roda

Daylight Technology

Natural light

The presence of daylight at the workplace creates a natural and yet pleasant working environment. This positive effect is partly psychologically based. Surveys have shown, that people feel better and their productivity increases, when they have access to daylight. Additionally, daylight helps saving energy, as it may replace artificial lighting in many areas. This is why skylight systems are highly rated in modern architecture. For many years, building owners, planners and architects alike have opted for the high quality standards of our skylight systems and the extensive advantages they offer for new buildings or roof refurbishments.

The systems are mounted on curbs and can be perfectly combined with other elements of our system range. Together with our natural smoke and heat extractors they provide an ideal unit for natural venting and cost-free natural lighting as well as for smoke and heat extraction in case of fire.

Illustration: Assembly hall, perfectly illuminated by a EUROLIGHT skylight system.

Infill options

Various polycarbonate multi-wall panels are available for the infill of the EUROLIGHT and DELTALIGHT skylight systems, as well as for the use in shed glazing. Additionally, the systems can be designed as hard roofing elements.

Polycarbonate is a building material, perfectly suited as a lighting element. It features high stability, impact resistance and rigidity. Furthermore, it is resistant to many mineral acids, salts, oxidants and carbon hydride. Polycarbonate panels come with a coating for UV stability, thus their translucency changes but marginally to the indicated value over time. Its particular benefits, however, will start to reveal, when used as a multi-wall panel. Due to their low weight of 2.6 – 3.2 kg/m² (16 mm thick panel without filling), multi-wall panels offer a significantly lighter alternative to glazing infills. They provide brilliant U-values and the HR5 version is even hailstorm resistant up to a hail stone size of 55 mm according to SIA standard 280.

type	thickness in mm	structure	grammage in gr./m²	version	translucence in %	g-value	U-value in W/m²K	sound insulation in dB	UV-protection	fire classification
10/4	10	4-layer	1750	clear	79	0,78	2,50	17	o	Bs1d0
				opal	45	0,53				Bs2d0
10/5	10	5-layer	1750	clear	65	0,65	2,39	20	b	Bs1d0 + B1n.b.a.
				opal	60	0,59				
				softlite	62	0,64				
16/3	16	3-layer	2700	clear	74	0,78	2,27	21	b	Bs1d0 + B1n.b.a.
				opal	63	0,69				Bs1d0
16/3	16	3-layer	3960	100% Lumira	59	0,58	1,33	24	b	Bs1d0 + B1n.b.a.
16/5	16	5-layer X	2550	clear	66	0,70	2,10	18	o	Bs1d0
				opal	40	0,55				Bs2d0
16/5	16	5-layer X	2600	softlite	57	0,56	1,88	21	b	Bs1d0
16/5	16	5-layer X	3000	softlite HR5	57	0,56	1,86	21	b	Bs1d0
16/6	16	6-layer	2800	clear	60	0,62	1,80	20	b	Bs1d0
				opal	40	0,45				
16/6	16	6-layer	3200	clear HR5	60	0,62	1,80	-	b	Bs1d0
				opal HR5	40	0,45				Bs2d0
6/16-20	16	6-layer	2800	clear	59	0,57	2,00	20	o	Hard roofing in conjunction with GRP panels
20/6	20	6-layer	3100	clear	58	0,60	1,60	21	o	Bs1d0
				opal	38	0,43				
25/3	25	3-layer	3300	clear	72	0,73	1,80	-	b	Bs2d0
				opal	50	0,61				
25/3	25	3-layer	4980	100% Lumira	53	0,53	0,92	-	b	Bs2d0
			4140	50% Lumira	62	0,58	1,18			
25/5	25	5-layer M	3400	opal	40	0,42	1,40	18	o	Bs1d0
32/5	32	11-layer M	3700	clear	53	0,57	1,10	18	o	Bs2d0

UV protection: o = coated on one side / b = coated on both sides

Hard roofing

When designed as a hard roofing element, the 16 mm polycarbonate multi-wall panel (marked in the table in orange) is combined with a 1.1 mm thick GRP panel, which is installed underneath.

Illustration: Continuous skylight system type EUROLIGHT with MEGAPHOENIX natural smoke and heat extractors, fitted on top of a Rodeo flange.

EUROLIGHT

The EUROLIGHT is an arched skylight system with polycarbonate multi-wall panels held in a glazing bar construction. As the upper and lower glazing bars are not connected to each other, the system radius is thermally separated. The system's good thermal insulation properties ensure low energy costs. The EUROLIGHT can be equipped with the PSP30 or PSG50 fall-through-safety grids. In order to comply with specific noise protection standards, the EUROLIGHT is also available with enhanced sound insulation values of up to 29dB. If, in addition to the daylight properties, smoke and heat extraction is required, natural ventilation systems can easily be integrated. The panel width is 1,060 mm.

The EUROLIGHT is fitted with polycarbonate multi-wall panels complying with the fire classification B-s1, d0 (opal or Softlite panels with fire classification B-s2,d0).

Advantages:

• Natural daylight (glare-free when opal, Softlite or with Lumira® aerogel filled panels are fitted

• Possible installation of natural ventilation systems, which can also be used for smoke and heat extraction

• Low weight due to the use of aluminium profiles and polycarbonate multi-wall panels

• Modular system for easy mounting

• Excellent U-values due to the thermal insulation of the system radius

• Also feasible as hard roofing

Design characteristics:

The arched polycarbonate multi-wall panels are held by matching cover and border profiles, which bestow a particularly appealing visual appearance on the skylight system. The border profiles are adjusted to the radius of the covering glazing bars and form the border of the base at the same time. The design of the extruded aluminium profiles used for the glazing bars allows the expansion of the different materials to be easily compensated for. The profiles are made of the aluminium alloy AlMg Si05 F22. Being part of a modular design the individual components of the continuous roof lights can be easily bolted together. All fitting parts are made of aluminium or stainless steel.

Applicable panel thicknesses suitable for the infill:

Subject to thermal technical demands, the infill is made from 10 mm or 16 mm polycarbonate twin-wall panels, either transparent, opal or as a Softlite version. Additionally, the panels can be filled with Lumira® aerogel to improve the light scattering properties and to achieve significantly higher thermal insulation values.

The EUROLIGHT is available in three versions, MKI, MKII and MKIII, which differ mainly in their plinth connection and sizes offered.

Illustration: EUROLIGHT continuous skylight system with integrated PHOENIX smoke and heat extractors mounted on a servicing hall of the Federal Railways.
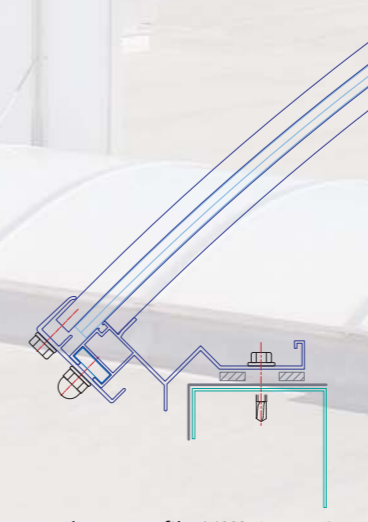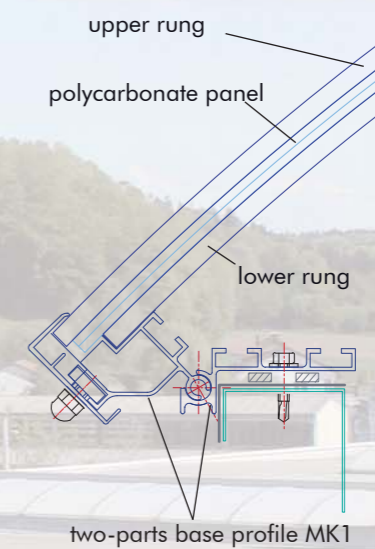
EUROLIGHT

EUROLIGHT MKI

Theoretically, the MKI can be produced in unlimited lengths and up to a width of 5,600 mm (opening width), for which it has obtained a general technical approval by the DIBt (German Institute for Structural Engineering). The base profile consists of two profiles, of which one is swivel-mounted, thus enabling the system to achieve different rises.
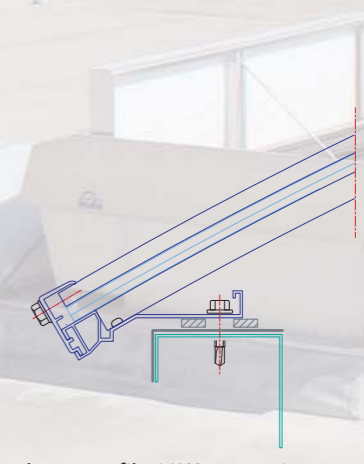
EUROLIGHT MKII

Unlike the MKI version, the MKII can only be produced with an opening width up to 3,000 mm. The rise/span ratio is available in 1/5 and 1/7. The difference to the MK1 is mainly in the modified base profile, which makes the MKII versions slightly cheaper.

EUROLIGHT MKIII

The MKIII has been designed as a EUROLIGHT with a default width of 2,500 mm, in which PHOENIX natural smoke and heat extractors can be integrated using an insulated, double-skinned base glazing bar without having to use connecting profiles. The rise/span ratio is fixed at 1/7. The MKIII version too has been type approved by the DIBt.

upper rung

polycarbonate panel

lower rung

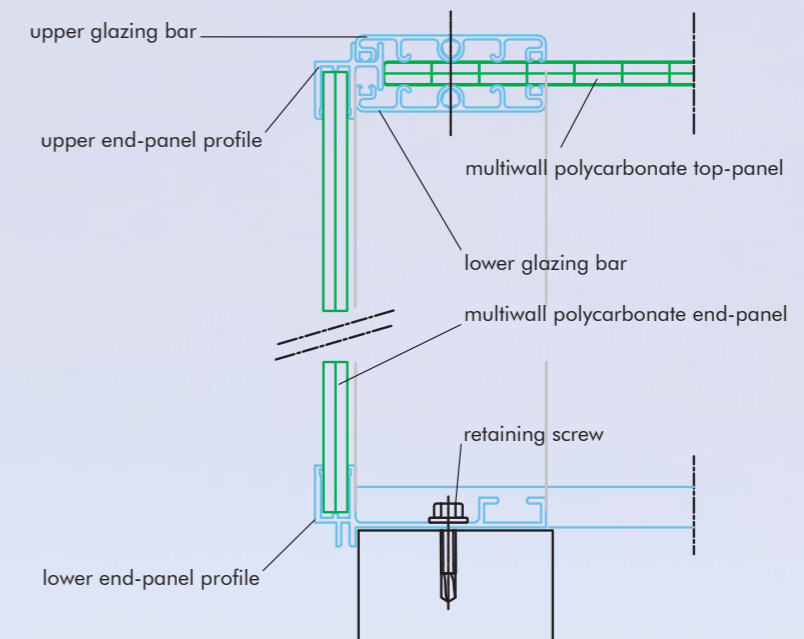two-parts base profile MK1

base profile MK2 (one-piece)

base profile MK3 (one-piece)

Illustration: EUROLIGHT MKIII with PHOENIX MKIII natural smoke and heat extractors, which are also used for day-to-day ventilation.

End panels:

For all three versions, the prefabricated end panels are almost identical. These are also custom-made out of polycarbonate twin-wall panels (10 mm or 16 mm) The panels are held in place by two special profiles. The upper end-panel profile is clamped between the upper and lower glazing bars, whereas the lower end-panel profile serves as the base profile.

upper glazing bar
upper end-panel profile
multiwall polycarbonate top-panel
lower glazing bar
multiwall polycarbonate end-panel
retaining screw
lower end-panel profile

Integration of natural smoke and heat extractor in the skylight system:

Natural smoke and heat extractors, ventilation equipment and multi-purpose ventilators can be integrated into the EUROLIGHT. To do so, they are mounted at the front part of the EUROLIGHT by means of hat profile flange. This installation is possible at any position of the skylight system.

upper glazing bar of the EUROLIGHT
cap profile
mounting of natural smoke and heat extractors / ventilators
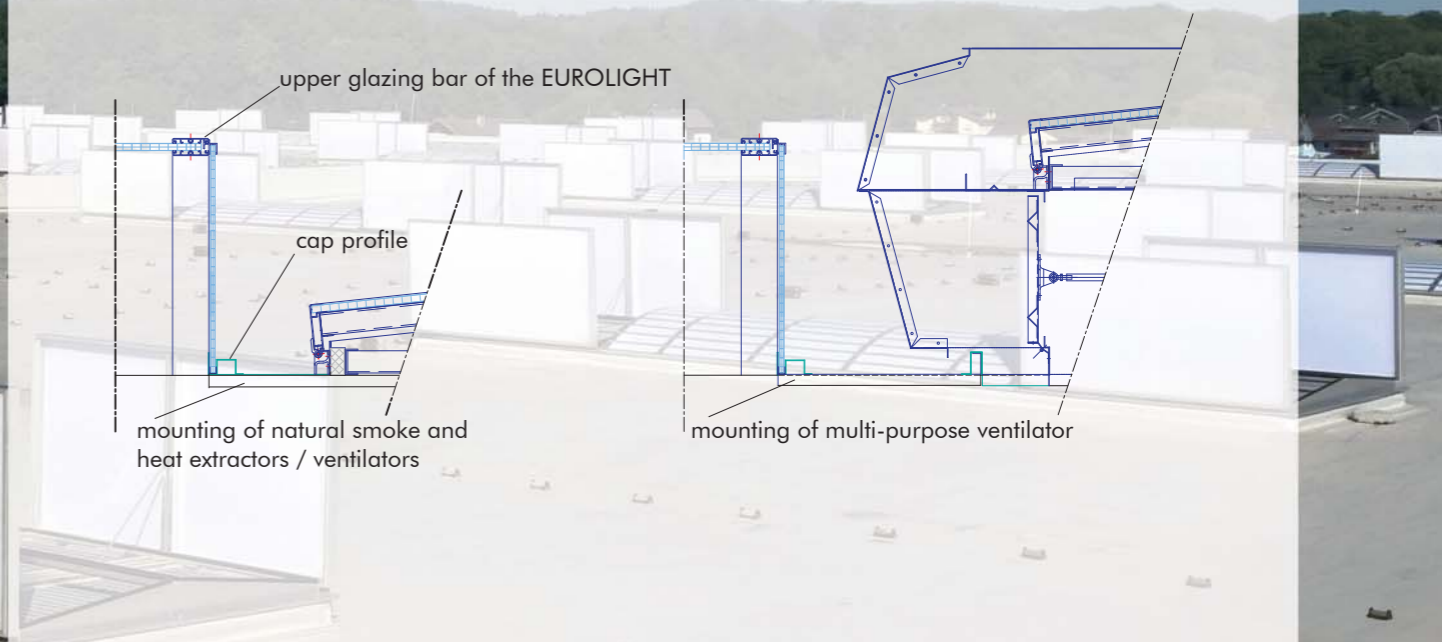mounting of multi-purpose ventilator

Illustration: EUROLIGHT roof lights with a total of 180 PHOENIX NSHE installed on top of the roof of a logistics centre.

If the twin-flap ventilators are intended to be used for ventilation purposes only, smaller systems can be mounted on the skylight by means of a radius flange (see drawing and large image).

PHOENIX as a ventilator

rodeo curb

reinforcing bracket
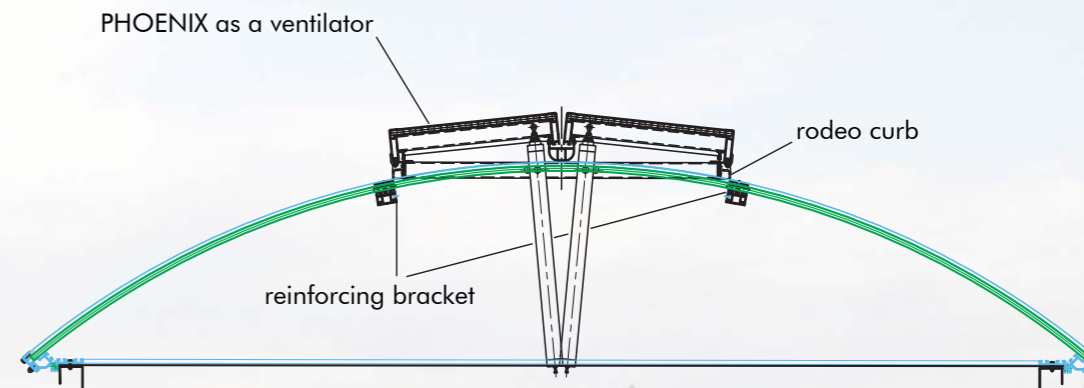
The EUROLIGHT MKIII with its default width of 2,500 mm and the PHOENIX MKIII with its insulated base frame that forms the front part of the interrupted skylight system on both sides, are perfectly matched. Thus, the number of non-translucent areas are reduced to a minimum and thermal bridges are prevented. As a twin-flap ventilator the PHOENIX MKIII comes with a default width of 2.5 m. Lengths are variable and available up to 2 m.
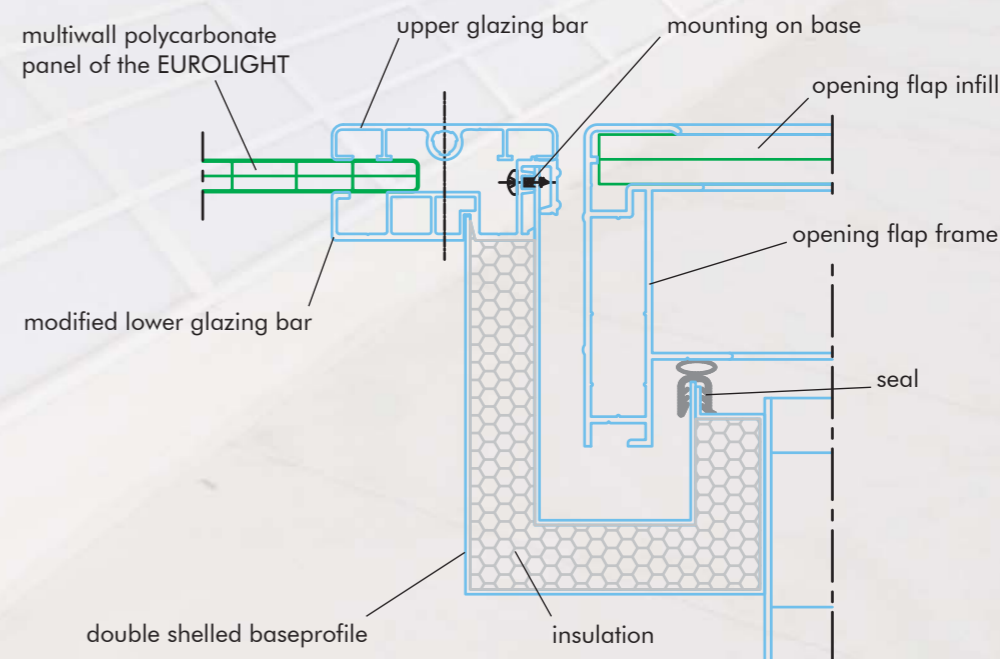
multiwall polycarbonate panel of the EUROLIGHT

upper glazing bar

mounting on base

opening flap infill

opening flap frame

modified lower glazing bar

seal

double shelled baseprofile

insulation

Illustration: A EUROLIGHT with an opening width of five meters and PHOENIX ventilators, mounted by means of a radius flange.
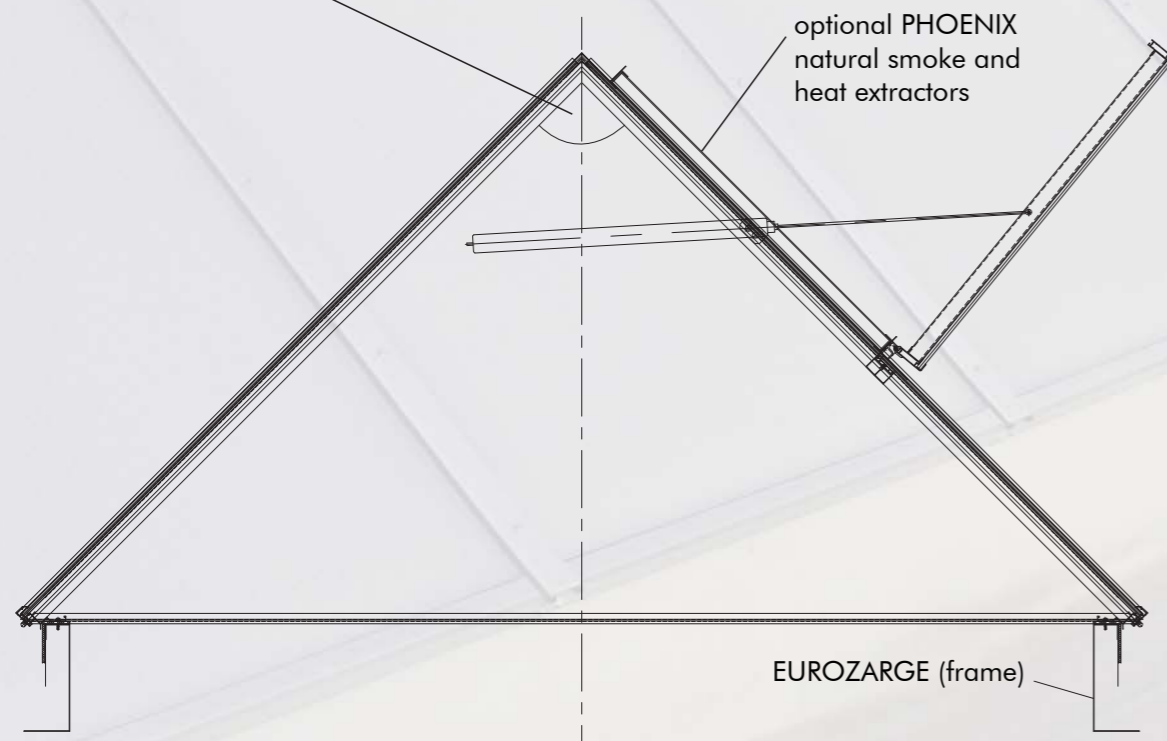
DELTALIGHT

The DELTALIGHT is a triangular skylight system on a self-supporting aluminium construction, in which polycarbonate multi-wall panels are inserted. Due to its design with glazing elements mounted in extruded aluminium sections, the DELTALIGHT has very good thermal-insulation properties, thus guaranteeing low energy costs. Significantly better insulation values and excellent light scattering properties can be achieved by filling the panels with Lumira® aerogel. Installing or retrofitting natural smoke and heat extractors or other devices into the DELTALIGHT is an easy option. The DELTALIGHT system can be equipped with a PSP30 fall-through safety grid. It is adapted accordingly for special requirements such as stricter sound insulation standards. Furthermore, south-facing solar shading can be installed.

The DELTALIGHT complies with the fire classification B-s1, d0 (opal and Softlite panels with fire classification B-s2, d0).

Advantages:

- Natural daylight (glare-free when opal, Softlite or with Lumira® aerogel filled panels are fitted

- Natural smoke and heat extractors can be easily fitted or retrofitted

- Low weight due to the use of aluminium profiles and polycarbonate multi-wall panels

- Optionally fitted solar shading louvers reduce heat built-up inside the building during the summer.

- Modular system for easy mounting

- Also feasible as hard roofing

standard angle combinations: 30°/ 120°/ 30° and 45°/ 90°/ 45°mm.
Other angles and asymmetrical designs (up to a width of 2 m) available on request.

optional PHOENIX natural smoke and heat extractors

EUROZARGE (frame)

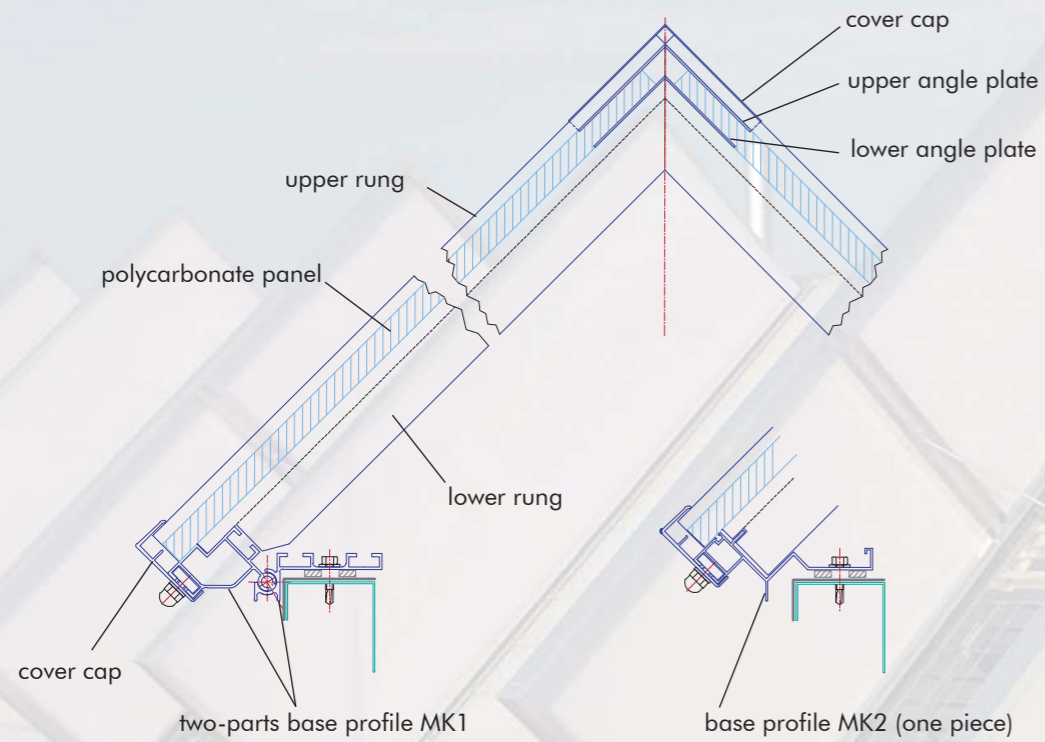DELTALIGHT with integrated PHOENIX natural smoke and heat extractor.

Illustration: DELTALIGHT skylight system with opal polycarbonate multi-wall panels and integrated single-flap PHOENIX natural smoke and heat extractors.

DELTALIGHT

Design characteristics:

The self-supporting construction is made of the aluminium alloy AIMg Si05 F22 with the base edge profile being mounted on top of a curb. At the end faces the glazing elements are held in a circumferential end-panel border profile. The border profile is adjusted to the angle of the first and last covering glazing bars, forming the border of the base at the same time. The end panel is made of 16 mm polycarbonate twin-wall panel. Threaded glazing bars welded together form the ridge turrets and the basis for the infill. The ridge flashing is made up of ridge caps and cover angles, which are attached to the upper glazing bars. All bolting components are made of aluminium or stainless steel.

cover cap

upper angle plate

lower angle plate

upper rung

polycarbonate panel

lower rung

cover cap

two-parts base profile MK1

base profile MK2 (one piece)

Sizes:

The DELTALIGHT is manufactured for roof openings between 1,500 mm and 5,000 mm. With a glazing-bar spacing of 1,000 mm, there are no length restrictions. The skylight is available with the following standard angle combinations: 30°/ 120°/ 30° and 45°/ 90°/ 45°mm. Asymmetrical designs and other angles are available on request.

Infill:

The DELTALIGHT glazing infill is made of polycarbonate multi-wall panels with a thickness to choose from between 10 to 32 mm. Furthermore, 10, 16 and 25 mm panels can be filled with Lumira® aerogel. An insulated-glass infill is also available.

Illustration: DELTALIGHT with a PSP30 fall-through safety grid, opal multi-wall panels and integrated PHOENIX ventilators.

DELTALIGHT

The DELTALIGHT is available in both, the MKI and the MKII versions, which differ in their base profiles. The MKI profile allow different angles and an asymmetric construction of up to a width of two meters. Furthermore, it is easier to install. The more economic MKII base profile is only available in two versions with either a 30° or 45° fixed angle.

End panels:

The end panels are manufactured out of custom-made 10 or 16 mm polycarbonate twin-wall panels and are held in place by the upper and lower end-panel profiles. The upper end-panel profile is held in place by the upper and lower glazing bars.
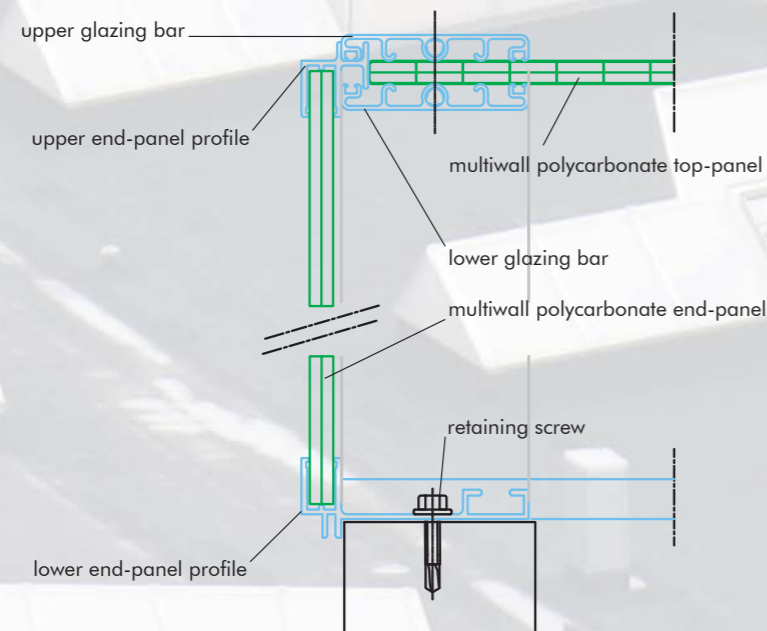
upper glazing bar

upper end-panel profile

multiwall polycarbonate top-panel

lower glazing bar

multiwall polycarbonate end-panel

retaining screw

lower end-panel profile

Illustration: DELTALIGHT continuous skylight systems with integrated PHOENIX natural smoke and heat extractors performing day-to-day ventilation.

Northlight glazing

For shed roof constructions we offer various glazing systems. Again, we rely on the advantages of multi-wall panels. We use panel thicknesses between 16 mm and 60 mm depending on the requirements. Glazing-bar-free glazing is possible using a 40 or 60 mm click system. Natural smoke and heat extractors as well as ventilators can be easily integrated into the northlight glazing.

Advantages:

- Low-weight polycarbonate panels relieve the statics weight load
- Glare-free when opal, Softlite (for 16 mm panels only) or Lumira® aerogel-filled panels are fitted
- High thermal-transmittance values: Up to 0.8 W/m²k without Lumira® filling and 0.385 W/m²k with Lumira® filling in 60 mm multi-wall panels
- High sound insulation values up to 23 dB (with Lumira® filling approximately + 3 dB)
- Fire classification: B-s1, d 0 (B-s2, d0 for opal and Softlite panels) according to EN13501
- Effective UV protection due to the co-extrusion process
- Easy integration of natural smoke and heat extractors and also ventilators
- Low-cost and low-weight alternative to glass

Infill options:

In addition to the polycarbonate multi-wall panels listed in the table on the second page, we offer the following click panels, which allow a glazing-bar-free glazing.

type	thickness	stucture	grammage in gr./m²	version	translucence in %	g-value	U-value in W/m²K	sound insulation in dB	UV-protection	fire classification
click panel PC 540-3	40 mm	3-layer	3910	klar	59	60	1,70	21	o	Bs1d0
			6690	100% Lumira	45	47	0,59	24	o	
			5340	50% Lumira	-	-	0,80	22	o	
click pane PC 540-7	40 mm	7-layer	4200	klar	58	55	1,10	22	o	Bs2d0
click panel PC 560-10	60 mm	10-layer	5800	klar	53	51	0,80	23	o	Bs2d0
			10000	100% Lumira	22	24	0,385	26	o	
			7900	50% Lumira	-	-	-	24	o	

UV protection o = coextruded on one side

500±5 — 40

only one chamber filled

both chambers filled

500±5 — 60
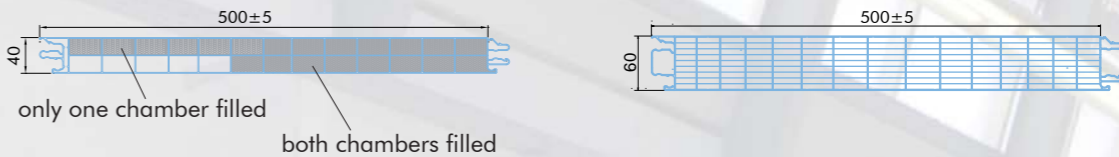
40 mm and 60 mm click panels allowing a glazing-bar-free northlight glazing.

Illustration: Northlight glazing on a textile factory.
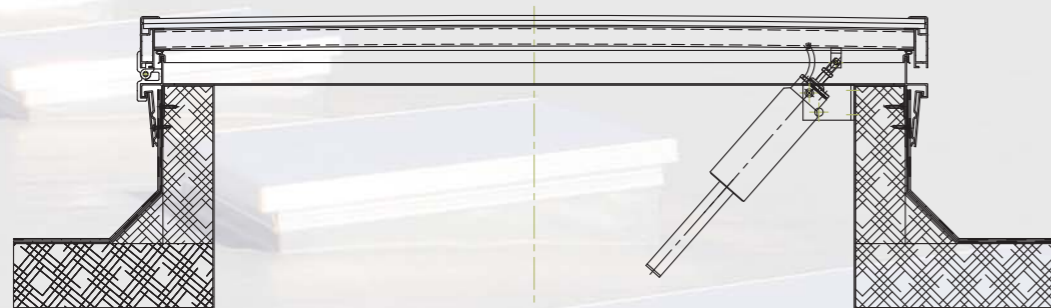
VenturiLight

The VenturiLight is an alternative to traditional skylight domes with all the benefits offered by multi-wall panels. In the VenturiAir version, the system additionally features a ventilation element. Both versions consist of an aluminium frame design, in which 16 mm polycarbonate multi-wall panels are inserted. The VenturiLight complies with fire classification B-s1, d0 (opal and Softlite panels with fire classification B-s2,d0) and is ideal for use as a low-price glazing element wherever ventilation is to be achieved otherwise. As standard, the VenturiLight and VenturiAir are fitted on a straight plinth. In order to improve the self-cleaning effect, installation on an inclined plinth is advisable (see large picture).

VenturiLight

VenturiAir

While the VenturiLight purely serves as a glazing element, the VenturiAir is a combined lighting and ventilation system. It is also made of an aluminium frame design and features a hood with an inserted 16 mm polycarbonate multi-wall panel. A linear actuator opens the system with a stroke of 300 mm.

VenturiAir

Compared to traditional roof glazing elements and roof openings, VenturiLight and VenturiAir offer not only flexibility, but also a huge energy-saving potential. In addition to their high UV stability, the infills boast the best light transmittance values and glare-free light-scattering properties (opal and Softlite panels). The systems can be mounted on a EUROSOCKEL or on other curbs, subject to certain conditions. If necessary, a fall-through safety grid can be inserted into the curb of the VenturiAir.

Both versions are available in all sizes from 600 x 600 mm to 1,800 x 2,500 mm.

Illustration: VenturiLight as a pure glazing element mounted on an inclined plinth.
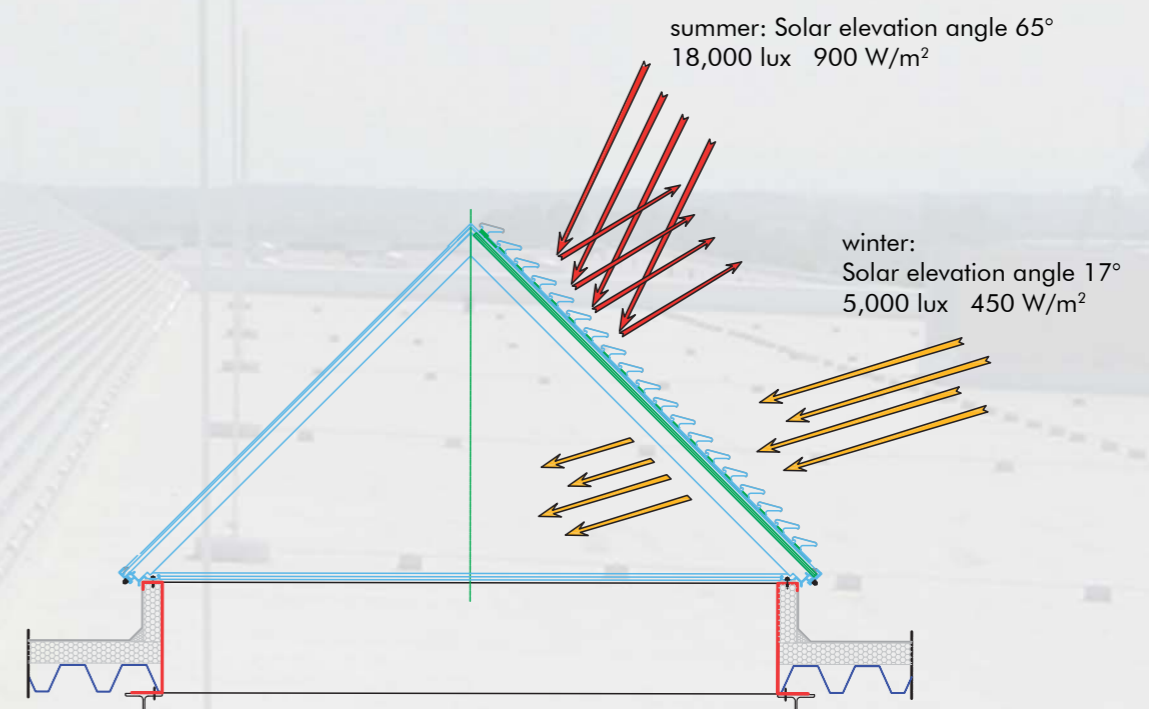
Solar shading

A pleasant temperature at the workplace is not only important for the well-being of the employees, it also significantly increases their productivity. Surveys have shown that every degree Celsius above 20 °C reduces productivity.

Due to the fact that the thermal output generated by direct sunlight on glazing surfaces can reach up to 900 W/m² in summer, solar shading is especially important. On the one hand it prevents glare, which can be particularly unpleasant at computer workstations, and on the other hand it protects against heat radiation by reflecting sunlight. Whilst heat builds up behind the windowpane when an indoor sunshade is installed, an outdoor sunshade reflects up to 80% of the solar radiation. Air-conditioning costs can thus be significantly reduced.

Advantages:

- Pleasant temperature in the working area and increased productivity of employees
- Glare-free ambient lighting (important at computer workstations)
- Up to 30% savings on air-conditioning costs
- Low weight and easy mounting on old and new buildings
- The louvres can be set at various angles

summer: Solar elevation angle 65°
18,000 lux   900 W/m²

winter:
Solar elevation angle 17°
5,000 lux   450 W/m²

The DELTALIGHT solar shading is made of aluminium louvres, which are mounted on the side facing the sun in order to shade against direct sunlight in summer. Thanks to the lucky fact that the sun does not rise more than 17° above the horizon in winter, it is still possible to profit from its thermal output during these months as it can shine almost unchecked through the louvres at an angle that does not cause glare.

Illustration: DELTALIGHT shaded on the south side with integrated PHOENIX ventilators.

Solar shading

The individual louvres are mounted in brackets in the spacing of the glazing bars of the DELTALIGHT. The brackets are inserted into an extruded aluminium support profile screwed to the upper glazing bar of the DELTALIGHT. This allows the system to be retrofitted.
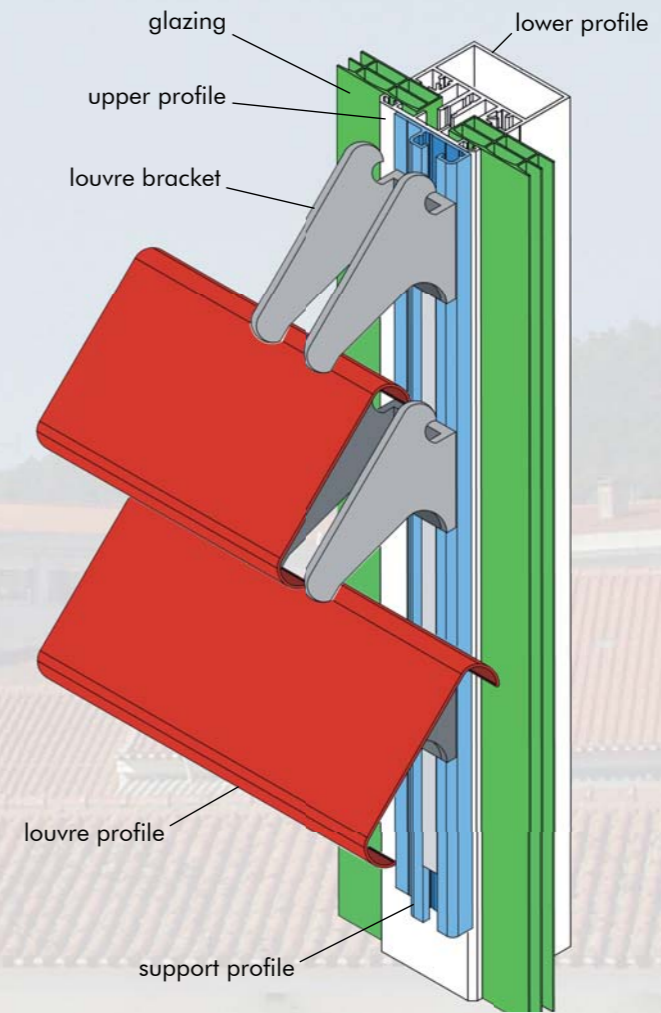

glazing

lower profile

upper profile

louvre bracket

louvre profile

support profile

Illustration: Asymmetrical DELTALIGHT with solar shading on the side facing the sun.