

SIMPLE, CLEVER SUSTAINABILITY

PART 1: SITE-ASSEMBLED METAL ROOF SYSTEMS FOR TOP THERMAL PERFORMANCE

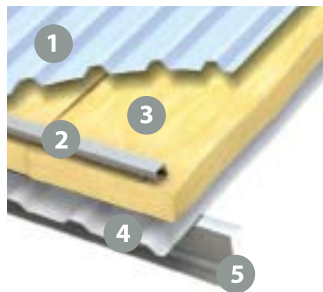
Steel is one of the ultimate building materials for sustainable buildings – it is light, very strong, long-lasting, design versatile and can be fully recycled.

This article is part of a series on metal roofing and cladding systems that promote sustainability.

A metal roof system made up of a series of everyday components can outperform almost any alternative system for bespoke and specific thermal properties. Site-assembled systems are built up from their constituent parts on the building site and critically, this system can be used for a new build as well as a retrofit over an existing metal roof.

The Safintra-warranted assembly combines best of breed components to create a system which will perform for decades.

It consists of a steel liner sheet of aluminium-zinc coated steel, a layer of insulation material, the Ashgrid bar and bracket spacer system, and an outer profiled weather sheet, also in aluminium-zinc coated steel.



Site-assembled system:

1. Weather sheet
2. Ashgrid Bar and bracket
3. Insulation
4. Liner sheet
5. Purlin

LINER SHEETS

Liner sheets are simply profiled sheets of aluminium-zinc coated steel with a trapezoidal profile and a thickness of anything from 0,3mm to 0,55mm. The thickness of the liner sheet will depend on the traffic it is required to handle, and the acoustic requirements of the cladding.

Where required, the acoustic performance of the cladding, in particular its ability to absorb internal sound and minimise reverberation, may be enhanced by the use of a perforated liner sheet.

Thinner gauge liner sheets are not strong enough to walk on, so it is essential that the insulation, spacer system and weather sheet are installed from access panels. Access panels are thicker profiled steel sheets with the same profile as the liner and can be equipped with adhesive non-slip strips. These are loose laid and nested over the liner sheet and used as a platform, shifted along the roof plane as work progresses.

Whether trafficable or not, the steel liner sheets provide an excellent, non-fragile barrier against falling once they have been fully fastened.



Liner sheet

THE SPACER SYSTEM

The primary function of the spacer system is to support the weather sheet at the required height above the liner sheet. The components of the system must therefore possess sufficient strength to safely transmit the required loading through to the primary purlins, without deformation.

The Ashgrid bar and bracket system consists of steel bars, which provide continuous support to the weather sheet, supported at intervals by steel brackets firmly attached to the purlins through the liner. The bracket foot must incorporate an EPDM pad, which acts as a thermal break, to minimise thermal bridging.

It is important to note that in the absence of an engineered spacer system, the structural integrity of blanket insulation or rigid insulation boards installed over purlins

MAKING ROOFS WORK SMARTER



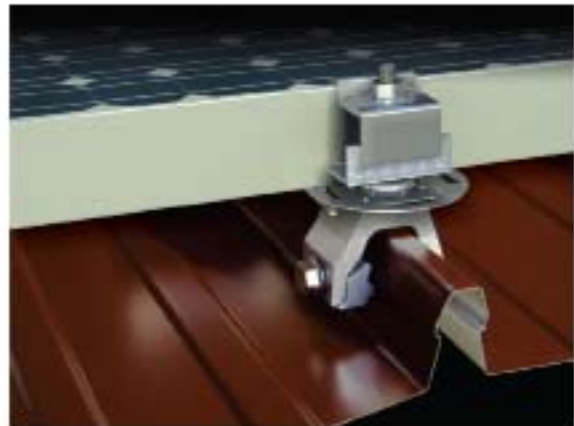
S-5 CorruBracket™ for corrugated profiles



S-5 TrapBracket™ for trapezoidal profiles



S-5 K Grip™ for Safflok and similar concealed fix systems



S-5 PV Kit™ for solar module attachment

S-5!® is the right way to attach almost anything to metal roofs:

- Non-penetrating clamps for concealed fix systems preserves sheeting warranties
- Profile-specific attachment brackets for all pierced fix sheets
- Engineered for attachment of PV panels, walkways, HVAC, safety rails, signage and more

S-5 clamps offer:

- High tensile aluminium and non-ferrous stainless steel hardware
- Material compatibility with aluminium-zinc coated steel
- 25-year manufacturer's warranty on all product components
- Unequalled holding strength, average load-to-failure of 1000kg

South African operations:- Johannesburg, Cape Town, Durban, Port Elizabeth, Polokwane, Nelspruit & Bloemfontein. www.safintra.co.za

Additional operations in Africa include:- Namibia, Botswana, Mozambique, Malawi, Zambia, Angola, Tanzania & Kenya, amongst others. www.safintra.com

is entirely reliant on the roofing fasteners and packers. The design lengths of the fasteners are often excessive whilst the insulation and packers do not offer them adequate support. This places the entire roof assembly at risk.

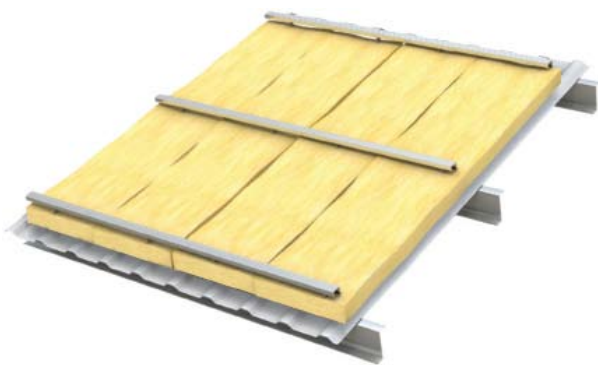


Liner sheet with bar and bracket system.

- Ashgrid Spacer system:
1. Steel bars
 2. Steel brackets
 3. Bracket foot

INSULATION

Glass fibre or mineral wool blankets are favoured due to their light weight, low thermal conductivity, acoustic performance and fire performance. Glass fibre and mineral wool blankets are flexible, which ensures that gaps between the insulation are eliminated during installation, preventing thermal bridging.



Insulation blanket on top of the liner sheet.

BUILT-UP STEEL SYSTEMS OFFER SAVINGS OF APPROXIMATELY 10% OVER RIGID INSULATION BOARD APPLICATIONS OF EQUAL R-VALUES. THEY ALSO OFFER SAVINGS BY FAST-TRACKING THE CRITICAL PATH OF THE PROJECT.

BENEFITS OF BUILT-UP SYSTEMS

- Cost-effective.
- Lightweight and fast method of construction.
- Secure and waterproof at an early stage of the build programme.
- Efficient: R-values up to 7m².K/W, and offers consistent thermal performance for the life of the building.
- Improved structural performance: The liner sheet and Ashgrid bar and bracket spacer system provide restraint to the steel purlins, thus ensuring rigidity of the roof structure.
- Glass fibre and mineral wool deliver an A/A1/1 fire rating with no restrictions.
- The acoustic performance far exceeds that of rigid insulation boards installed over purlin and eliminates rain drumming.
- Improved security due to a second steel skin.
- Recyclable and reusable: As the individual components are not bonded, recycling of the materials after the building's operational life does not present the potential ecological impact presented by foam-cored composite panels.

THE OUTER WEATHER SHEET

The outer profiled metal sheet of a double-skin built-up cladding system is known as the weather sheet. While protecting the building by forming a weather-tight envelope, it also acts as a structural element, as it plays an important role in transferring externally applied loads, for example from wind, hail, snow and foot traffic, through to the secondary steelwork and the primary load-bearing frame.

Built-up steel systems offer savings of approximately 10% over rigid insulation board applications of equal R-values. They also offer savings by fast-tracking the critical path of the project.

Safintra supports its Built Up System with Performance Warranties. Technical advice is gladly offered at all stages of the project. **WR**

Safintra South Africa
Tel: 011 323 6300

Website: www.safintra.co.za and www.safintra.com





SAFLOK 700[®]
concealed fix roofing

LOCKS DOWN YOUR ROOF



The most advanced wide-coverage concealed fix system on the market

- Cover width of 700mm per sheet for fast, cost effective installation
- Re-engineered clips ensure superb sheet engagement at every rib, and total stability at the male-female lap
- Deep pans for excellent water run off, even at 2 degree pitch
- Saflok components include detailing for high wind loads and structurally challenging installations
- Can be rolled on-site in lengths up to 120 metres

South African operations:- Johannesburg, Cape Town, Durban, Port Elizabeth, Polokwane, Nelspruit & Bloemfontein. www.safintra.co.za

Additional operations in Africa include:- Namibia, Botswana, Mozambique, Malawi, Zambia, Angola, Tanzania & Kenya, amongst others. www.safintra.com