Innovative combination of materials for function and design:

Basic profile made of rigid PVC and aluminium covering profile

Advantages of the composite profiles in detail:

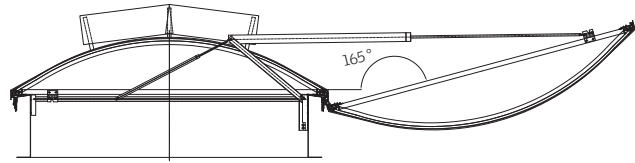
- high-quality and robust construction
- for secure and easy implementation of the roof sealing
- for prevention against fire flashover according to DIN 18234

Advantages of the continuous rooflight construction:

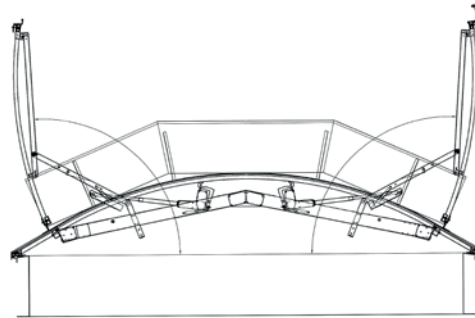
- type static according to Eurocode (DIN EN 1991-1-3 and DIN EN 1991-1-4)
- complete load distribution of the wind suction forces via the PVC surface without metallic penetration of the insulation level

Advantages of rooflight accessories:

- high-quality plastic flap, thermal separation and heat insulated with glazing analogous to the continuous rooflight



Sectional view of a VARIO-THERM continuous rooflight with full flap



Sectional view of a VARIO-THERM double flap.

Energy efficiency

Thermal decoupling and heat insulation of the eaves area:

(Basic profile made of rigid PVC and aluminium covering profile)

- multi-chamber insulation profile without thermal bridges

Thermal decoupling and heat insulation of the kerb head:

(Kerb connection profile made of rigid PVC supplementing the eave profile)

- multi-chamber insulation profile without thermal bridges
- highly insulating, effective kerb head covering
- lowers the U_w value of the continuous rooflight construction up to an additional $0.2 \text{ W/m}^2\text{K}$

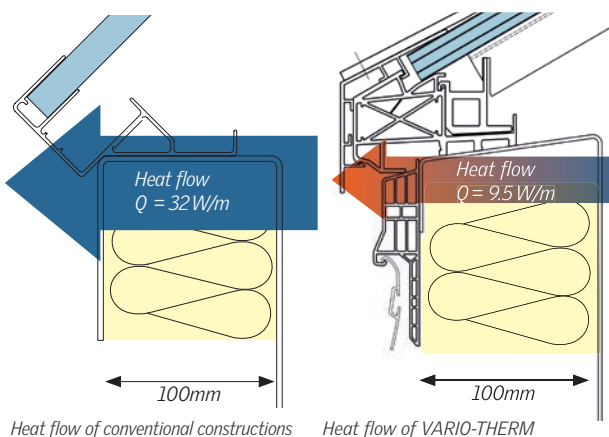
Enables a total heat transfer (U_w value) of $1.02 \text{ W/m}^2\text{K}$:

(Considerably better than the current EnEV reference value of $\leq 2.4 \text{ W/m}^2\text{K}$)

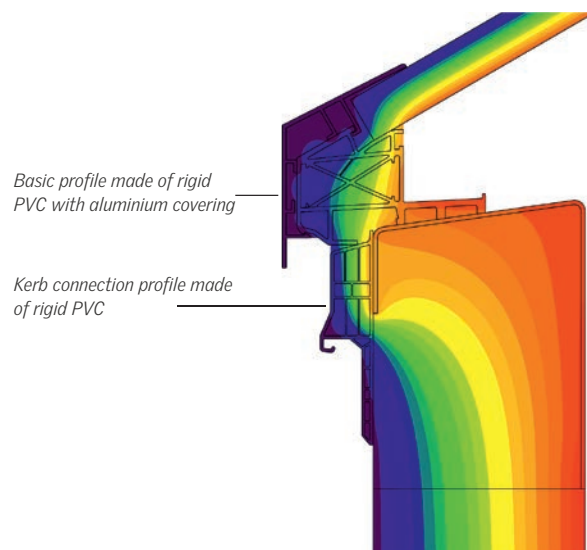
- ideal for projects with sustainability certification
- ideal for energy efficiency refurbishment

Isothermal performance for continuous rooflight with heat flow compared with conventional rooflight eave profiles

Perfect interaction: The heat insulating multi-chamber eave and kerb connection profiles result in ideal isothermal performance.



A low heat flow stands for less loss of heat.



The risk of condensate formation will be further minimised.

Technical data for glazing variants

Description	U _g value of the glazing [W/m ² K]	U _w value of the rooflight construction ¹ [W/m ² K]	Special features
PC 16/7	1.82	1.46	Optional as variant IR control
PC 20/7	1.61	1.32	Optional as variant IR control green
PC 16/7 + PC 3	1.58	1.29	Hail protection: HW 5 in all categories Sound insulation: 26 dB
PC 10/4 + GFK + PC 10/4	1.54	1.26	Hard roofing: B _{Roof} (t1) Sound insulation: 27 dB
PC 10/4 + PC 10/4	1.50	1.24	Fire behaviour: B-s2, d0 Sound insulation: 24 dB
PC 10/4 + non-woven fabric + PC 10/4	1.50	1.24	Hard roofing: B _{Roof} (t1) Melttable area according to DIN 18230-1
PC 10/4 + PC 10/4 DI	1.31	1.13	Sound insulation: 24 dB
PC 10/4 + GFK + PC 10/4 DI	1.20	1.05	Hard roofing: B _{Roof} (t1) Sound insulation: 27 dB
PC 10/4 + PC 4/2 + PC 10/4 DI	1.16	1.02	Sound insulation: 24 dB
PC 16/7 + GFK DI	1.33	1.12	Hard roofing: B _{Roof} (t1) Melttable area according to DIN 18230-1

Note:

¹Data relates to a continuous rooflight with the dimension 2 x 10m with insulated kerbs of 50cm height