

# InSkew

## High performance timber fixing for pitched warm roof construction

### PART 'L' COMPLIANCE

Since the publication of Building Regulations Part L, 2006, the new 'u' values for pitched warm roofs, where the insulation is above the rafter, is 0.18 – 0.20 W/m<sup>2</sup>K. Warm roofs, used to maximise living space and constructed using InSkews, have been shown to comply with these latest Part L Building Regulations.

### WARM ROOF BENEFITS

- Complies with Building Regulations – Part L
- Reduces heat loss and retained heat gain
- Lagging of pipes and tanks eliminated
- Reduces running costs
- No cold bridging
- Protection against damp and corrosion
- Roof tile ventilation no longer required
- Produces a Room-in-a-Roof space

### INSKEW RECOMMENDATIONS

The following insulation manufacturers recommend InSkew and specify it in their BBA certification

- Celotex – GA 3000
- Dow – Styrofoam, RL & PR
- Ecotherm – Pitched roof board
- Kingspan – TP10
- Knauf – Polyfoam
- Rockwool – Rockfall
- Springvale – Platinum Warmsqueeze
- Vencel Resil – Jablite
- Xtratherm – Pitched roof board



### THE BENEFITS OF USING INSKEW

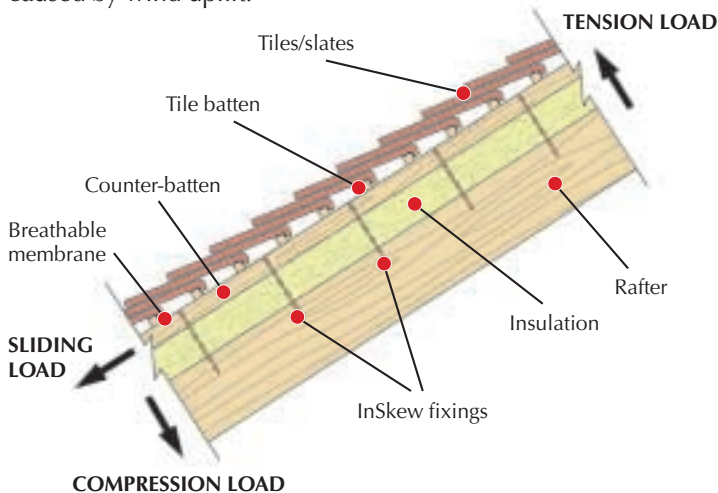
Designed specifically for use in warm roof construction, InSkews are structurally more reliable, due to their helical profile, and more economical than traditional nails as far fewer are required. Other benefits include:

- Free in-house design service available with a rapid response
- Written specifications covered by Helifix Professional Indemnity insurance
- One piece, stress-free, stainless steel fixing
- Designed to withstand the structural loads – both the roof weight and wind suction
- High performance – fewer fixings required
- Excellent holding power in both tension and compression
- Prevents compression of insulation and does not impair its thermal performance
- Hammer or power driven normally without pre-drilling
- Recommended by leading insulation manufacturers
- Self-tapping action avoids batten bouncing and splitting of timbers
- Headless, flush fixing for minimal cold bridging and heat transfer
- Full technical data available: Independently tested by TRADA

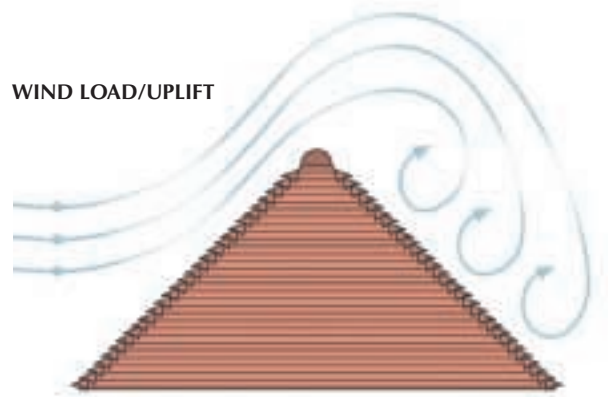
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## UNDERSTANDING PITCHED WARM ROOF STRUCTURAL LOADS

Structural loads on a pitched warm roof must be considered differently from those on a traditional 'cold roof', where the weight of the roof covering is supported directly by the rafter. On a warm roof the weight is taken up by the counterbattens, which are laid on top of the insulation, a non-structural element. The counterbatten effectively reproduces the rafter above the insulation and it is essential therefore that it becomes a structural member to which the tile batten can be fixed and, at the same time, hold down the insulation against wind suction. InSkew has been designed to do just this, resisting both the sliding and compressive loads of the roof covering while counteracting the tensile loads caused by wind uplift.



WIND LOAD/UPLIFT



### SLIDING LOAD

As insulation thicknesses increase so do the sliding or bending loads that are imposed on the counterbatten. The laid weight of the roof covering and the roof pitch both affect the sliding load as the heavier the tile and the steeper the roof, the greater the load becomes. However, the snow load, which must be considered in the overall assessment, starts to decline at approximately 40°.

A consequence of the sliding load is that under the weight of the roof covering the insulation could compress, impairing its thermal performance. However, InSkew, unlike traditional fixings, effectively withstands both sliding loads and compression loads.

### WIND SUCTION

The counterbatten (usually 25mm-50mm thick and 38mm-50mm wide) must be thick enough to grip the InSkews and enable them to resist the wind uplift. It must not buckle under the sliding load between fixings and must be wide enough to meet the manufacturers requirements for clamping the insulation. Wind suction will be affected by the anticipated wind speed, the height of the building, the site exposure and the local topography.



### INSKEW 600

- 6mm outside diameter
- 3.35mm core diameter
- Austenitic stainless steel
- Cold rolled from wire with a Hi-Fin special profile around a central core
- Section provides good tensile and compressive characteristics
- Available from stock in standard lengths from 75mm to 300mm
- Manufactured to ISO 9001:2000 quality assured standards

# InSkew

## INSKEW SPECIFICATION

400			Counter Batten Centres	600		
0 - 60	61 - 80	81 - 100	Insulation Thickness (mm)	0 - 60	61 - 80	81 - 100
7.2	8.3	11.1	InSkews per m <sup>2</sup>	7.3	8.4	11.1
350	300	225	Fixing Centres (mm)	225	200	150

Assumptions: 1. UK mainland, not coastal or western Scotland. 2. Laid weight of tiles is less than or equal to 60Kg/m<sup>2</sup>.

**These figures are for guidance only – please call Helifix for a detailed specification**

## INSKEW LENGTH

The InSkews require a minimum 35mm penetration into a softwood rafter

### Example:

Counter batten thickness	38mm
+	+
Insulation thickness	50mm
+	+
Optional ply deck	Nil
+	+
35mm into the rafter	35mm
=	=
<b>InSkew Length</b>	<b>125mm</b>
<small>(Rounded up to nearest standard length)</small>	

## TESTING, PERFORMANCE & COSTS

Helifix is the only manufacturer to have had independent testing carried out on its roof fixing. Initially TRADA carried out comprehensive testing and developed our original load tables. These were updated in 2000 to conform to current timber standards and measure performance with deep insulation.

In 2003 Napier University conducted timber pull-out tests which concluded that three traditional fixings would be required to match the performance of a single InSkew. Comparative costs should bear this in mind – together with the labour costs of installing three times as many traditional fixings.

As insulation thicknesses increase so does the need for ever longer effective fixings. Whereas nails increase in diameter and tend to curve as their length increases, InSkews remain constant in diameter and are straight. Traditional fixings will therefore require wider, and more expensive, counterbattens and rafters as their length increases to avoid splitting the timber – a problem InSkews avoid with their self-tapping helical design.

For a detailed and accurate fixing specification that takes into account your exact roof details and specific location, which will save you time and money and is covered under the Helifix Professional Indemnity insurance, please call our Technical Sales Team on 020 8735 5222

## POINTS TO NOTE

- A.** Counterbattens must be at least 25mm thick to grip the tile batten fixing firmly
- B.** Insulation over 50mm thick requires a stop batten
- C.** Hand or power support tools should be used with InSkews of 120mm or longer. The power driver speeds installation and is recommended for deep insulation and to reduce buckling when driving into hard rafters
- D.** When using InSkews to fix tile battens to support vertically hanging tiles, contact the Helifix Technical Sales Team

## INDIVIDUAL PROJECT SPECIFICATIONS

Helifix is happy to provide individual project specifications to suit your exact requirements. You can either visit our website ([www.helifix.co.uk](http://www.helifix.co.uk)) and complete the InSkew 600 Enquiry Form on-line and email it to us, or you can telephone our Technical Sales Team on 020 8735 5222. When telephoning please make sure you can provide the following information to enable us to work out an accurate specification.

1. Counter-batten thickness
2. Insulation thickness
3. Additional material thickness (e.g. ply deck)
4. Counterbatten/rafter centres
5. Roof pitch (rounded to the nearest 10°)
6. The laid weight of tiles or slates being used
7. In which county is the site?
8. Wind exposure – minimum, medium or maximum?
9. Is the building over 15m high?
10. The area of the roof in m<sup>2</sup>

# InSkew

## Bridgford Point, Nottingham

Developer: **Mansell Construction Services Ltd**  
 Installer: **W R Leivers**



### PROBLEM

A new development in West Bridgford, Nottingham, for AMK Land, Bridgford Point comprises 24 flats in three storeys above five ground floor retail units and employed InSkew high performance fixings in its roof construction.

### SOLUTION

Architects for Mansell supplied details of the roof components, pitch and wind exposure to Helifix who provided an InSkew specification, including size, quantity and fixing density. The stress-free stainless steel InSkews, each 130mm long, were then installed by local roofing contractors, W R Leivers, securing 25mm counter-battens through 50mm of insulation and supporting the artificial slate tiles. In total 3,500 InSkews were used on the 364m<sup>2</sup> roof.

## Penygelli County Primary School, Coedpoeth, North Wales

Main Contractor: **Mowlem Plc**  
 Installer: **Bracknell Roofing**  
 Client: **Wrexham County Borough Council**



### PROBLEM

The new Penygelli County Primary School, at Coedpoeth in North Wales, is a single storey building with large pitched roofs in an area of maximum wind exposure. It required a reliable high performance fixing that would resist all loadings while supporting the laid tile weight of 50Kg/m<sup>2</sup> and InSkews were ideally suited.

### SOLUTION

ISP Architects, project architects for design and build contractor Mowlem Plc (now part of Carillion), provided the Helifix Technical Department with drawings and details of the school's roof construction and were then provided with an InSkew specification. Due to its size and location, the 2,300m<sup>2</sup> roof with pitches ranging from 20°-27°, required 22,000 x 190mm InSkews to secure the counter battens through 100mm of insulation.