Ash&Lacy
building systems

a Hill & Smith Holdings Plc Company

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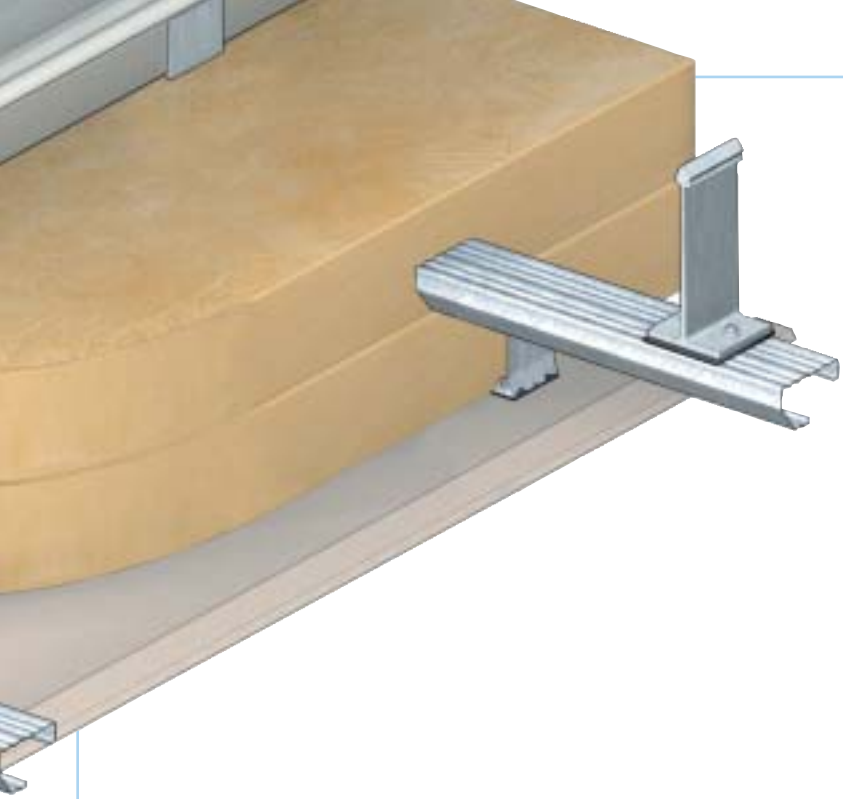
Ashzip™

Roofing envelope solution

Contents



A building isn't simply accommodation - be it a school, a hospital or a centre of commerce. It is also the face of the occupants that inhabit it and increasingly clients now expect their buildings to project an appropriate image.

Alongside aesthetic considerations, weatherproofing, durability and outstanding thermal performance are also all of paramount importance.

These all present architects, designers and contractors with fresh challenges and new problems - which must be met with innovative product solutions.

In recognition of this requirement, Ash & Lacy offer the total envelope solution. Ashzip standing seam roofing is an essential part of that package and offers the following key features and benefits: -

- Design flexibility - aesthetically pleasing profile available in tapered and convex or concave curved configurations.
- Part of a one stop integrated roofing package - including gutters and architectural perimeter features.
- Long continuous lengths - can be manufactured on site, at eaves level directly onto the roof if required.
- Excellent weatherproofing - long lightweight lengths, secret fixing and interlocking perimeter details provide continuous weathertight roofs.
- Outstanding thermal performance - fully complies with AD L2/Technical Standard J.
- Expert technical advice - available before, during and after the project.

Aesthetic expectations are of paramount importance...

Ashtech panel systems, an exciting range of architectural facades and rainscreens which bring new aesthetic opportunities to building design or refurbishment.

The total envelope solution

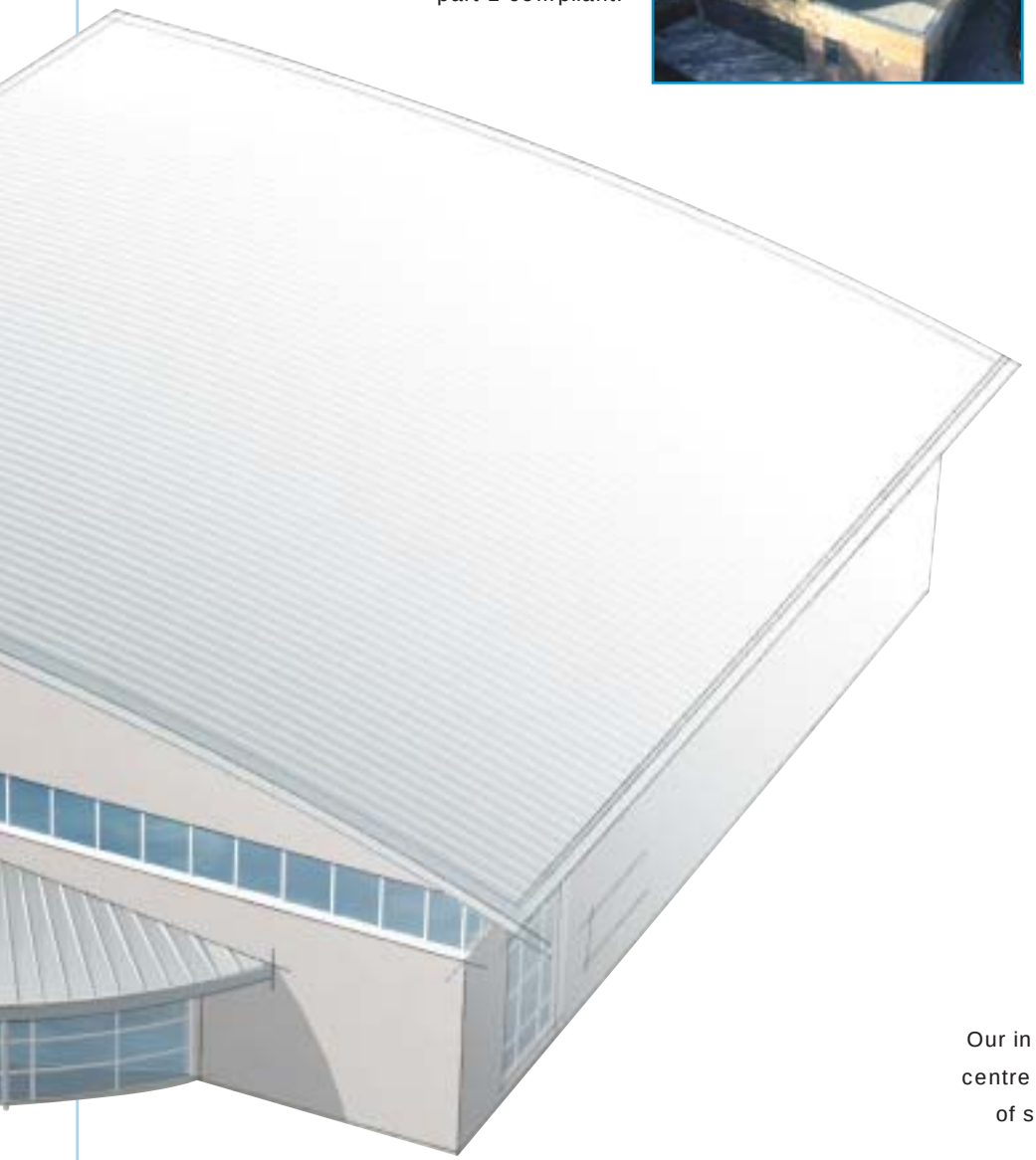
from a single source

Features like tapered sheets and perimeter details are often the most dominant feature of the building. We have the competence, technology and trusted experience to help you to get these crucial areas right every time.

...as are weathertight durable solutions

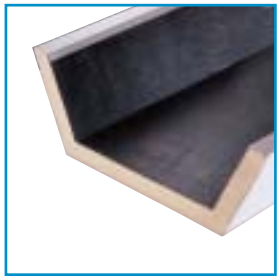
Ashzip standing seam roofing offers high aesthetic values and outstanding weathertightness that is fully part L compliant.

Old roofs can be revitalised with our engineered Ashjack flat to pitched package, further enhanced with an Ashzip weatherproof covering.



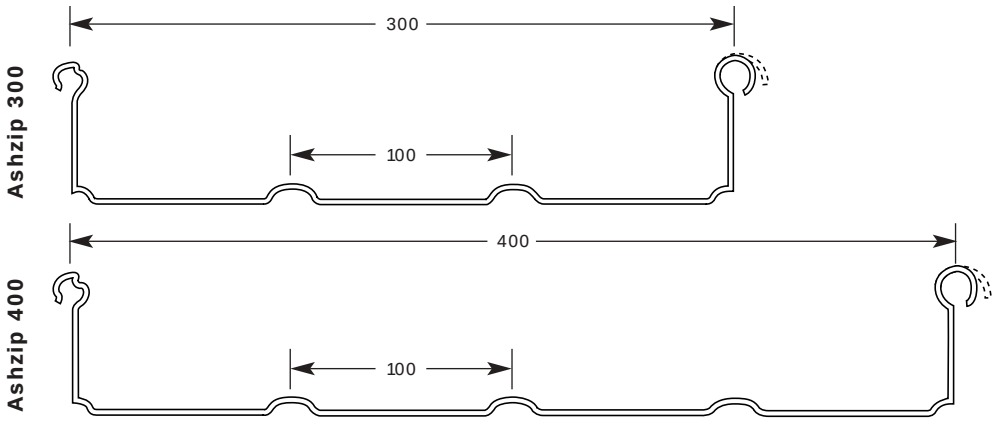
Our in-house research and development centre is instrumental in the development of software and design solutions for all key areas of Ash & Lacy products.

A long life leak free roof covering is seriously compromised unless the rainwater goods offer similar levels of durability and performance.



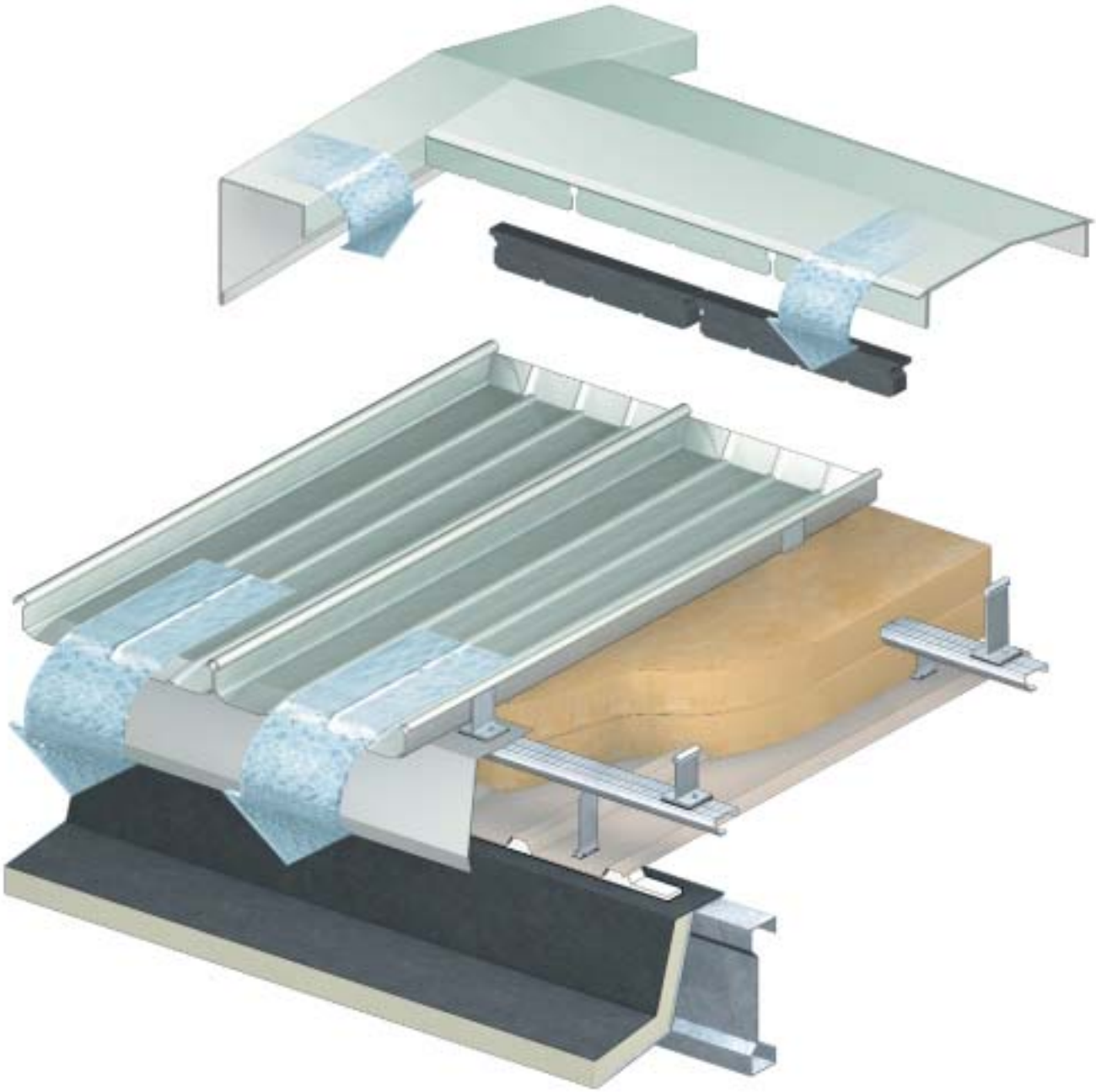
An engineered solution

Defective roofing is a major source of problems in the UK construction industry. Issues include leakage, defective thermal performance, problematic acoustics and poor resistance to wind suction or foot traffic. Derived from years of trusted experience, the Ashzip roofing solution has been engineered to provide a comprehensive “one stop” solution to all these problems.



Preventing leakage

Leakage is the single biggest problem associated with roofing and accounts for more problems than all others put together. Ashzip is secretly fixed by engaging an anchor headed fixing halter within the keyhole shaped standing seam rib. The keyhole is then closed tight around the halter by running the zipping machine up the rib. This makes for a weatherproof joint down to 1.5° without the need for sealant and with outstanding resistance to wind uplift. Ashzip’s lightness and ease of handling enables it to be produced in very long lengths from eaves to eaves or from the ridge to the eaves, without end laps. A single unbroken sheet length combined with no penetrative fixings makes it virtually impossible for such a roof construction to leak.



Perimeter details

Perimeter details can frequently account for a high percentage of roof leaks, particularly at lower pitches. Problems are usually a result of over reliance on the quality of on site labour and the incorrect application of sealant materials, filler pieces etc.

With Ashzip, wherever there is a junction in the roof, an effective interlocking overlap joint is created by turning the various metal components up or down using a simple tool provided with the system. This has the benefits of being easy to perform, sealant free and easily checked for correct installation.

At ridges and hips, the pan of the profile is turned up to form a physical barrier to prevent water from running back over the sheet ends. This upstand, together with nearest profile rib to the verge, is then overlapped by the perimeter flashings, which are designed to shed water over the upstands without the risk of run or blow back beneath the weatherproof detail. At low pitches, the eaves of the sheets are also turned down into the gutter by approximately 20°, to prevent water trickling back on the underside of the sheet.

Aesthetics

A building is often the external face of the organisation(s) it accommodates. Alongside performance, aesthetic expectations are nowadays of paramount importance. With its attractive narrow ribs at wide centres, Ashzip brings the traditional benefits of metal roofing installation speed, durability and security, without an “industrial” appearance. A wide palette of colours and finishes are available and the sheets can be tapered or curved to suit the design requirements.

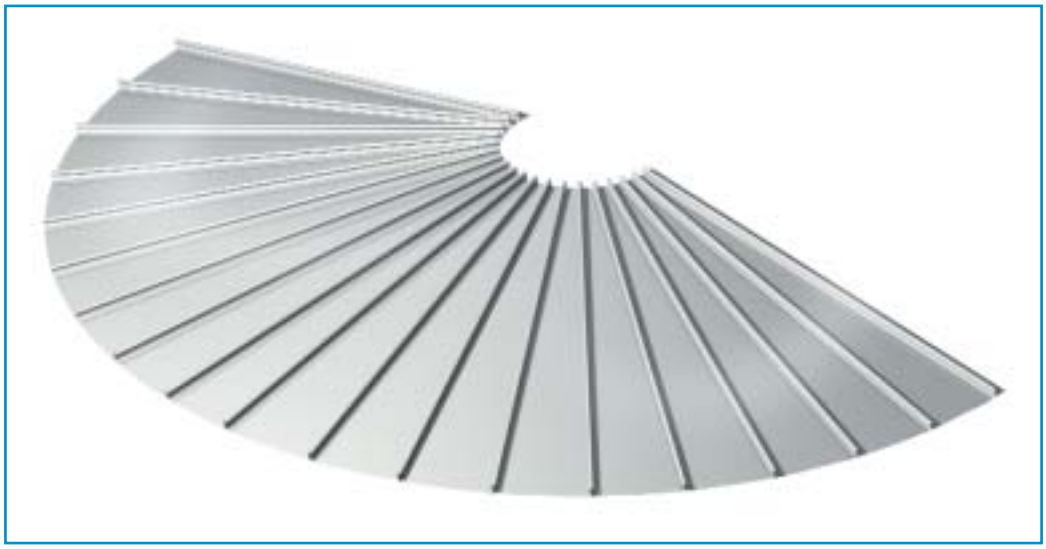
The evolution of architecturally pleasing roof and wall cladding systems emphasises the importance of equally sophisticated perimeter detailing. From initial concept to project completion, our quality of sheet metal fabrication skills, technical competence, technology and trusted experience ensure that an Ashzip roofing solution is best placed to achieve the highest aesthetic standards.

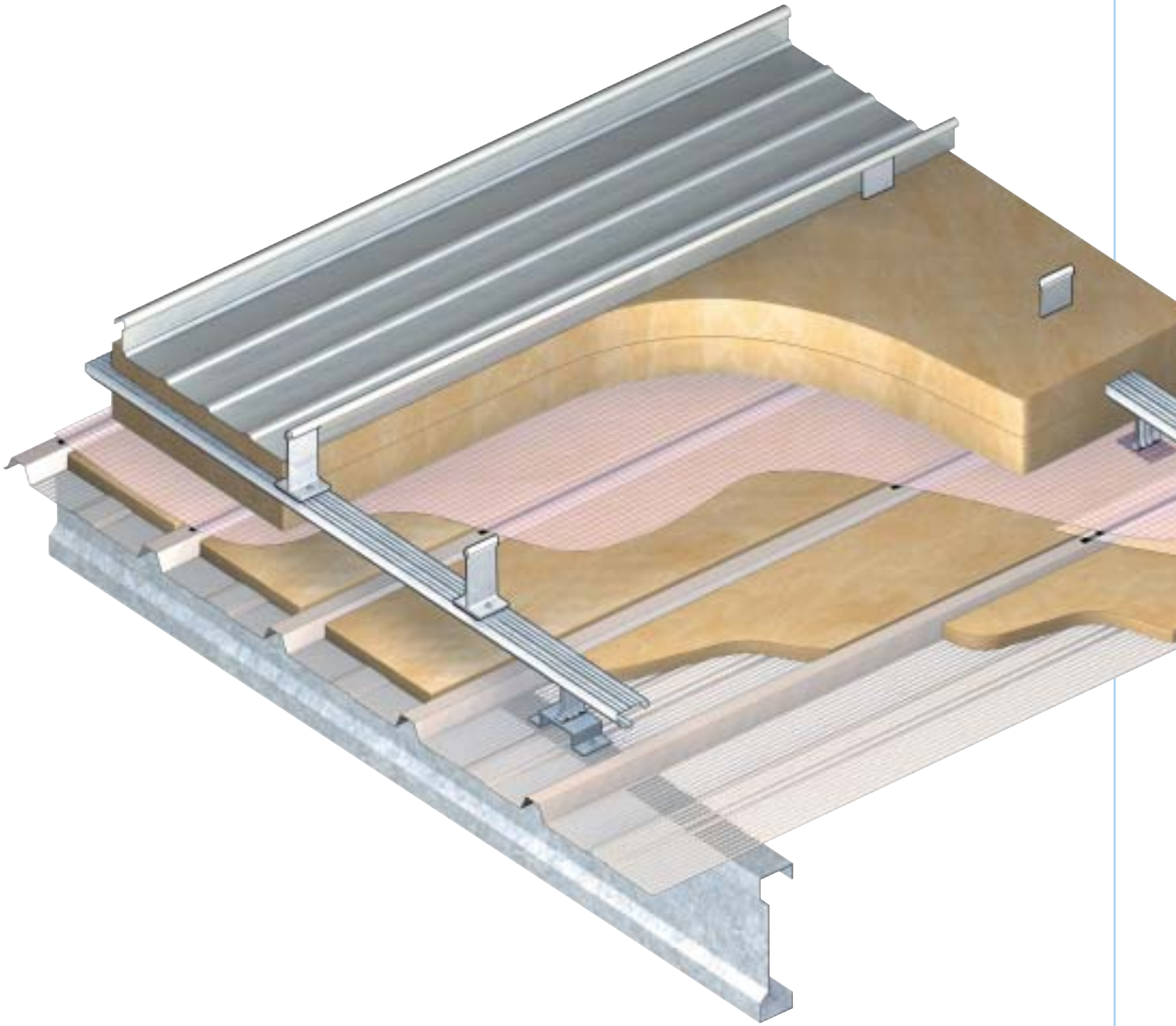
Curved roofs

Ashzip can be convex or concave curved or “wave formed” (the latter are configurations incorporating both convex and concave curves in one profile sheet). So-called “hockey stick” sheets, with one end partially curved and a straight tail to the profile sheet, can also be formed. Ashzip sheets will self-curve to approximately 40-55m radius depending on material, thickness and profile width. For radii beneath this figure, they can be mechanically smooth curved down to very tight radii, either at the factory or on site.

Tapered Ashzip

Ashzip sheet can be taper roll formed to form a radial roof on plan. In designing such roofs the key criteria is not so much the minimum and maximum widths of the tapered sheets involved, as the ability to master the complex geometries involved in actually establishing the roof layout. Ash & Lacy have the practical know how and the computer modelling experience to use tapered Ashzip sheets to the best effect to achieve the required visual impression.





Acoustics

Standard Ashzip insulated constructions already have sufficiently high sound reduction indices, so as not to suffer complaints about rain noise drumming.

Ash & Lacy is a long established perforator of metal sheeting. We are also able to provide systems with perforated absorbent linings to control reverberation and reduce unwanted sound within the building e.g. schools, sports and leisure facilities etc.

Systems with perforated linings can cause problems for the unwary in terms of pressure testing the building in order to establish the degree of airtightness. Our in-depth experience enables us to help you avoid such problems on high performance systems for applications such as cinemas, industrial facilities etc.

For wider internal spans or uninterrupted ceiling lines free from purlins between rafters, perforated wide span metal decking or structural trays can also be supplied.

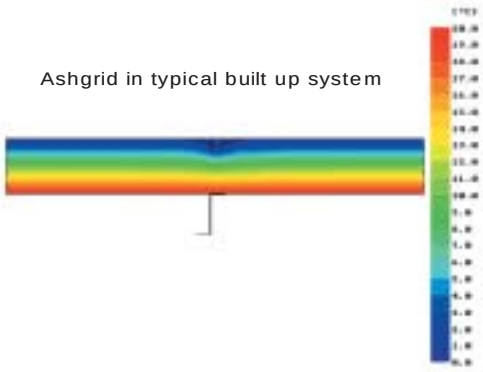
Thermal issues

Revisions to the regulations concerning the energy efficiency of buildings were implemented in 2002. The principal changes for metal roofing were a doubling of insulation levels, together with far greater emphasis on energy loss via unwanted air change and the effects of cold bridging or lack of insulation continuity.

In practice, many standing seam roofs embodying these criteria have already been constructed for several years, as befits systems predominantly used on better quality buildings in the commercial, health and education sectors.

The introduction of tighter regulations does not therefore pose too many problems from a design and installation viewpoint.

Ashgrid in typical built up system



Significant changes have occurred in the implementation of new methods of calculating U-values, with CE marking together with the requirement to accommodate the effects of thermal bridges and the cumulative effect these may have on the overall building envelope. These primarily involve computer modelling, at least in the initial stages.

There is also a requirement for building control purposes to provide a declaration of compliance with airtightness standards in England and Wales, together with a declaration that the insulation is reasonably continuous or that reasonable conformity to approved specifications has been achieved.

This will involve air leakage testing for buildings over 1000m² gross floor area and possibly a thermographic inspection for insulation continuity.

More detailed information on these issues can be found in MCRMA Paper 14: Guidance for the Design of Metal Roofing and Cladding to comply with Approved Document L2: 2001; BRE Information Paper IP 17/01 and BSRIA: Airtightness Testing, A Guide for Clients and Contractors.

The importance of airtightness

Poor airtightness standards are a major source of excessive energy consumption and manifest in buildings as cold draughts and wind whistling noises. When the heating is on in a building, the envelope is frequently over pressure. If the building is not effectively sealed, this over pressure will try to equalise by escaping through gaps in the building fabric, taking heat with it. Not only does such air leakage increase heating costs, it can also be a major source of condensation.

Approved Document L2 stipulates a maximum air leakage rate for the whole building (including floor slab) of 10m^3/hr/m^2 at 50 Pa.

Achieving compliance

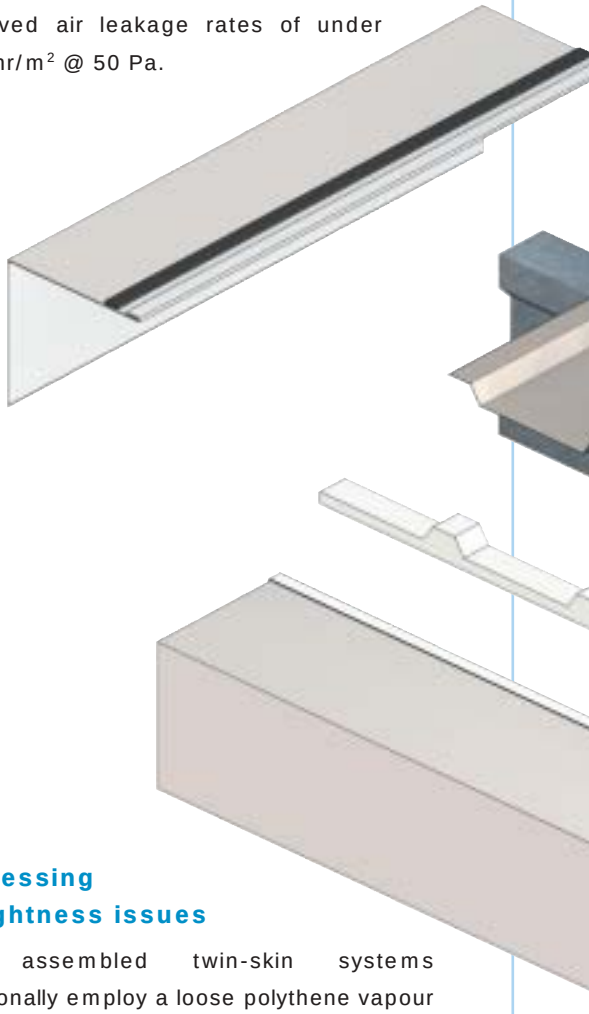
Testing confirms that, for standing seam roofing, achieving compliance is not a particularly onerous target.

As with thermal bridging and insulation continuity, the main sources of any problem will usually be at the perimeter junctions (eaves, verges, ridges, hips, valleys, abutments etc. as per the diagram above) rather than the main plane elements of the roof.

Proof of airtightness compliance to AD L2 is required for building control purposes. For buildings with less than 1000m^2 gross floor area, a declaration will suffice, stating that appropriate design and installation has been carried out to achieve reasonable conformity to specifications approved for compliance with AD L2.

For buildings in excess of this figure, on site air leakage tests will have to be carried out and a declaration provided that the results demonstrate compliance. Smoke testing or pressure testing are two possible methods.

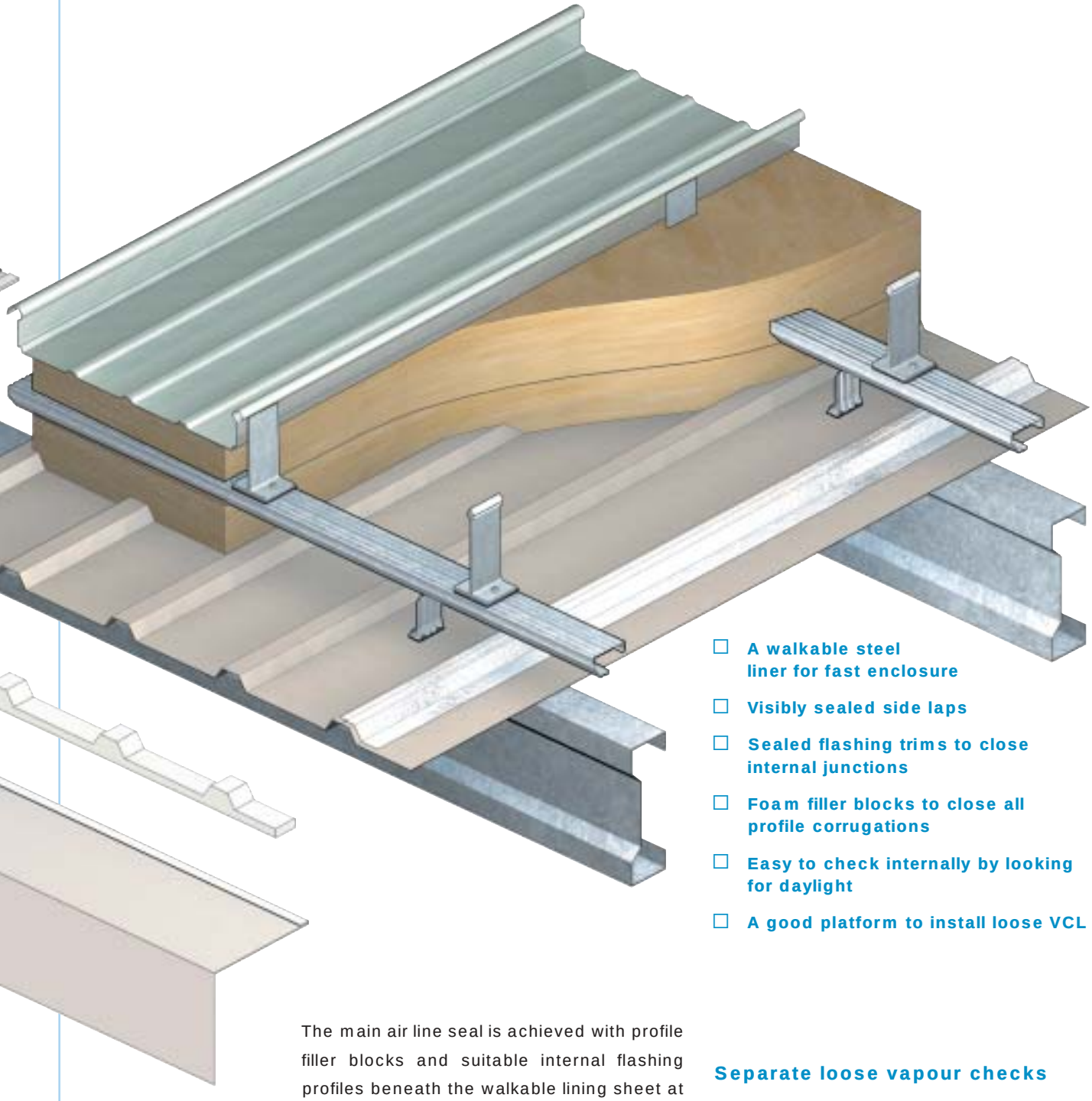
Testing of sealed twin-skin roofing systems as outlined in accordance with CIBSE TM23 (Testing Buildings for Air Leakage) has achieved air leakage rates of under 1m^3/hr/m^2 @ 50 Pa.



Addressing airtightness issues

Site assembled twin-skin systems traditionally employ a loose polythene vapour control layer (VCL) as the main means of achieving high standards of airtightness. However, in this instance the theory does not appear to be borne out by practical experience, due to the vagaries of site installation methods and the British climate.

With Ashzip systems, we put the main emphasis on fully sealing the walkable metal lining sheet perimeters as the main air line seal and vapour control layer. This is then backed up where appropriate with a separate loose VCL e.g. on high humidity applications or complicated roof plans with many junctions.



- ☐ **A walkable steel liner for fast enclosure**
- ☐ **Visibly sealed side laps**
- ☐ **Sealed flashing trims to close internal junctions**
- ☐ **Foam filler blocks to close all profile corrugations**
- ☐ **Easy to check internally by looking for daylight**
- ☐ **A good platform to install loose VCL**

The main air line seal is achieved with profile filler blocks and suitable internal flashing profiles beneath the walkable lining sheet at the roof perimeters and junctions, while the lap joints in the lining sheet are sealed with visible sealing tape. The seals are visible for site inspection and access is easily achieved if remedial work needs to be carried out. Not only is the installation comparatively foolproof, it is also practically impervious to the vagaries of the weather and achieves construction economies/ savings that can be more usefully employed elsewhere on the project.

Separate loose vapour checks

High humidity and complicated roof plans can be enhanced using a high quality loose VCL for belt & braces performance. Its use is essential with perforated liner sheets on acoustic systems.

Careful attention to sealing will be required on perforated systems so that any pressure testing of the building envelope does not disturb the loose VCL sealing. (Our technical department can provide further advice on this matter).

Insulation continuity

The building should be designed and constructed so that there are no significant gaps in the insulation layer. This obviously applies to all areas, but experience has shown that the biggest problems are always at the junctions and edges of the various building elements (eaves, verges, ridges, hips, valleys, abutments etc.).

Ensuring insulation continuity requires little more than common sense to ensure that the insulation layers in the various building elements always abut or overlap one another, rather than stopping short of each other.

The Ψ-value (PSI) is the extra heat loss through a junction through lineal thermal bridging over and above the heat loss of the adjoining insulated plane elements (e.g. the main areas of roof and wall). In essence, the Ψ-value is very similar to a U-value, but is expressed per linear metre (W/mK), whereas a U-value is expressed per square metre (W/m^2K). Ψ-values are required for all thermal junctions where they may impede the thermal performance of the main plane elements of the building envelope.

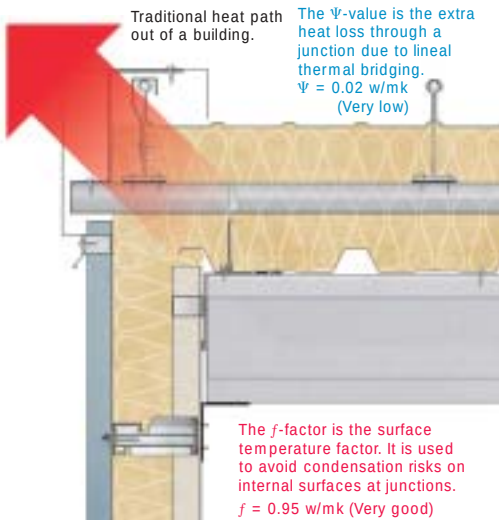
To satisfy the requirements, the Ψ-value for the building fabric must be considered where

$$\alpha = \frac{\Sigma\Psi \cdot L}{\Sigma A \cdot U} = \frac{\text{(sum of heat loss at junctions)}}{\text{(sum of heat loss through plane areas)}}$$

α-value (Alpha) must be less than or equal to 0.10 for non-domestic buildings or 0.16 for domestic buildings. Given their larger size, thermal bridges are relatively less important on non-domestic buildings. On simple large roofs with comparatively modest perimeter details, thermal bridging will have little impact with a permissible allowance of 0.10. By comparison, a small roof with a relatively high ratio of perimeter detailing to roof area e.g. several hips, valleys, dormers etc may require careful design to remain within the limits of the regulations.

"Point" thermal bridges caused by penetrations of the insulating envelope, such as protruding girders to support projecting overhangs etc are not currently required to be included in these calculations.

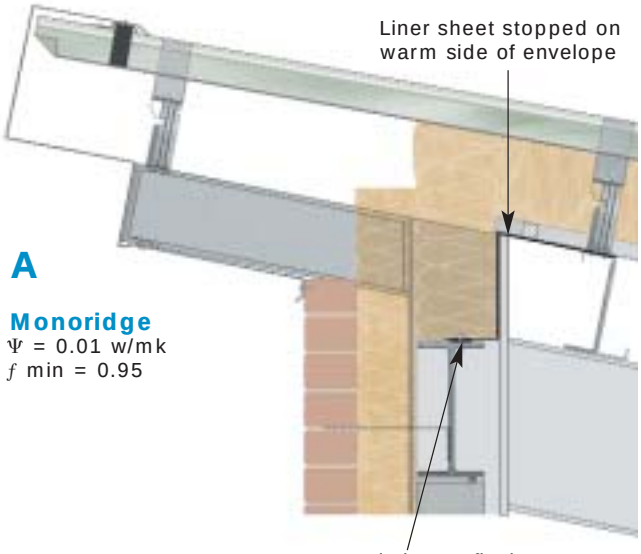
f- factors are also needed for these junction details. *f* is the surface temperature factor and is to be used to avoid internal surface condensation risks. However, perusal of the typical detail *f*-factors together with the relevant building type internal humidity classification tables suggests that these values are really most relevant for high internal humidity buildings.



Ashzip robust details are available for all common typical details. These ensure that there are no significant insulation gaps or thermal bridges at the interface of the various elements. Both the Ψ-value and the *f*-factors are illustrated on major details and our technical team is available to provide bespoke assistance.

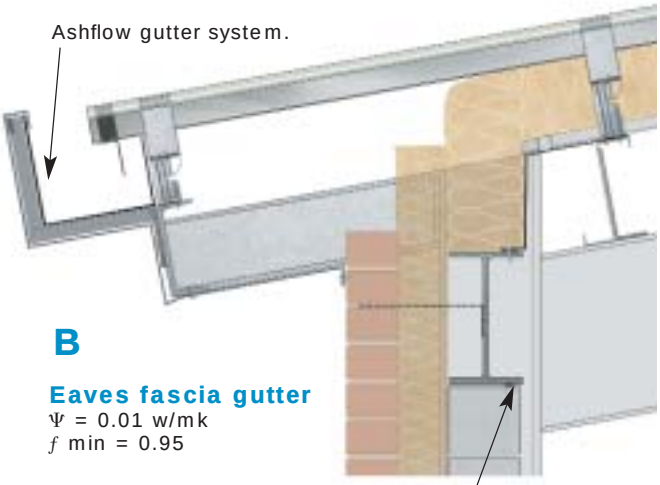
The responsibility for achieving compliance will normally rest with the developer or builder, even where the work has been carried out indirectly via a subcontractor. The developer/builder can provide a certificate or declaration that the works comply with the regulations or obtain one from a suitably qualified, competent person.

For insulation continuity, the certificate must confirm that appropriate design and installation has been carried out to achieve reasonable conformity to the regulations or that a thermographic survey has shown that the insulation is reasonably continuous over the building envelope and excessive thermal bridging has been avoided.



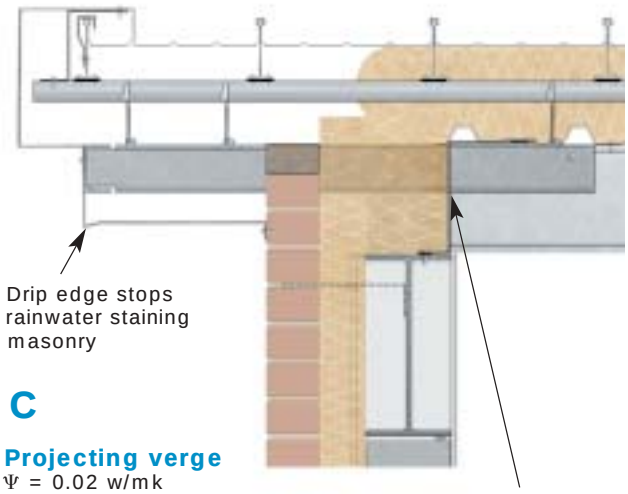
A

Monoridge
Ψ = 0.01 w/mk
f min = 0.95



B

Eaves fascia gutter
Ψ = 0.01 w/mk
f min = 0.95

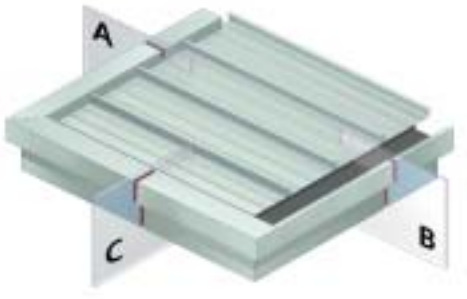


C

Projecting verge
Ψ = 0.02 w/mk
f min = 0.95

Thermally efficient typical details

Projects today frequently include overhangs and masonry. These details are based on 'as built' situations. They demonstrate outstanding thermal efficiency and incorporate a highly desirable continuous 'line' to the roof perimeter.

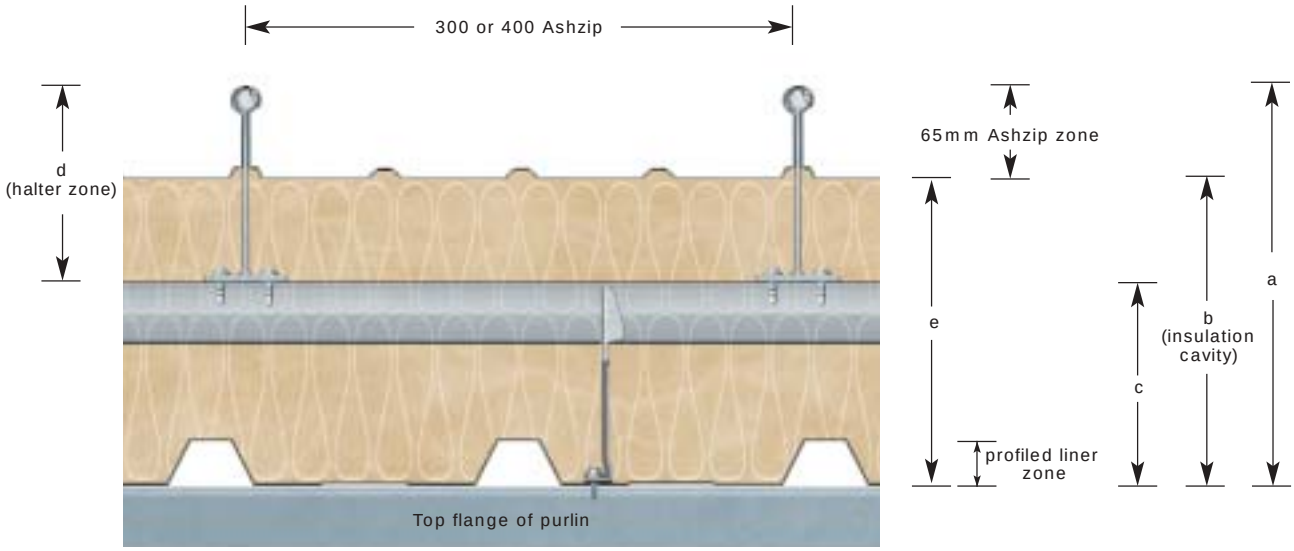


Note:

As recommended in BRE Paper IP17/01, the values given are only applicable to the roofing elements which have been calculated in isolation. The adjoining elements are deemed to be adiabatic for this purpose.

Changes to the components will have an effect on the given Ψ-values. For example the liner sheets could be taken through to the outside of the envelope but this could increase the values to between 0.25 and 1.10.

The steelwork and the sealing between this and the masonry will be by others. As the projecting Structural steel elements are not lineal features, their analysis is not a requirement of Approved Document L.



Dimension a = Overall height of system from top flange of purlin to the crown of the Ashzip rib.
Dimension b = Overall height of insulation cavity from top of purlin to the pan of the Ashzip profile.
Dimension c = Height of Ashgrid engineered thermal spacer system
Dimension d = Height of Ashzip halter
Dimension e = Thickness of insulation prior to compression to fit into the insulation cavity (dimension b).

U-value W/m²K	0.25	0.20	0.25	0.20
Insulation Material	Rockfibre λ =0.04	Rockfibre λ=0.04	Glass wool λ=0.044	Glass wool λ=0.044
Dimension a - Overall height of complete system	255	300	270	315
Dimension b - Overall height of insulation cavity	190	235	205	250
Dimension c - Height of Ashgrid engineered spacer	135	180	150	195
Dimension d - Height of Ashzip halter	120	120	120	120
Dimension e - Thickness of insulation prior to compression to fit **b**	200	250	220	260

Note: The above are calculated with LAMBDA 90/90 values and Ashzip 400 at 1500 purlin centres. Wider purlin spacings will reduce the insulation thickness and overall system height, as may further improved 'K' values. Please consult our technical department for the most up to date information.

U-Value calculations and system thickness

The thermal performance of all Ashzip roofs is assessed using CE marked insulation by undertaking complex three dimensional computer modelling using software which complies with BS EN ISO 10211-1, as required by AD L2 and TS J.

All Ashzip double-skin roof constructions achieve compliance with the elemental U value for roofs with integral CE marked insulation of 0.25 W/m²K, as specified in AD L2 and TS J. The illustration and table above detail the heights/thicknesses of the various components.

The relationship between the height of the Ashgrid spacer system and other components is determined by the 3-D computer modelling and the need to achieve optimum results whilst keeping the overall thickness down.

The Ashgrid spacer bar has been engineered to achieve excellent structural and thermal performance with deep depths of insulation. As the creators and manufacturers of Ashgrid, we have the technical expertise to use the system to its best effect in areas such as projecting verges to reduce the apparent thickness of the finished roof construction. For further information please contact our technical department.

Site assembled or composite panel systems?

Continuous foam insulated panels are frequently presented as the answer to the new Building Regulations. On the face of it, they can seem a simple solution. However, experience shows that the situation is not as clear-cut as it may initially appear.

Although most of the insulation is factory-applied, the majority of insulation continuity problems actually occur at the perimeter details. In these areas, panels are frequently dependent on site-applied infill insulation, which makes them as prone to installation error as other systems, if not more so. Similarly, although they are devoid of spacer systems within the main area of the panel, they can be just as susceptible to thermal bridging as other systems.

It is common practice with panels to take the internal liner skin through to the outside of the building on the underside of the insulation. This leads to much higher Ψ-values than a double-skin system where the liner would be terminated or thermally broken on the warm side of the building envelope. Controlling greatly increased thickness of foam insulation at the side laps is also more difficult. Poor joint alignment through over-expanded or bulging foam can occur, causing gaps to open up at the joints, leading to thermal bridging, poor airtightness and even the risk of condensation. (For a variety of reasons, panels have also been known not to be butted together properly on site, leading to similar consequences).

With regard to airtightness, the method for sealing panels at perimeters is virtually identical to twin-skin, e.g. internal flashing trims and separate sealing strips. In this respect, both types of system can be equally vulnerable to poor design or workmanship, but with a sealed twin-skin liner as outlined previously, the main air seal is far more visible. This not only makes it easier to visually check during construction, but also far more accessible should remedial work need to be carried out.

In essence, both systems have their uses and place in the market. However, the thermal performance of a good quality site assembled system should be viewed as equal to that of a quality composite panel. Furthermore, if the building is subject to specific criteria such as fire or acoustic performance or a complicated roof form, then site-assembled can have some very positive, tailor-made advantages.

Speed of installation

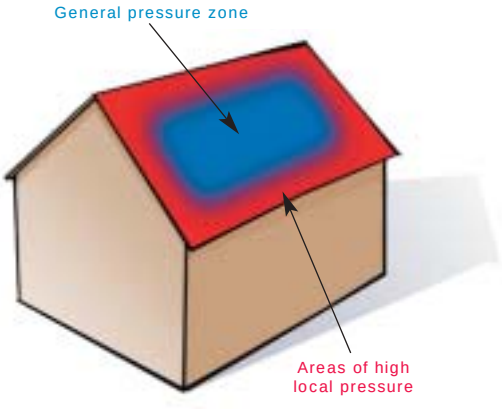
Composite insulated panels are often perceived as offering significant benefits in terms of speed of building enclosure and ease of compliance with Part L of The Building Regulations (England & Wales)/Part J of The Technical Standards (Scotland).

However, experience shows that a sealed walkable profiled liner sheet provides a weatherproof envelope for other trades far more quickly than most panel systems.

As outlined opposite, to seal the building to comply with regulatory issues, both site assembled and composite systems rely on similar techniques. There should thus be no appreciable difference in this respect to either speed or performance.

Some site-assembled systems may be slower to make weathertight. However, this will usually be on applications less suited to panels. For example, where there are demanding acoustic or fire performance criteria or very complex roof layouts.

Wind uplift



Very strong winds and gales now seem to be an annual occurrence. Unlike hinged, clipped or snapped together secretly fixed roofing systems, the zip up action of the Ashzip profile gives outstanding, proven performance against wind uplift and installation error. Essentially, the zipping action squeezes the profile ribs, providing a strong, vice like grip at every individual fixing point. The positive fixing method of the Ashgrid spacer bar also provides outstanding resistance to uplift. It has been engineered to afford superior lateral stability in comparison with other spacer systems.

Notwithstanding the above however, it should be a pre-requisite with all secretly fixed/standing seam roofs to first calculate the wind uplift figures acting on the roof prior to consulting roofing system load-span data. The project engineer/steelwork designer should calculate the loads for both the areas of high local pressure and the more moderate zones of general pressure. These should then be applied to the appropriate roofing system load-span tables to determine the correct spacing for purlins.

Down loads

The combination of the vertical profile ribs and zipped side lap detail also provides very good resistance to imposed loads such as foot traffic. Walking on the zipped ribs will not cause them to spring apart, buckle or break. There are also no separate cover caps, which can work loose and detach.

The self-weights of the individual Ashzip profiles are shown in the relevant load-span tables. The typical weight of a 0.7mm steel liner profile, 200mm insulation and spacer system is circa 12kg/m^2. The weights of the Ashzip profile can be added to this figure arrive at the typical system weight per m^2.

Wide spans from metal decking or structural trays

For wider internal spans or uninterrupted ceiling lines free from purlins between rafters, Ashzip can be combined with internal linings from wide span metal decking or structural trays. These can be installed transversely across the slope or longitudinally down the slope. Internal facings can be either solid or perforated for acoustic performance. A wide range of system applications and permutations are available. For further information please consult your area manager, the Ashzip design manual or our technical department.

Minimum pitch

Ashzip is designed for pitched roof applications where the **actual** pitch is 1.5^O or more. (On curved roofs zero degree fall at the apex of the curve is acceptable).

Load span tables

Ashzip 400 0.7mm Steel (Self weight 8kg/m² Curved sheets 1.6 maximum span)								
Span (m)	3.00	2.75	2.50	2.25	2.00	1.75	1.5	1.25
Wind Uplift	1.40	1.70	2.08	2.35	2.76	3.25	3.85	3.95
Down Load	0.75	1.15	1.59	2.20	2.50	2.70	3.00	3.37

Ashzip 400 0.9mm Aluminium (Self weight 3.5kg/m² Curved sheets 1.5 maximum span)								
Span (m)	3.00	2.75	2.50	2.25	2.00	1.75	1.5	1.25
Wind Uplift	0.90	1.20	1.45	1.95	2.10	2.60	2.95	3.05
Down Load	0.56	0.75	0.95	1.30	1.75	1.85	1.90	1.90

Ashzip 300 0.9mm Aluminium (Self weight 3.9kg/m² Curved sheets 1.5 maximum span)								
Span (m)	3.00	2.75	2.50	2.25	2.00	1.75	1.5	1.25
Wind Uplift	1.15	1.70	2.15	2.45	2.85	3.35	3.35	3.41
Down Load	0.70	0.95	1.35	1.77	2.30	2.40	2.40	2.40

All are characteristic working load in kN/m² for the Ashzip and Halter only.

Wind uplift deflect limit: L/90
Down load deflection limit: L/200

The above are based on four or more spans. For applications using Ashgrid spacer systems, the Ashgrid load span tables will also have to be consulted/considered.

Additional load/span data is available for thicker gauges of aluminium, other steel combinations and Ashgrid spacer system. Please consult our technical department. Curving Ashzip sheets will automatically limit the maximum permissible spans as detailed at the head of the tables above.

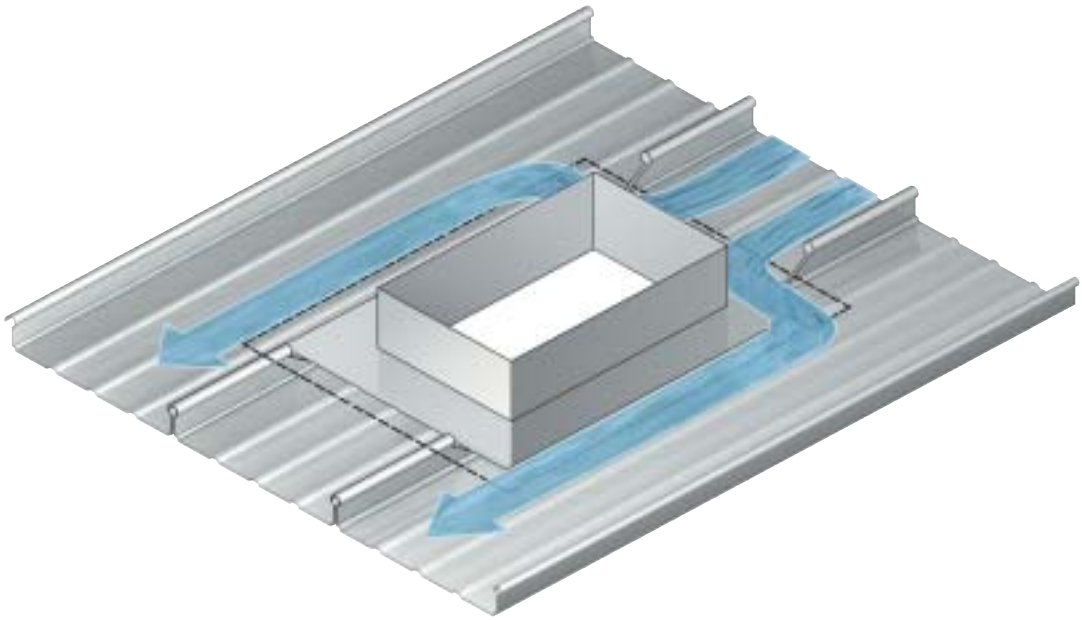
Roof openings and penetrations

Large roof openings close to the ridge can be weatherproofed by means of a factory fabricated soaker sheet taken back to the ridge capping.

For larger roof openings down the slope an upstand detail can be located in the pan of the profile and the standing seam ribs stopped short of this detail, so that the flow of water is not obstructed by the upstand detail.

The weatherproofing of the standing seam ribs together with the upstand detail can be achieved by two methods.

gutters against intrusive abutments etc. Both weathering methods may require some support from a separate ancillary framework. However such a framework will usually already have to be provided in any case to transfer the load from the roof unit that is being weathered, back to the main roof support structure. Further advice and assistance on these matters is usually available directly from the specialist companies who carry out this work. Information on these companies is available from our technical department or the Ashzip manual.



On aluminium Ashzip the weatherproofing can be maintained by the on-site welding together of the various components. Painted aluminium finishes can be restored by localised repainting after welding or by covering over the weld line with a cosmetic surround in pre-painted aluminium. Plastisol coated steel Ashzip is weatherproofed by in situ moulding of GRP to form a weatherproof soaker. The GRP mix is pre-coloured to match the Ashzip roof and is effectively bonded to the sheet to reinstate the weatherproof envelope. In situ GRP moulding can also be used with aluminium Ashzip. Both methods can be used to create effective valley gutters or secret

Smaller penetrations such as soil vent pipes and flues can usually be accommodated within the width of the Ashzip sheet and can be weathered by means of a flexible “Dek-Tite” style flexible pipe collar from Ash & Lacy.

Long lengths and rainwater goods

Long continuous lengths

One of the main features of the Ashzip system is the ability to produce long continuous unbroken lengths of sheet from either ridge to eaves or eaves to eaves on curved or very low pitch roofs.

Traditionally longer lengths were moved by road but this practically limits maximum sheet lengths to circa 40 - 45m. Furthermore, any sheets longer than 27m will require a police escort and movement order.

Nowadays, it is becoming more common to take the rollformer to site and manufacture the sheets in situ. Ash & Lacy have two containerised mobile rollformers for this purpose. The sheets themselves can be rolled either at ground level or directly onto the roof via the eaves.

Containerised on-site roll former.

Thermal movement

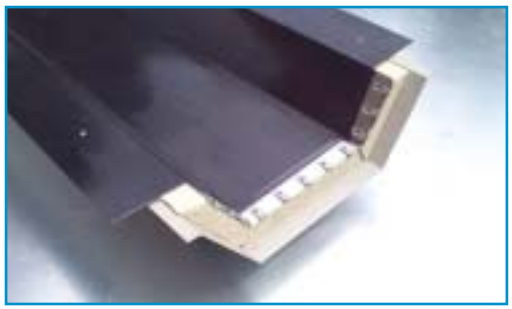
The successful expansion properties of this generic type of zip up profile are now well known with a demonstrable UK track record of 20 years, incorporating millions of square metres on many technically demanding buildings. Essentially, the inherent flexibility of the keyhole profile with halter restraint does not in practice lead to the kind of problems that used to be associated with more rigidly fixed aluminium profiles, such as fixing hole elongation etc.

Indeed experience suggests that by far the biggest source of expansion related problems over the last two decades appear to have been related to ancillary items such as incorrect flashing or gutter design and their installation. In this respect Ash & Lacy is ideally placed to advise on getting these areas right first time, due to extensive experience in this field.

Rainwater goods

A long life, leak free roof covering is seriously compromised unless the rainwater goods offer similar levels of durability and performance to that of the main roof. Common problems include premature corrosion, leaking joints and incorrect sizing.

Ashflow gutter and RWP systems compliment Ashzip roofing perfectly. Because there is no one solution which is suitable for every situation, a wide range of traditional options are offered to suit all applications and cost criteria. Fascia gutter systems can be made in painted aluminium or light gauge pre-coated steel. More substantial factory insulated gutter systems are manufactured in heavier duty galvanised steel or aluminium.



G600 factory insulated steel gutter

Although the concept of these systems may be traditional, the latest technology is used to make provision for ease of assembly, accommodating thermal movement and compliance with the Part L of the Building Regulations.

However in addition to these methods we can also offer the latest EPDM membrane lined gutter technology. This has the benefits of better thermal performance, simple solvent welded jointing and a life expectancy in excess of 30 years.

EPDM membrane lined gutter

Rooflights

The range of Ashzip compatible rooflights has been developed in response to the specifier's need for a choice of product options.

Principal requirements are not only to satisfy roof safety regulations, but also to have a range of products that offer incremental levels of thermal insulation, safety, light transmission and durability to suit varying project budgets.

As a consequence two distinct types of rooflight system have evolved to suit the Ashzip system, barrel rooflights and lay in rooflights. The following features are common to both systems: -

- GRP and Polycarbonate options
- High light transmission levels
- Improved UV protection to maintain light transmission
- CDM and non fragility compliant
- Guaranteed 30 year performance on some GRP options
- Full Part L compliance - Low U-value options available
- Full range of fire ratings
- Tints and diffusion can be varied - reduce glare and improve contrast

Lay-in rooflights

Lay-in rooflights provide a visually less obtrusive and a more economical solution to the problem of natural light in buildings. The rooflight profile is fitted flush, in the same plane as the Ashzip sheets. However due to the profile definition of the GRP external sheets, these generic rooflight designs are unsuitable to lap underneath a metal secretly fixed or standing seam outer sheet.

Therefore they are more suited to start under the ridge capping and run down the slope to the eaves or if required to end lap over the Ashzip metal sheets part way down the slope.

Such details make them less suited to low pitches than the barrel vault, while their lower resistance to wind uplift usually necessitates through fixings in the profile pan, although the sidelaps can be zipped up to the Ashzip using special zipped up cover caps.

Barrel rooflights

Barrel rooflights are the ideal design for curved roofs or roofs at very low pitches. They are also the rooflight of choice for clients who want no compromise in terms of weatherproof integrity regardless of roof pitch. Their design minimises the physical interface between the rooflight and the main roof system.

As a consequence, the no penetrative fixing concept of the entire roof envelope is maintained and not undermined by any inadequacies in the method of rooflight installation. By the use of apron flashings, in situ GRP moulding or site welding, these rooflights can also be easily introduced into mid-slope locations.

Refurbishment with Ashjack

Ashjack propped rafter system during construction

By offering exceptional weatherproofing, durability and vandalism resistance, Ashzip is suitable for both new build and refurbishment applications.

Old or damaged flat roofs can be transformed and revitalised with a pitched Ashzip “Umbrella” roof, incorporating our innovative Ashjack structural frame system. This solution uses proven structural principles and fully engineered components, backed by a nationwide network of approved installers providing unrivalled technical support.

When over roofing with Ashjack, the existing roof is left in situ and the new roofing subframe is installed over the top of this, minimising disruption for the occupants during installation. The Ashjack subframe itself can be either a full spanning truss system which is attached to the perimeter structure of the building. Alternatively it could be a propped rafter, where the existing roof is used to support the new lightweight structure.

Ashjack Propped Rafter System overclad with an Ashzip standing seam roofing system

Any solution imaginable can be achieved quickly and simply. For example the eaves height can be increased and if required, attractive eaves and verge overhangs introduced so the building is ‘secured by design'. Curved roof forms without ridges etc can be introduced by using the unique Ashjack curved propped rafter system.

Energy savings can be achieved through taking the opportunity to significantly increase insulation levels. At the same time standing water is removed once and for all, while troublesome internal outlets can be abandoned and full external drainage introduced.

Fall arrest systems

A number of specialist safe access systems are available for Ashzip roof systems.

The Saferidge and Safetrack systems utilise a powder coated aluminium track fastened either to the ridge or further down the slope.

Restraint is provided by a travelling eyebolt which runs along the track. The system complies with EN795 requirements etc.

The Constant Force TM post by Latchways plc provides a non penetrative fall arrest system that complies with EN795, CDM regulations and ease of compliance with part L of the Building regulations. For further information contact the Ashzip technical department.

Non fragility

Where Ashzip external sheets and profiled liner panels are fixed in full accordance with the manufacturers installation guide they will fully comply with all current or anticipated guidelines on non-fragility of roof coverings. E.g. Non-fragile Class B to ACR [m] 2000:001

PVF² coated aluminium cladding after circa 25 years exposure in Warrington.

Wall cladding systems

Wall cladding systems

In keeping with our 'one-stop' philosophy, a full range of wall cladding systems are available to complement the Ashzip roofing. Options range from hi-tech rainscreens through to profiled steel sheeting.

Profiled metal sheeting

Twin skin trapezoidal, sinusoidal ('S' shape) and plank shape profiled sheet systems are offered for applications ranging from plant rooms, parapet linings or soffit sheeting, through to cladding entire elevations.

In keeping with market demands the most popular finishes are the common pre-painted galvanised steel coatings and colours. However for more specialist applications such as marine environs, or the rail and power generation industries etc, aluminium cladding can also be supplied.

Composite panels

Ashpanel is a range of factory insulated composite panels. Both continuously applied foam and rockfibre insulation cores are available with both options usually being able to achieve satisfactory U.K. insurance approvals (at the time of writing).

Both trapezoidal and the flatter micro ribbed panels are offered with the latter being available with a variety of different surface patterns.

Rainscreens and flat facades

Ashtech is an exciting range of architectural panel systems which bring new aesthetic and engineering opportunities to building design. With both aluminium composite material (ACM) and solid aluminium plate options available, these products realise the full potential of modern construction materials.

Ashtech ACM combines exceptional flatness, superb structural performance and lightweight to produce a highly versatile product with a high aesthetic appeal.

Ashtech solid aluminium utilises both extruded and rolled plate aluminium. The ability to weld and post paint the product means that an almost limitless range of architectural effects are achievable, particularly where small quantities are required.

Ashzip materials & durability

The Ashzip external profile is available in either 3000 series aluminium or GZ275 prepainted galvanised steel. Principle finishes available are listed below together with some guidance as to their main characteristics. However please be aware that the durability of a metal coating is determined by many factors such as colour, location, environment, etc.

The following information is intended for general guidance for the British Isles only. For project specific information contact Ash & Lacy or the coating manufacturer.

Stucco embossed & Plain mill finish

–"Plain mill finish aluminium is normally expected to last the life of the building without maintenance"-BS5427 : 1976. This product is available produced from recycled aluminium.

PVF2 / PVdF on aluminium

With excellent durability and colour stability, this finish usually provides a long-term aesthetic life of 20 years plus on an aluminium substrate. As the aluminium does not rust and most shades have an even colour change that does not peel it is feasible that some applications may never be repainted (photo above left).

ARS on aluminium

An abrasion resistant coating for aluminium with good handling characteristics and advantages for certain applications.

200 microns plastisol on steel

The established high performance coating for pre painted steel. Corus HPS200 scintilla and leathergrain finishes are available with projected lifespans well in excess of 20 years.

Reaction between dissimilar materials

Any reaction between dissimilar materials is obviously to be avoided. As with most building design processes avoiding reaction between dissimilar materials is mainly common sense. In the first instance there is a need to think ahead to anticipate the likelihood of any potential problem beforehand and then design accordingly.

With regard to the sheeting components it is important that a sense of perspective is maintained. For serious adverse reaction to take place between say steel and aluminium, both materials would generally need to be in their unprotected natural states and to be corroding in the presence of reasonable amounts of liquid to act as an electrolyte.

Over the years experience has shown the protective or decorative coatings on steel cladding components will usually also act as a very effective isolating or barrier medium between the two different materials. Similarly the absence of reasonable levels of liquid also helps in deterring the onset of any electrolytic sacrificial corrosion.

Avoidance of reaction between dissimilar materials can be further enhanced by the introduction of separate barrier materials such as PVC isolating tapes, powder coating or more inert materials such as stainless steel. Invariably the cost of such precautions versus the intended use and projected lifespan of the building will have to be carefully considered.

Steel rivets in mill finish aluminium after 24 years exposure in an urban atmosphere.

General considerations

High humidity applications

Systems utilising Ashzip that are suitable for high humidity applications are available. However, the more aggressive and demanding conditions of such environments need careful consideration in terms of practical buildability and choice of suitably durable materials. To discuss your specific requirements please consult your Ashzip regional technical specifications manager.

Lightning protection

Modern structures use metals extensively in their construction. There are considerable benefits in utilising these metal parts as conducting paths. For example the steel frame of a building can frequently be used to provide a principle source of lightning protection with a metal roof like Ashzip in compliance with BS6651, without recourse to separate external conductor tapes running all over the roof. For further information please liaise with your lightning protection system engineer or consult the Ashzip technical department.

Fire performance

Ashzip standing seam roof systems contain rockfibre or glasswool insulations. As such they are not deemed to pose a potential fire problem in the same manner as some composite insulated panels are perceived in the market place. They have a Class O rating as classified by the building regulations, with a class 1 surface spread of flame rating for the metal facings and are classed as FAA/SAA to BS476 Part 3 1975.

Site installation

Full instruction for onsite installation, on site rolling, curving and training etc is available. Please contact the Ashzip technical department for details.

Additional information

More detailed technical information, typical detail drawings, other product brochures and colour charts are readily available. Please contact your regional technical specification manager or our sales office or technical department for prompt attention.

Draft specifications

Draft specifications for all aspects of the Ash & Lacy total envelope solution are readily available. Please contact your regional technical specification manager for bespoke advise and assistance on the actual product technical specifications best suited to your intended application.

Standards and guarantees

Ashzip, Ashjack, Ashtech, Ashfab and Ashflow gutters are produced to the highest quality standards by new UK based modern machinery, both in house or on site. This includes BS EN ISO 9001:2000. Ash & Lacy Building Systems will also provide product warranties and guarantees on a project by project basis on request. Please contact your regional technical specification manager for further information.

Ash & Lacy
a proven track record

Ash & Lacy Building Systems Ltd has a consistent track record of innovation in roofing and cladding. Many milestones in the development of modern roofing systems were pioneered and originated by Ash & Lacy. Typical examples are curved roofing and cladding, thermally engineered bar and bracket spacer systems (Ashgrid) and lightweight structural frames for over roofing (Ashjack).

Ash & Lacy is a wholly owned subsidiary of Hill and Smith Holdings plc, fully listed on the London Stock Exchange. The group is focused on construction, building and transport infrastructure. Ash & Lacy are well established as the third oldest company in the West Midlands.

Floclad from 1984 in Warrington

Wide experience

Ash & Lacy has been continuously involved in the design, development and production of metal roofing and cladding for over 25 years. Products during this period have included curved cladding, curved frameless buildings, continuous foam composite panels, secret fix low pitch roofing systems, flat to pitch systems, rainscreen cladding, cladding support systems, fasteners, ancillaries and external envelope fabrication.

Research and development

Part of in-house Research and Development Centre at our Bromford Lane Headquarters.

Structural load testing and computer modelling are just two of the activities carried out at our headquarters-based in-house research and development centre. It has been instrumental in the development of software programmes and design solutions formulated for Ashzip.

Taking excellence to a new level

Although Ash & Lacy already has ISO 9001 accreditation and uses the latest CNC technology, we believe this is not enough to achieve our ambitious future goals. As a result, we are also totally committed to the European Foundation for Quality Management (EFQM) Business Excellence Model. This provides a robust framework to enable us to pursue continuous improvement in every aspect of the organisation and its principles have fast become a way of life at Ash & Lacy.

ASHGRID™

SPACER SUPPORT SYSTEMS

ASHJACK™

FLAT TO PITCHED ROOF SYSTEMS

ASHFAB™

FABRICATIONS, FLASHINGS & GUTTERS

ASHTECH™

ARCHITECTURAL WALL PANEL SYSTEMS

ASHFIX™

FASTENERS & ACCESSORIES

ASHZIP™

STANDING SEAM ROOFING SYSTEMS

Ash&Lacy building systems

Head Office: Bromford Lane, West Bromwich, West Midlands B70 7JJ
Tel: 0121 525 1444 Fax: 0121 525 3444

Unit 8c, Kingston House Estate, Portsmouth Road, Kingston-upon-Thames, Surbiton, Surrey KT6 5QG
Tel: 020 8335 2600 Fax: 020 8335 2666

Unit 4a, Albion Trading Estate, South Street, Whiteinch, Glasgow G14 0AR
Tel: 0141 950 6040 Fax: 0141 950 6080

All E-mail enquiries to: sales@ashandlacybp.co.uk or firstname.lastname@ashandlacybp.co.uk Website: ashandlacybp.co.uk