



**A BETTER WAY TO BUILD**



**NEW BUILDS · EXTENSIONS · CONVERSIONS  
COMMERCIAL BUILDINGS · WAREHOUSING**



# The Thomas Carter Construction Service

## Thomas Carter SIPs Construction

Thomas Carter Limited have been building with SIPs since 2004 and is a Kingspan Approved Delivery Partner.



Building with pre-formed SIPs panels is not a new development. Buildings of all shapes and sizes have been built using SIPs for many years,



particularly in the US and now commonly in Germany and increasingly here in the UK.

## Kingspan SIPs Panels

We use Kingspan exclusively because Kingspan is the market leading UK manufacturer of premium and high performance rigid insulation products and insulated systems for building fabric and building services applications. Kingspan SIPs are the only Independently BBA pre-approved system manufacturer in the UK, which is why we use Kingspan. BBA certification is recognised throughout the construction industry as a symbol of quality and is accepted by specifiers, building control, local authorities and insurers.



## Converting Architectural specification drawings.

We will convert architects drawings supplied in DWG or DXF CAD format to full SIPs conversion specification drawings and



engineer calculations for submission to Building Control. Frozen design should include plans, elevation, sections, and window schedules. We will discuss this with you beforehand.

## Why build with SIPs?

### SPEED

The building is erected and weather tight in a fraction of the time by comparison to traditional brick and block. The panelised nature of the system can enable a fast track building process, which substantially reduces construction time.

### FASTER ACCESS FOR FOLLOW-ON TRADES

Follow-on trades can start work sooner as a building using SIPs, together with the breathable membrane wrap, offers a weather-tight shell helping complete the project faster.

### ENERGY EFFICIENT AND SAVINGS

Highly energy efficient buildings achieving whole wall and roof U-values of 0.19 – 0.10 W/m<sup>2</sup>.K or better. Kingspan SIPs panel offers up to 70% reduction in heating bills



This thermal image shows almost no heat loss from SIPs built house.

### GAIN INTERNAL FLOOR SPACE

Due to the superior make-up of the SIPs panel, offering reduced thickness and extremely high levels of insulation, a typical 10m x 8m two storey home can yield between 10 & 11m<sup>2</sup> more useable floor space when compared with standard alternative build methods.

### MINIMAL WASTE

Creates minimal site waste as kits are designed, cut and palletised in a controlled factory environment before being delivered to site.

### ENVIRONMENTAL SUSTAINABILITY AT ITS CORE

Most of the components for a typical SIPs system, e.g. panels and ancillaries come from one source, therefore there are fewer deliveries, less transport, congestion, noise and traffic pollution, reducing a project's impact on the environment.

### PREDICTABLE COMPLETION SCHEDULE

Much easier to predict project completion times, simple to erect and requires no wet trades internally.

### PRECISE ENGINEERING REDUCES DEFECTS

Defects are vastly reduced due to factory controlled manufacturing, precise design and the engineering of the system.

### EXCELLENT INDOOR WORKING ENVIRONMENT

Provides a more controllable indoor environment than traditional construction methods, such as masonry, due to the system's potential for superior air-tightness.

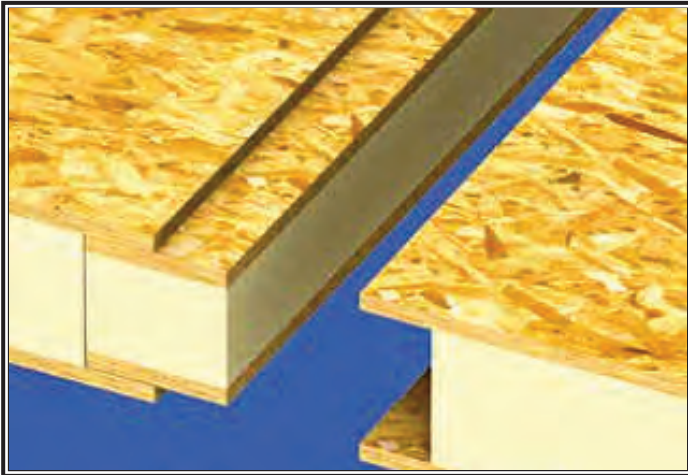
# Building with the Kingspan SIPs System

## ‘Structural Insulated Panels’ or SIPs.

They are manufactured to the highest standards by Kingspan, the leading UK insulation manufacture. The panels consist of a high performance fibre-free rigid urethane insulation core,

During manufacture, the insulation core of Kingspan SIPs panels is autohesively bonded to the OSB/3 facings. This process provides a more reliable and superior adhesion than the secondary bonding process used in the manufacture of most other SIPs.

Kingspan SIPs system panels are a structural composite. This composite assembly provides stiffness, strength and calculable responses to applied loads.



sandwiched between two layers of Oriented Strand Board type 3 (OSB/3). The SIPs system offers 142mm or 172mm thick panels connected with a unique jointing system for walls and roofs and intermediate floors using engineered or open web joists.



## Adaptability and Versatility

The SIPs system leaves ample scope for individual design. The panels are pre-cut to match a project's engineering and design specifications, and a complete kit is delivered to site ready for erection.

This system can be used to create buildings up to 4 storeys in height, the panels being used to create the walls (load-bearing and non-load-bearing) and roofs of a complete building.

The panels are lightweight compared with brick and block and therefore are ideal for use where heavy construction may not be possible.

As with all construction methods, including traditional masonry, a long lasting external weather proofing is a necessary part of walls and roofs constructed using the SIPs system.

A variety of external finishes can be used from traditional brickwork to a huge choice of different cladding designs, styles and materials, wood finishes and renders. All are useable with SIPs construction.

## Diversity

The SIPs roof and wall elements can be used individually with other non-SIPs system components. For example SIPs panels can be used as a wall system in conjunction with a timber rafter roof or with steel frame or part of a brick and block structure.

In most cases SIPs are ideal for extensions, conversions or additions to existing buildings regardless of their structure type.



## Compliance and Certification

The Kingspan SIPs system is recognised by major building warranty providers such as NHBC, Building Life Plans, Premier, Build Zone Homebond and HAPM.

The SIPs system's use is covered by LABC Registered Details Certificate No. EWW5546.

The SIPs System comprising 142 mm thick panels holds BBA and NSAI Agrément certification.



**NB:** SIP systems are not recommended for cellars or basement constructions or for use in high humidity environments.



### The best use of developed technology

The above images show a SIPs building under construction. The property featured was built by Thomas Carter in 2008. It demonstrates the flexibility and capability of building with SIPs.



In this case a highly creative development. SIPs offers this capability to all forms of construction from a residential extension to a warehouse or factory. SIPs is here today and is undoubtedly... 'A better way to build!'

## Technical Information

### CO2 Emissions

The first step in minimising the CO2 emissions of a building is to reduce its space heating demand. The most effective way to do this is to improve the performance of its envelope by specifying low U-values, low air permeability and by avoiding significant thermal bridging wherever possible.

### U-values

The SIPs system comprising 142 mm thick panels can achieve whole wall and roof U-values of 0.19 W/m<sup>2</sup>.K or better with no additional insulation. The SIPs system comprising 172 mm thick panels can achieve whole wall and roof U-values of 0.17 W/m<sup>2</sup>.K or better with no additional insulation.

### Air-tightness

In addition to the excellent U-values that can be achieved by walls and roofs constructed using SIPs, the closed cell structure of the rigid urethane insulation core of the panels does not allow movement of air within them. The insulation will not sag or physically deteriorate over time, as may be the case with other insulating materials.

The Kingspan SIPs proprietary jointing system can create a very air-tight structure. Air leakage levels can be as good as 0.08 air changes per hour at normal pressures (approximately 1 m<sup>3</sup> / hour / m<sup>2</sup> at 50 Pa).

### Thermal Bridging

Repeating thermal bridges occur where a material with a significantly worse thermal conductivity interrupts the insulation layer in a construction. U-value calculations for conventional timber frame systems take into account the effects of repeating thermal bridges, i.e. timber studs etc. The insulation layer in the SIPs is not interrupted by repeating studwork. Therefore, there is less repeating thermal bridging. There are, however, some thermal bridges, e.g. where timbers are used to support point loads etc.

Thermal bridging from timber stud walls average 18% in conventional timber frame. The SIPs system offers reduced heat loss as a result of only 4% thermal bridging of a typical domestic building wall and 1% thermal bridging from timber elements for a typical domestic building roof.

Linear thermal bridges occur at junctions, e.g. wall to floor interface, and openings, e.g. windows, in the building fabric, and are expressed as psi (γ) values. γ-values are an important factor in the calculation methodologies used to assess the operational CO2 emissions of buildings. The SIPs system achieves very good γ-values, due to the continuity of insulation at junctions and openings inherent in the SIPs design.

### Zero ODP and Low GWP

The fibre-free insulation core of Kingspan SIPs panels is manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).

### Responsible Sourcing

Kingspan Insulation's manufacturing facility, at which SIPs system panels are produced, carries FSC® (FSC®- C109304) and PEFC Chain of Custody certification. As standard, the OSB facing of SIPs system panels is PEFC certified. This certification verifies that the OSB facing of SIPs system panels is legally sourced from well managed forests.

### Green Guide Ratings

2008 BRE Green Guide Summary Ratings, for walls and roofs constructed using generic Kingspan TEK®-type SIPs, as a result of the comparatively low environmental impact of the SIPs, are heavily influenced by the external cladding specification. Wall and roof elements, constructed using the Kingspan TEK® Building system, correspond to generic elements, described in the 2008 BRE Global Green Guide, which achieve Summary Ratings of A+ or A.



### Thomas Carter Limited

Office. Glenbrook. Foxhole Lane. Matfield. Kent. TN12 7ES.

Tel: 01892 724710 / 0845 263 8250

Fax: 01892 724710

Email: admin@thomascarter.co.uk

Website: www.thomascarter.co.uk

