



SOANSENG™
RIDGE VENT
NATURAL ROOF VENTILATORS



SOANSENG

Soanseng™ Ridge Vent Natural Roof Ventilators

Soanseng™ Ridge Vents from Soanseng Steel Engineering provide an economical, effective and low maintenance method of exhausting heat, moisture and air-borne contaminants from industrial and commercial buildings.

By taking advantage of natural thermodynamic forces, ridge ventilators offer a sustainable solution to improving energy efficiency, without moving parts.

Soanseng™ Ridge Vents are ideally suited to the extraction of low to medium heat loads, with virtually no running costs or maintenance.

Natural ventilation | Natural ventilation | low running expenses

Efficient air flow | cooler building

One-piece brackets | easy installation

Knockdown form | cost-effective, damage resisting

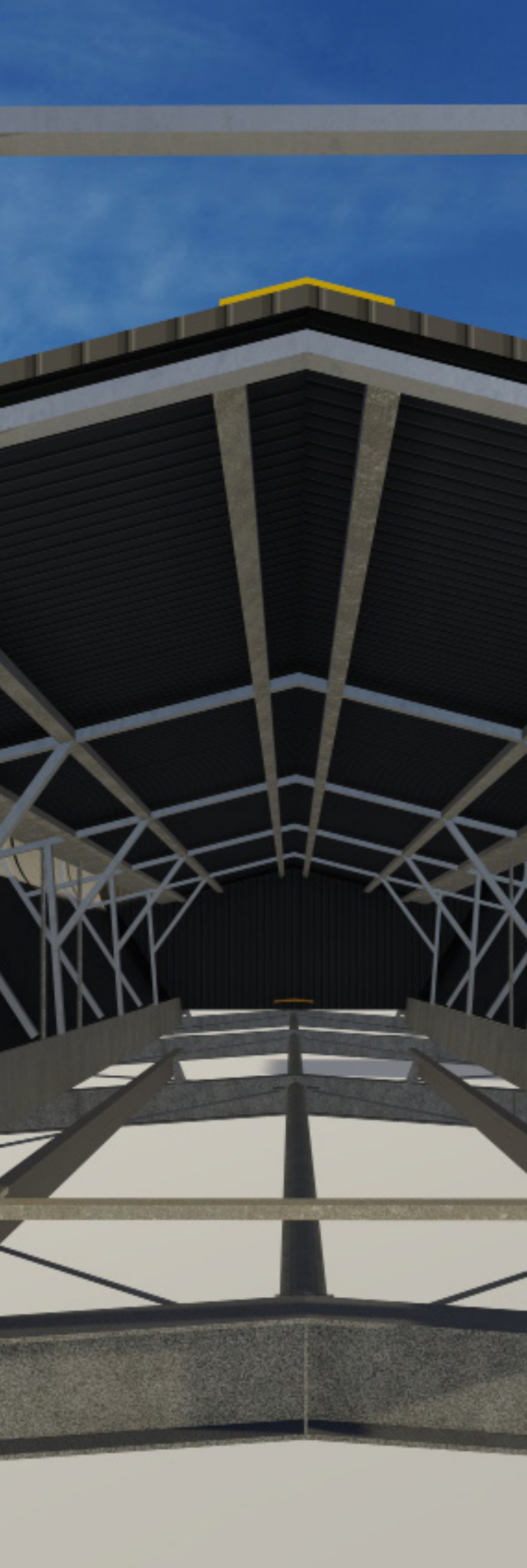
Extensive size range | suits most designs

No moving parts | low maintenance

Self draining | no additional plumbing

Mesh guarding provides bird and vermin barrier

Soanseng™ Ridge Vents are suitable for use in light and moderate factory, shed and storage facilities with non-corrosive ridge ventilation needs.



Selection & Specification

Materials

Components for Soanseng™ Ridge Vents are supplied as coated steel products. Coated sheet product is manufactured from material conforming to [ISO 10721-2017 Steel structures].

External components are supplied in a pre-painted or zincaluminium finish to suit the project. For sizes 750mm and above, the external side cladding can be provided in a comprehensive range of pre-painted colours as standard.

Non-ferrous cladding materials such as aluminium and stainless steel are also available.

Adverse Conditions

Soanseng™ Ridge Vents offer excellent durability in benign locations. If use in marine or heavy industrial environments or applications where corrosive or above ambient humidity air will be discharged.

Compatibility

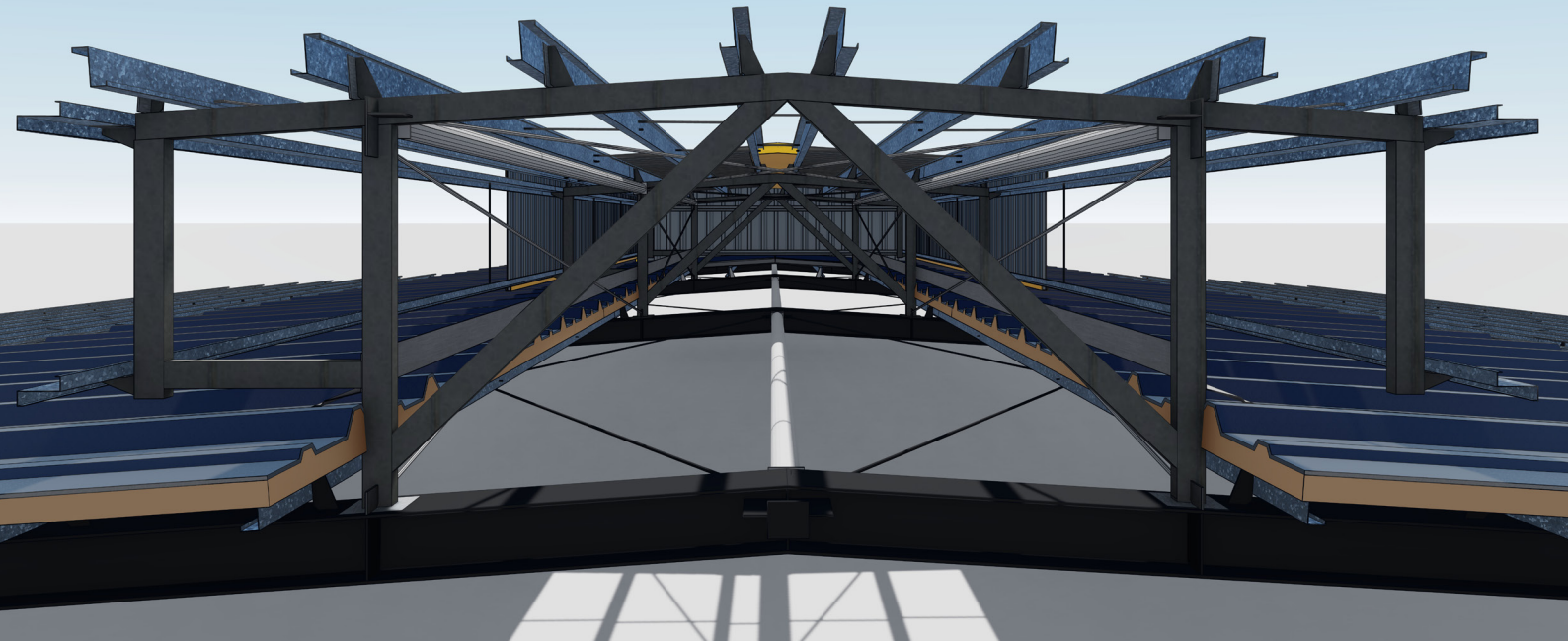
All building products need to be checked for compatibility with adjacent materials, whether they are part of the current project or pre-existing or planned building elements. Avoid placing Soanseng™ Ridge Vents on or in conjunction with components made from copper, lead, green or treated timber, stainless steel and mortar or concrete. Contact Soanseng Steel Engineering for detailed information.

Architectural Specification

This specification may be used to ensure that required performance and functional needs are met:

"The venting shall be Soanseng™ Ridge Vents in ... m length/s with a throat width of ... mm (300/450/600/750/900/1200) and for a roof slope of ... degrees. Sheet materials shall be protected steel sheet to [ISO 10721-2017 Steel structures], with a minimum AZ150 zinc-aluminium or Z275 zinc coating with or without an oven-baked paint film of selected colour. The assembly shall be fixed to the purlins/girts in accordance with the manufacturer's recommendations. Suitable fixing screws in accordance with [ISO 10721-2017], Class 3 minimum, shall be used at each connection. Flashing shall be supplied in compatible materials as specified. All components shall be fixed in a workman-like manner, leaving the job clean and weathertight. Minor blemishes should be repaired with touch-up paint supplied by the roof manufacturer. All debris (nuts, screws, cuttings, filings, etc.) shall be cleaned off daily."

Add length, throat width and roof slope as required for individual projects.



Standards

Soanseng™ Ridge Vents have been independently tested to:

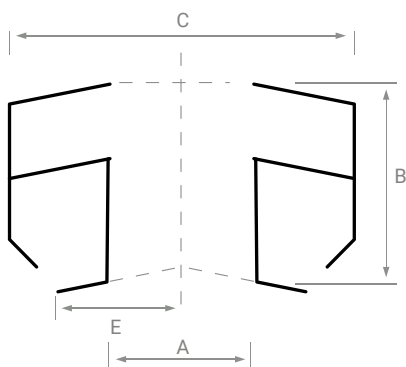
ICS 13.220.50 FIRE-RESISTANCE OF BUILDING MATERIALS AND ELEMENTS standards.

ICS 13.040 AIR QUALITY related standards.

Design

Soanseng™ Ridge Vents are only intended for installation along the ridgeline of a roof. It is possible to specify and install the vent as a continuous unit, therefore it should be considered whether access from one side of the roof to the other is required. This could be achieved by specifying more than one unit within the roof length, leaving access at one or more ends or by the use of access ladders or walkways.

Sizes



Top flange of roof purlin must be fixed between dimensions A and E, as close as possible to opening. (Bracing members not shown for clarity.)

Soanseng™ Ridge Vents - Dimensions (mm)

A Vent Size (Throat)	B Unit Height	C Unit Width	Side Cladding	D Maximum Frame Spacing	E Flange Length
300	400	700	FLAT SHEET	1350	300
450	600	1050	FLAT SHEET	1200	400
600	780	1400	FLAT SHEET	1200	400
750	950	1800	LONGSPAN*	1200	475
900	1130	2200	LONGSPAN*	1200	600
1200	1490	2860	LONGSPAN*	1500	750

* Soanseng™ sheeting

Soanseng™ Ridge Vents - Mass

Vent Size (Throat)	Frame Spacing	Vent Mass (Kg/m)
300	1350	17
450	1200	24
600	1200	31
750	1200	39
900	1200	54
1200	1500	74

Spacing/Support

Soanseng™ Ridge Vent frames must be installed at the spacings given in dimension D of the table at left, or less. Purlins must be positioned to allow attachment of the frame on the purlin flanges as defined by dimension E. Designers are reminded to allow for point loadings applied to the purlins for both dead and wind loadings.

Wind Pressures

The behaviour of Soanseng™ Ridge Vents was analysed independently to determine the adequacy of the structural frames and to determine the reaction forces that are applicable to the rest of the structure. This analysis has been completed for non-cyclonic Regions A and B, as well as cyclonic Region C.

Soanseng™ Ridge Vents - Wind Loadings			
Wind Region	A	B	C
Wind Speed (m/sec)	50	61	66
Basic Wind Pressure (kPa)	1.75	2.6	3.0

This table assumes vents will only be installed on industrial type, importance level 2 buildings with a roof pitch of 10 degrees or less, up to 10 metres high.

Foot Traffic

Standing or walking on Soanseng™ Ridge Vents is not recommended, as this could be unsafe and may cause superficial or visual damage to the vents.

Ventilation

Ventilation through the Soanseng™ Ridge Vent is passive, therefore performance will vary and will be highly dependent on building geometry, internal building use and weather conditions. The cooling benefits of passive venting are universally recognised and Soanseng™ Ridge Vents have been independently tested to determine airflows under a variety of conditions.

Exhaust Performance

The performance of any ridge ventilator will depend on the throat size of the vent, the height of the structure to the top of the vent, the inlet height (assumed to be half the door or inlet vent height above the floor) and the temperature difference between the outside and inside of the building.

These parameters are included in the ridge vent performance graph at right.

Design Procedure

To determine the vent size required the following procedure should be followed.

1 Determine the stack height (distance from inlet to the top of the vent in metres).

2 Find the temperature difference inside to outside of the building in degrees Centigrade.

3 Find the average building height $[(\text{ridge} + \text{eaves height}) / 2]$ and multiply this by the building width. Lengths are in metres.

4 Select the number of air changes required per hour to suit the use of the building. Multiply the answer to item 3 by the number of air changes, and plot this on the y-axis.

5 Multiply the stack height by the temperature difference, and plot this on the x-axis.

6 The intersection of the plot lines gives the size of the required Soanseng™ Ridge Vent.

This procedure determines the vent size for an installation along the full building length. If only partial length vents are to be used, designers should modify the building volume in inverse proportion to the percentage of ridge vent proposed.

Design Example

A warehouse building, 100 metres long and 30 metres wide, is to be fitted with Soanseng™ Ridge Vents. The eaves height is 6 metres and roof pitch is 3 degrees. The warehouse has many open access doors along its sides, but because of insulation in the roof, it is thought that the temperature difference could be about 9 degrees. Using 4 vents, installed in 20 metre lengths with equidistant spacings between, determine the vent size required.

1. Determine the stack height.

Eaves height = 6m, Roller doors = 4m (Inlet height = 2m)

Roof pitch = 3 degrees

Roof rise = (bldg wdth/2) x tan roof pitch
= 0.78m

Assume vent size of 600 mm

Vent height = 0.78m

Stack height = 4 + 0.78 + 0.78 = 5.6m (approx.)

2. Temperature difference = 9°

3. Average bldg ht = (6 + 6.8)/2 = 6.4m

Modify building width to allow for 80m of vent.

Modified width = 30 x 100 / 80 = 37.5

Building volume = 6.4 x 37.5 = 240m³

4. Air changes per hour = 5

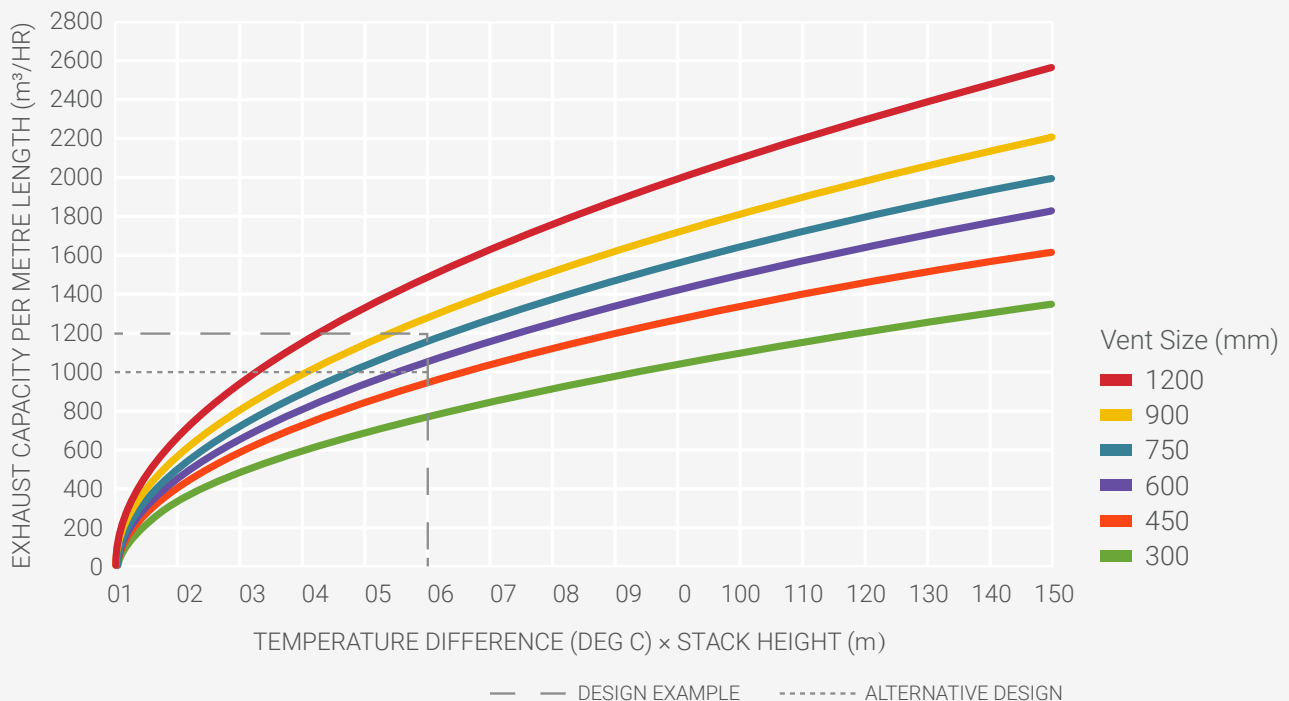
Y axis plot = 1200

5. X axis plot = 50.4

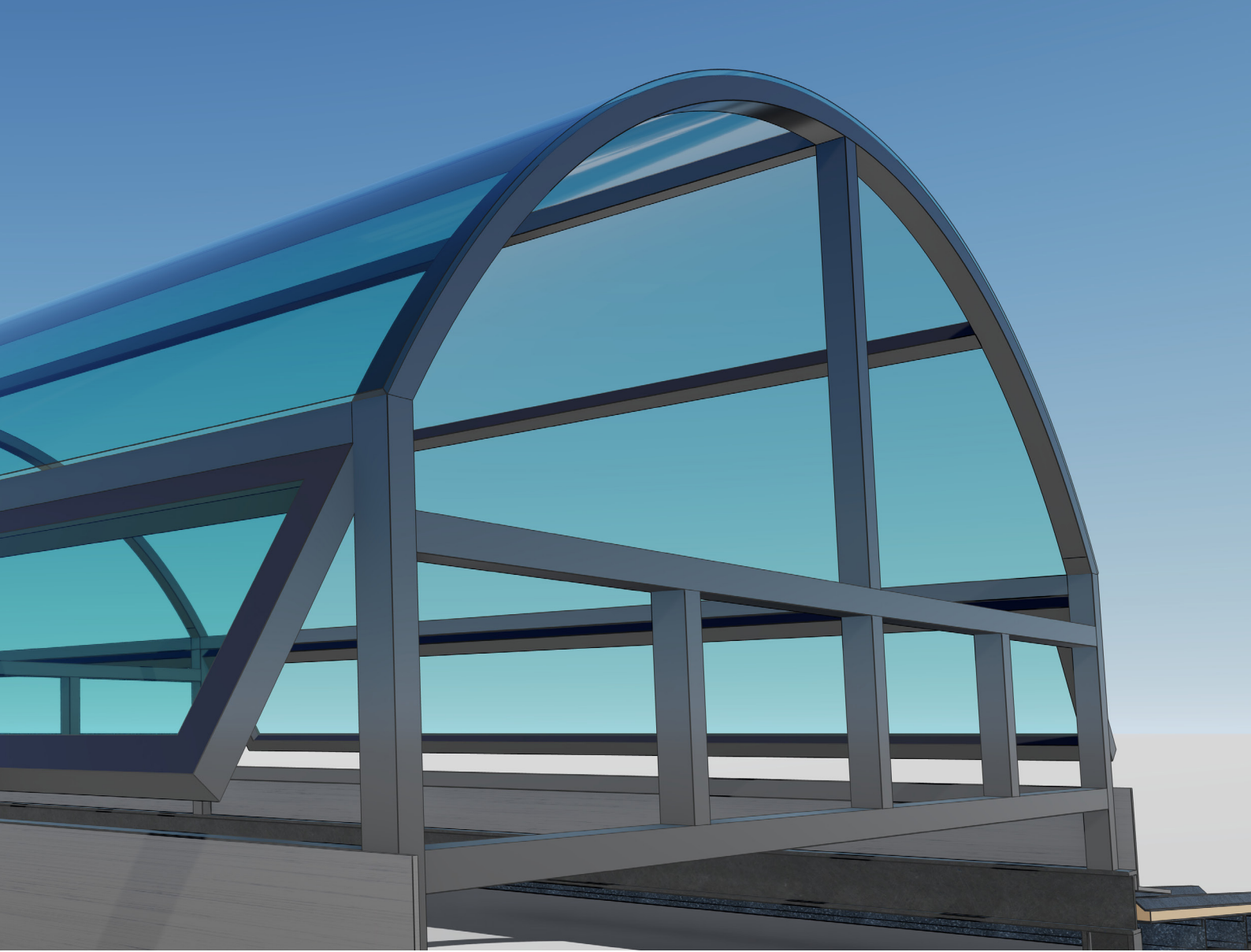
6. Solution is a 900mm vent running 80% of the building length.

An alternative solution could be a 600mm vent running the full length of the building.

Ridge Vent Exhaust Performance



Exhaust capacity per metre length (m³/hr) = building width x height x number of air changes per hour



Air Changes per Hour

The building use and the building designers will determine the number of air changes required. Typical values are:

Building Use	Air Changes/Hour
Warehouse	5
Poultry Shed	8
Light Manufacturing	10
Plant Building1	2
Assembly Hall	15
Kitchen	20

Purlin Loads

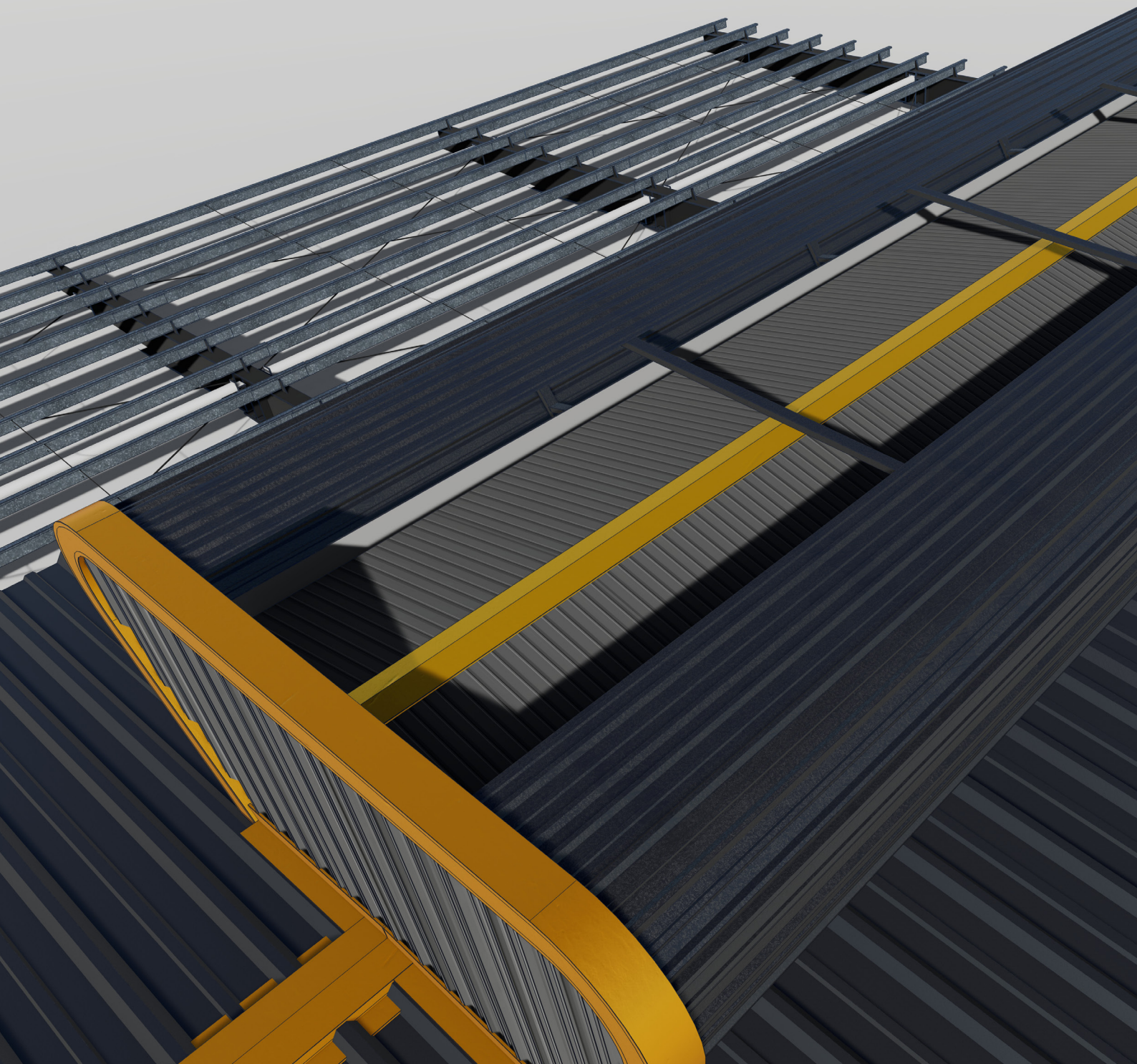
In addition to the dead loads caused by the mass of the ridge vent, designers need to consider the effect of the wind reaction loads on the purlin design and specify adequate fasteners. Based on the wind and frame details outlined above, the reaction loads at each fixing point are given in the following table.

Vent Size	Region A		Region B		Region C	
	Reactions (kN)					
	HorizV	er tH	oriz	Vert	HorizV	er t
300	0.62	0.47	0.93	0.71	1.07	0.81
450	0.86	0.65	1.28	0.96	1.47	1.11
600	0.54	0.73	0.80	1.08	0.92	1.25
750	0.79	1.09	1.17	1.62	1.35	1.87
900	0.95	1.24	1.40	1.84	1.62	2.12
1200	1.58	1.88	2.34	2.79	2.70	3.22

These loads may vary with frame spacing and local conditions.

Fastener Specification

Fasteners to attach frames to the ridge purlins must be designed to suit individual projects, allowing for variations in purlin thickness and fastener configuration.



Procurement

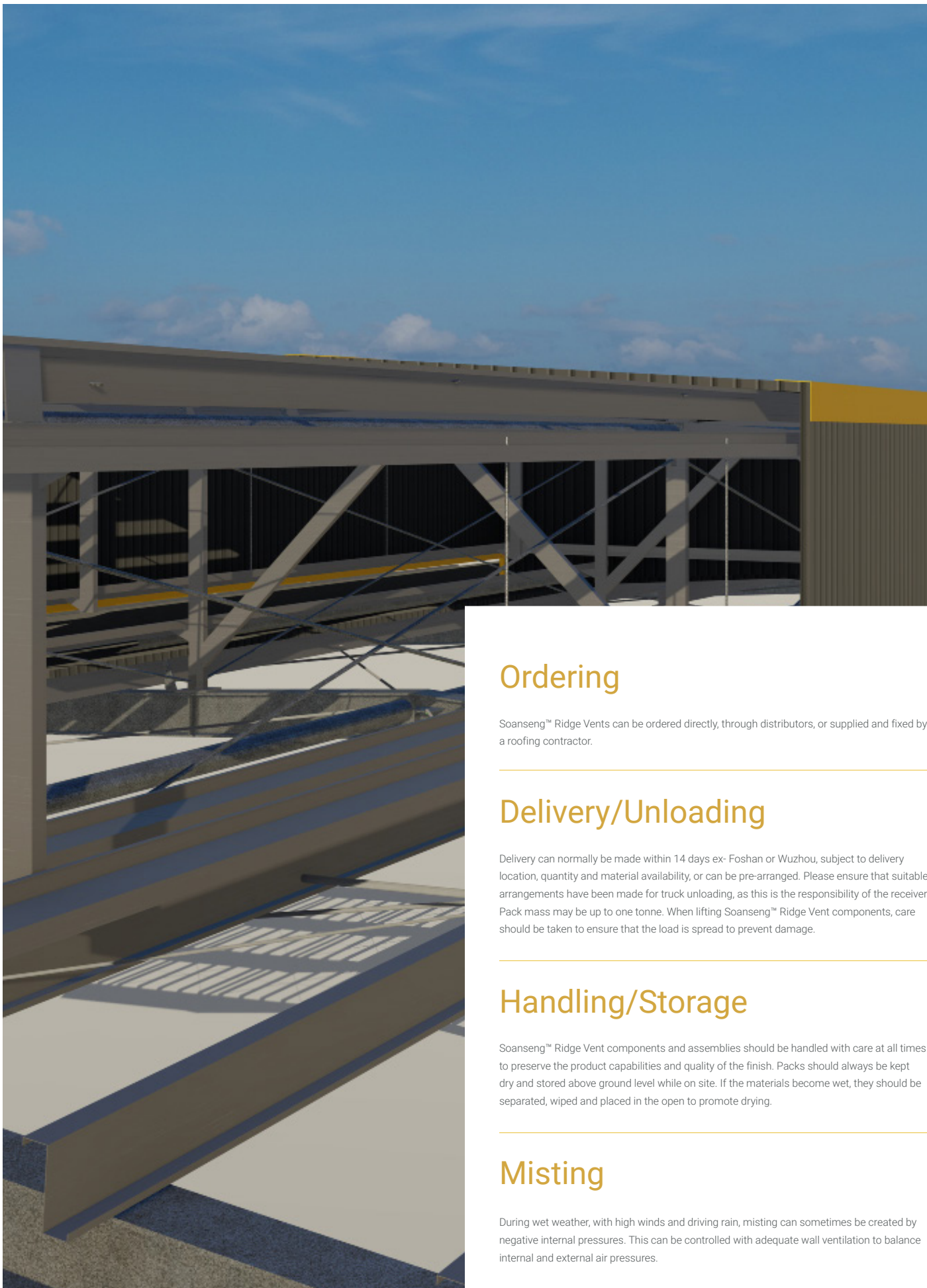
Prices of Soanseng™ Ridge Vent and accessories can be obtained from Soanseng Steel Engineering or any distributor of Soanseng™ products.

Soanseng™ Ridge Vents are supplied in knockdown form, ready for assembly, and are custom made to suit the length of vent required.

When designing or transporting long products, ensure the length is within the limit of the local transport authority regulations. Manufacturing tolerance on the length of components supplied is +0 -15mm.

Soanseng™ sheeting, used as side panelling for 750/900/1200 Soanseng™ Ridge Vents, is supplied up to 8 metres (maximum length of vent module). Allow 100mm for overlaps if multiple sheets are to be used in a continuous vent.

Flashing, trays and capping are generally supplied in specified lengths up to a maximum length of 8 metres.



Ordering

Soanseng™ Ridge Vents can be ordered directly, through distributors, or supplied and fixed by a roofing contractor.

Delivery/Unloading

Delivery can normally be made within 14 days ex- Foshan or Wuzhou, subject to delivery location, quantity and material availability, or can be pre-arranged. Please ensure that suitable arrangements have been made for truck unloading, as this is the responsibility of the receiver. Pack mass may be up to one tonne. When lifting Soanseng™ Ridge Vent components, care should be taken to ensure that the load is spread to prevent damage.

Handling/Storage

Soanseng™ Ridge Vent components and assemblies should be handled with care at all times to preserve the product capabilities and quality of the finish. Packs should always be kept dry and stored above ground level while on site. If the materials become wet, they should be separated, wiped and placed in the open to promote drying.

Misting

During wet weather, with high winds and driving rain, misting can sometimes be created by negative internal pressures. This can be controlled with adequate wall ventilation to balance internal and external air pressures.



Installation

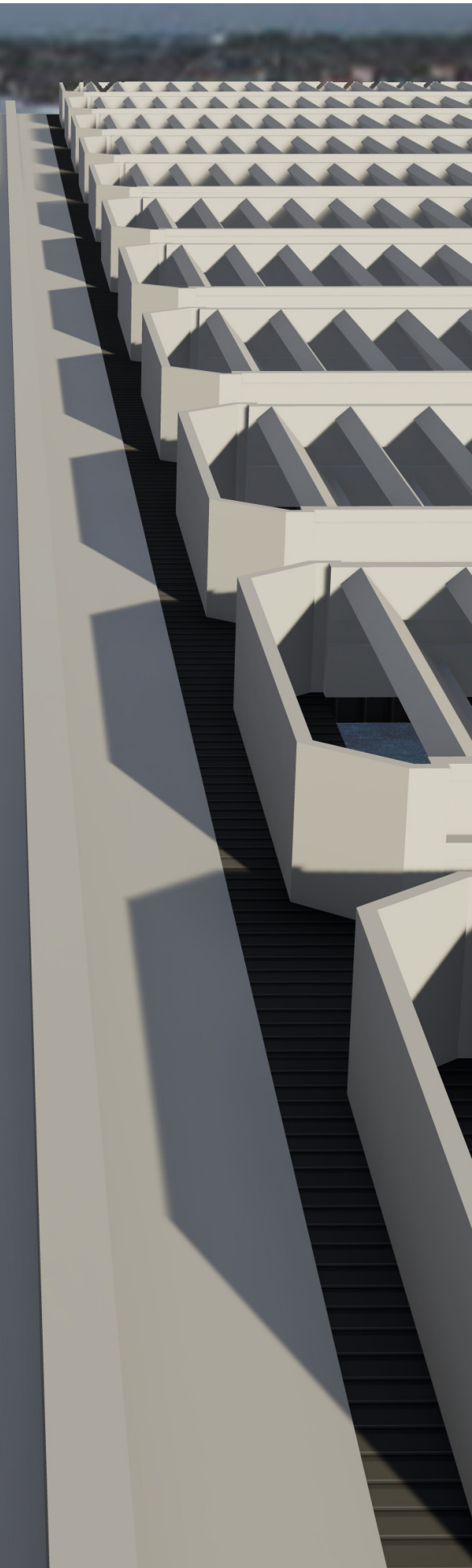
Soanseng Sheet Metal offers a wide range of purpose fabricated roofing accessories in stainless steel, coated steel, aluminium and copper, including:

- ◆ Custom Ridge Capping
- ◆ Half-Round Gutters
- ◆ Custom Fabricated Gutters
- ◆ Stainless Steel WBox Gutters
- ◆ Fascia Gutter and Brackets
- ◆ Downpipes
- ◆ Rainwater Heads
- ◆ Commercial Flashing

Notes

All laps are to be silicone sealed. For installation in cyclonic areas all No 10 x 16mm screws are to be replaced with No 12 x 20mm screws. Installation procedures are to follow all workplace health and safety requirements. Screws not supplied with kit.

The information contained in this brochure is as far as possible accurate at the date of publication. However, before application in a particular situation, Soanseng Steel Engineering recommends that qualified expert advice be obtained confirming the suitability of the product(s) and information in question for the application proposed. While accepting its legal obligations, Soanseng Steel Engineering disclaims all liability (including liability for negligence) for all loss and damage resulting from the use of the information provided in this brochure.



Site Induction

Consideration should be given to including vent ridges as part of roof and wall handling and installation in site induction safety procedures. Specific consideration should be given to handling, avoidance of cuts, trips, slips and falls, sheet handling (particularly in windy conditions), sheet cutting procedures and surface temperature (on sunny days).

Insulation

Soanseng™ Ridge Vent is suitable as specified for use in roofs with insulating blanket up to 50mm. Increased thicknesses require longer fasteners and greater care in installation. The throat area of the vent must remain clear of insulating material.

Installation Sequence

All orders are delivered with an assembly guide and components list. Soanseng™ Ridge Vents modify Chinese dimensions accordingly :

300mm to 1200mm Series Vents

1. Fix one frame at each end of the opening using four M14 screws (non-cyclonic areas) or other fasteners as specified by the engineer. The base of each frame must either be fitted under the roof sheet directly on to the purlin, or in the pan of the roof sheeting. Do not install on top of roof ribs.
2. Align and space the remainder of the frames, ensuring that the lap join for the cover panels is on a frame. Fix as per step 1.
3. Loosely fit the apron flashing to both sides of the vent. Scribe the turn down to the roof profile.
4. Fit the internal ridge flashings using 10 x 16mm screws at maximum 150mm centres.
5. The internal gutter channel (supplied with 600, 750, 900 and 1200 vents) are fitted at every second frame. To fit the internal downpipe, cut the ridge capping and slide the channel through the space in the bracket. Fix and seal the downpipe channel to ridge capping.
6. Fit the lower mesh to the lower outer edge of the frame using 10 x 16 wafer tek screws. Then scribe the apron edge of the mesh to match the profile of the roof.
7. (300 - 600 Series Vents). Fit the top and side flashing with 10 x 16mm screws at maximum 150mm centres, ensuring the lower mesh is tucked behind the side cover.
8. (750 - 1200 Series Vents). Fit the top flashings and the Stramit Longspan® cladding to the sides of the frames using 10 x 16mm screws at maximum 150mm centres.
9. Fit the upper mesh between the two edges of the top flashing.

Walking

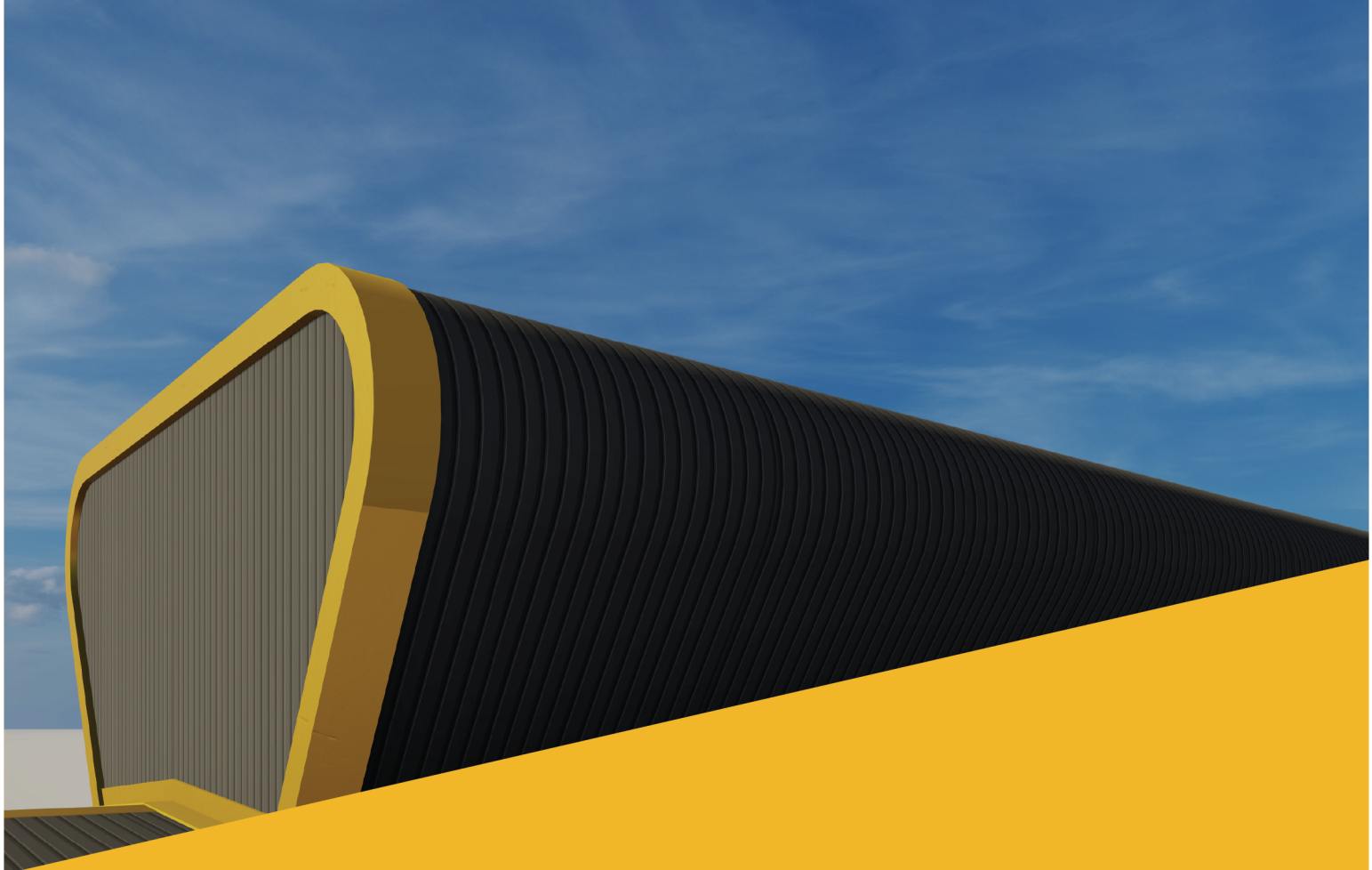
As with all roofing products, extra caution is recommended when walking on the roof. Always wear flat rubber soled shoes and place feet only in the pans of rib/pan profiles, taking care to avoid the last pan or two near edges of the metal roof area. Do not walk on the roof vent itself.

Good Practice

Soanseng Steel Engineering recommends that good trade practice be followed when using this product, such as that found in Australian Standards Handbook HB39.

Cutting

Should cutting be required, use a power saw with a steel cutting blade or a power nibbler and, for localised cutting, tin snips. Avoid the use of abrasive discs as these can cause burred edges and coating damage. Please dispose of off-cuts carefully.



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