



ACO LICHT **VARIODOME TWIN** system description





Variodome Twin – roof smoke vent with double flap skylight

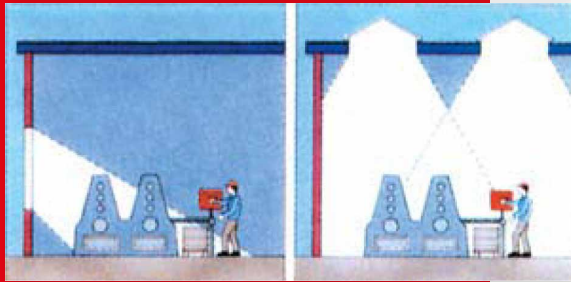


The EN 12101 certified VARIODOME TWIN roof smoke vent with double flap skylight family offers a high quality technical solution, primarily for the illumination and heat and smoke venting of factory bays, industrial facilities and warehouses. For these products, manufactured using robot technology and the most advanced manufacturing procedures, quality (ISO 9001) and environmental protection (ISO 14001) are likewise considered important factors. The VARIODOME TWIN products are available in a wide range of sizes and types and thanks to this variability, they can be applied virtually for any architectural solution, ensuring full freedom of the designer.

In terms of functionality, our skylight systems may serve three functions well linked to one another.

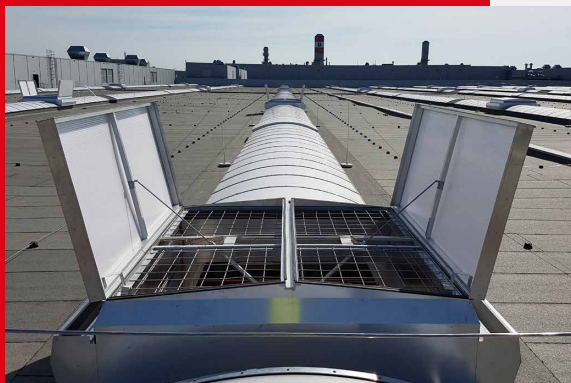
1. Illumination

Illumination takes place through lightweight, light transmitting plastic panels of good thermal insulation capability, serving as glass substitutes, selected according to function. The image attached depicts the efficiency of roof illumination well. For illuminating large interior areas with natural light, using the advantages natural light offers, skylights are indispensable. The energy consumption of artificial light sources can be significantly reduced.



2. Ventilation

Besides illumination, opening leaves and opening mechanisms allow natural ventilation. This is particularly significant where air exchange and the avoidance of excessive warming are required. An especially important and advantageous property of the VARIODOME TWIN product family is its natural ventilation of high efficiency. By opening the double flaps beyond 90 degrees, air flow is ensured over the entire cross section of the skylight.



3. Heat and smoke exhaust

Smoke development in enclosed spaces is one of the most dangerous processes to human health and property. If the hot, rapidly ascending smoke gases quickly filling the enclosed spaces are not vented, little chance remains to save the persons and the material property in there, and last but not least the building itself.

Besides illumination and ventilation, roof vent skylights are perfectly suitable for exhausting hot smoke gases generated due to fire in enclosed areas, in a regulated manner.

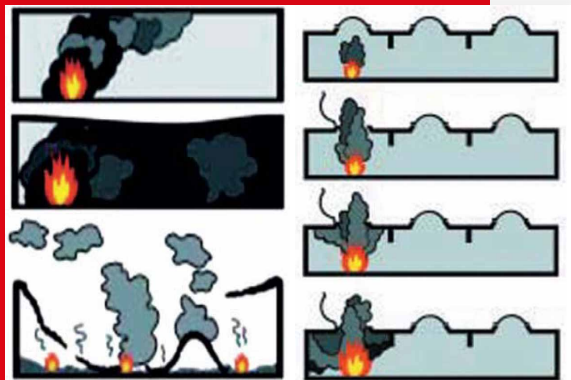


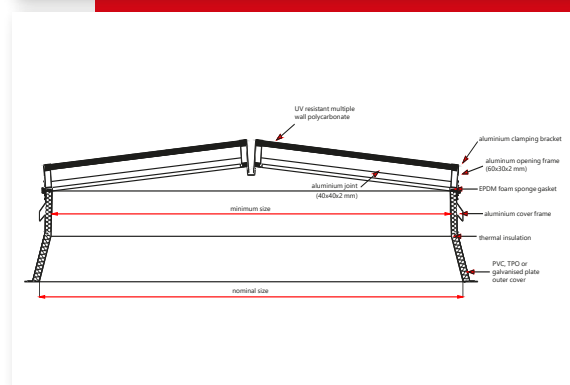
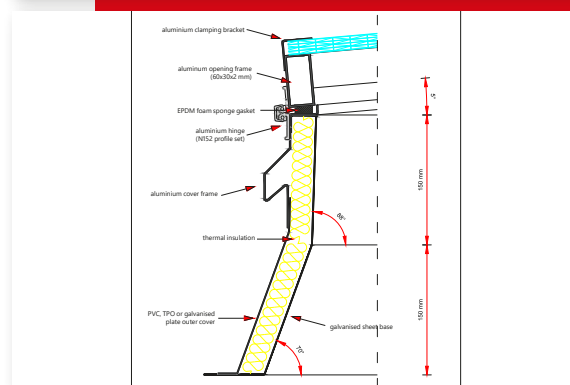
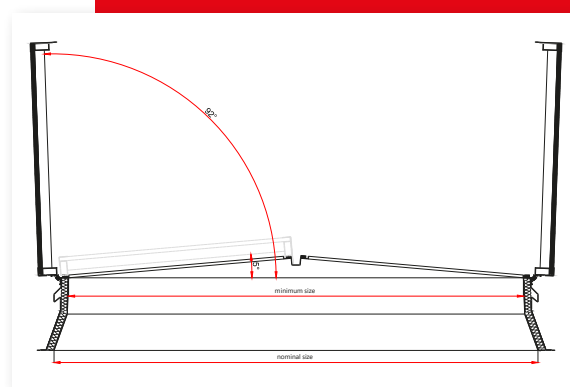


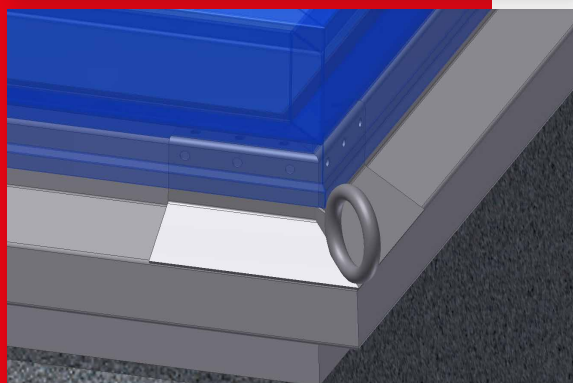
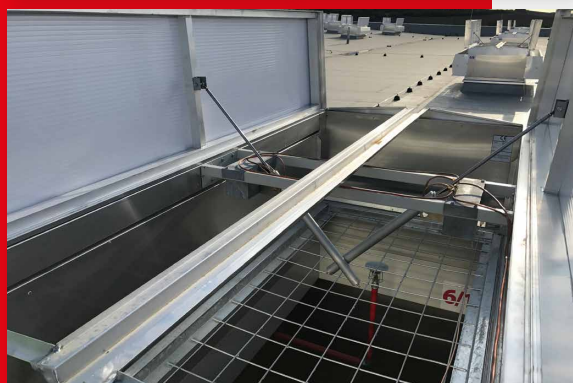
Table of dimensions and effective opening cross sections of VARIODOME TWIN double flap smoke vent skylights

Serial number	Basic dimension (cm x cm)		Geometric area (m ²)	DOP – Declaration of performance – EN12101-2	CV value	Effective opening area (m ²)
1	120	250	3	WL – 1.500; Re – 1.000 – 10.000; SL – 1.000; RE – 4s; B – 300; T – (00); B-s2-d0	0,7	2,09
2	170	190	3,23		0,66	2,13
3	170	210	3,57		0,66	2,36
4	170	240	4,08		0,66	2,70
5	170	250	4,25		0,66	2,81
6	170	270	4,59		0,67	3,05
7	170	300	5,1		0,67	3,40
8	190	210	3,99	WL – 1.500; Re – 1.000 – 10.000; SL – 1.000; RE – 4s; B – 300; T – (00); B-s2-d0	0,66	2,64
9	190	240	4,56		0,66	3,02
10	190	250	4,75		0,66	3,15
11	190	270	5,13		0,66	3,41
12	190	300	5,7		0,67	3,82
13	210	240	5,04	WL – 1.500; Re – 1.000 – 10.000; SL – 1.000; RE – 4s; B – 300; T – (00); B-s2-d0	0,66	3,35
14	210	250	5,25		0,67	3,49
15	210	270	5,67		0,67	3,78
16	210	300	6,3		0,67	4,20
17	230	240	5,52	WL – 1.500; Re – 1.000 – 10.000; SL – 1.000; RE – 4s; B – 300; T – (00); B-s2-d0	0,67	3,68
18	230	250	5,75		0,67	3,83
19	230	270	6,21		0,67	4,14
20	230	300	6,9		0,67	4,61
21	250	250	6,25	WL – 1.500; Re – 1.000 – 10.000; SL – 1.000; RE – 4s; B – 300; T – (00); B-s2-d0	0,67	4,17
22	250	270	6,75		0,67	4,51
23	250	300	7,5		0,67	5,02

1. In terms of functionality, the opening leaves may be opened:

- for heat and smoke ventilation, ensuring opening beyond 90 degrees
 - a, with pneumatic cylinder – with supplementary automated cooling
 - b, with 24-36 V motors
- for daily ventilation
 - a, with pneumatic cylinder – opening beyond 90 degrees
 - b, with 24-36 V motors – opening beyond 90 degrees
 - c, with a 230 V opening motor – 30-50 cm opening height
- in combination for heat and smoke ventilation and daily ventilation.





2. Control of the opening mechanisms may take place:

■ for heat and smoke venting:

- a, by the CO₂ control centre, optionally supplemented with a magnetic switch (variant capable of receiving the signal of the fire alarm centre) supplemented with pressure switch (to forward signal if required)

- b, 24-36 V electric monitoring and control centre, equipped with battery

■ for daily ventilation:

- a, three position switch, optionally with light feedback, rain and wind sensor centre and sensors
- b, compressed air ventilation centre, optionally fitted with a pressure reducing compressor and buffer tank with rain and wind sensor centre and sensors designed to receive the excess pressure from the CO₂ centre

Fall protection and anti-burglary grills

Considering the increased property and human life protection requirements, and in order to adhere to them, the entire skylight system may be fitted with steel grills protecting it against burglary and falling down. For fall protection and burglary protection meeting the corresponding requirements, steel grills of D=6 mm and D=10 mm in diameter, with a mesh spacing of 150 x 150 are used respectively.

Insect or bird nets

Special manufacturing (e.g. medicine and alimentary industry) or other hygienic conditions and regulations may require that opening leaf roof vents be fitted with netting against the intrusion of insects and birds. The framed nets custom manufactured by ACO, fitted with great precision to the existing opening leaf vent or the one yet to be built in, offer full protection against bird and insect intrusion. Thanks to their design, the nets do not, in any way, hinder the functions of ventilation, heat and smoke venting.

Fall protection eyelet

Nowadays, in modern construction sites, the protection of the bodily soundness of those working at the site is also indispensable besides due observance of the corresponding statutory provisions. The safety eyelet fixed to the base of the roof vent for connecting safety ropes is a standard component of the VARIODOME TWIN product family. Its application, supplemented by personal protective equipment, provides local protection against falling down, rendering the application of ropeways unnecessary.



Technical specifications of the polycarbonate and PETG built in the skylights:

Opening leaf glazing	colour	Light transmittance (%)	Thermal transmittance factor (U=W/m ² K)	Sound insulation factor (R _w)
1 layer of PETG	water clear	94	5,4	–
1 layer of PETG	opal	84	5,4	–
2 layers of PETG	water clear/water clear	87	2,7	24
2 layers of PETG	water clear/opal	77	2,7	24
2 layers of PETG	opal/opal	68	2,7	24
3 layers of PETG	water clear/water clear/water clear	79	1,8	28
3 layers of PETG	water clear/water clear/opal	70	1,8	28
3 layers of PETG	water clear/opal/opal	65	1,8	28
3 layers of PETG	opal/opal/opal	59	1,8	28
10 mm pc	water clear	65	2,39	20
10 mm pc	opal	60	2,39	20
16 mm pc	water clear	61	1,7	22
16 mm pc	opal	55	1,7	22
25 mm pc	water clear	54	1,4	22
25 mm pc	opal	44	1,4	22
40 mm pc	water clear	51	1,1	25
40 mm pc	opal	43	1,1	25
50 mm pc	water clear	50	0,99	26
50 mm pc	opal	40	0,99	26
10 mm pc + 1 layer of PETG	water clear/opal	62	2,08	23
16 mm pc + 1 layer of PETG	water clear/opal	59	1,57	26
16 mm pc + 2 layers of PETG	water clear/water clear/opal	55	1,25	30
25 mm pc + 2 layers of PETG	water clear/water clear/opal	49	0,95	31

Base	colour	Light transmittance (%)	Thermal transmittance factor (U=W/m ² K)	Sound insulation factor (R _w)
with 30 mm thermal	–	–	0,92	35
with 60 mm thermal	–	–	0,55	44



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