

Available Through:



# Kingspan TEK® Building System

## AN INTRODUCTION



- Next generation construction system
- Achieves U-values no worse than 0.20 W/m<sup>2</sup>.K and lower U-values are achievable
- Air tight construction, as low as 0.08 air changes per hour at normal pressures
- Provides up to 10% additional floor space
- Recognised by warranty providers: HAPM, NHBC and Zurich Municipal
- BBA and IAB certified
- Quick and safe to build
- CFC/HCFC-free with zero Ozone Depletion Potential
- Can create warm homes with very low fuel bills
- Highly efficient and sustainable
- Habitable room in the roof space
- Internal works can start earlier
- EGAN compliant
- The system creates minimal on-site building waste
- Ideal for all building types



**CENTURY®**



IAB No. 02/0158



# Introduction

## What is the *Kingspan TEK*® Building System?

The *Kingspan TEK*® Building System is a simple but revolutionary way of building homes quickly and with outstanding thermal efficiency using Structural Insulated Panels [SIPs].

SIPs are made from two sheets of oriented strand board [OSB], bonded during manufacture to a CFC/HCFC-free, zero Ozone Depletion Potential [ODP], rigid urethane insulation core.

The overall result is a home that is very energy efficient, making it very cheap to run, often requiring only a bare minimum outlay for fuel bills.

The system is highly versatile being able to construct a range of buildings from new homes right through to commercial properties.

The *Kingspan TEK*® Building System is recognised by the major building warranty providers such as HAPM, NHBC and Zurich Municipal. It also holds BBA, IAB and Zulassung Certification.

## Design Flexibility

The *Kingspan TEK*® Building System can be used to create the walls (loadbearing and non-loadbearing), roofs and floors of a complete building. The *Kingspan TEK*® Building System can be used as a roofing system in conjunction with masonry or timber frame walls.

## Applications

The *Kingspan TEK*® Building System can be used to create buildings up to 3 storeys. Because the panels are light weight compared to brick and block, at 25 kg/m<sup>2</sup>, they are ideal for use, where heavy constructions are not possible.



# Energy Efficiency

## General

The low U-values that can be achieved by using the **Kingspan TEK® Building System** e.g. 0.2 W/m<sup>2</sup>.K with no additional insulation, mean that not only can the System meet and exceed current Building Regulations but it also can meet the U-values that are expected to be set in the next changes to the Building Regulations in 2005 and beyond.

Air tight construction – as low as 0.08 air changes per hour at normal air pressures or 0.91 air changes per hour at 50 Pa (approximately 1 m<sup>3</sup>/hour/m<sup>2</sup> at 50 Pa).

The insulation will not sag or physically deteriorate over time as may be the case with other insulating materials.

The SIP technology, upon which the **Kingspan TEK® Building System** is based, means the insulation layer is not interrupted by repeating studwork. Therefore there is less cold bridging and a better thermal performance.

## Limited Cold Bridging

Due to the continuity of insulation within its panels, the **Kingspan TEK® Building System** provides greatly enhanced thermal reliability when compared with other more traditional forms of construction.

The **Kingspan TEK® Building System** does not suffer from:

- sagging insulation;
- wet insulation due to exposure on site which could reduce thermal performance;
- gaps and voids in insulation coverage left by poor site workmanship; or
- compressed loft insulation from storage of items in the loft.

The **Kingspan TEK® Building System** does not suffer from the problems associated with other common construction techniques:

- air leakage through poorly sealed sockets, switches etc. in timber frame walls;
- air leakage at floor zones through wet plastered masonry cavity walls;
- air leakage under skirting boards and through poorly sealed sockets, switches etc. in dry lined masonry cavity walls; and
- air leakage through poorly sealed loft hatches and top storey ceiling light fittings.



## Floor Space

When building a wall to achieve a U-value of 0.2 W/m<sup>2</sup>.K using the **Kingspan TEK® Building System**, the structure can be 223 mm thick. In comparison, a timber frame wall to achieve the same U-value may have to have a wall 390.5 mm thick, (12 mm OSB / 215 mm glass fibre quilt between 215 mm studs / 12.5 mm vapour check plasterboard on dabs). A full fill masonry cavity wall to achieve the same U-value will have to have a wall 430 mm thick (205 mm rock mineral fibre full fill / 100 mm dense block / 12.5 mm plasterboard on dabs).

This means that the **Kingspan TEK® Building System** gives you more floor space for the same external dimensions. Ideal when considering compliance with the housing densities demanded by guidelines such as PPG3 in England and Section 5 of Planning and Development Act in the Republic of Ireland.

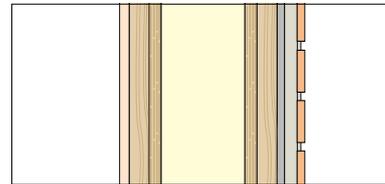


Figure 1: Brick slips on render on Kingspan TEK

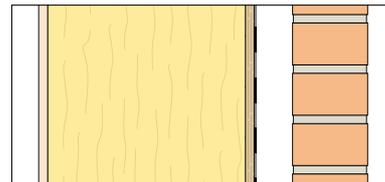


Figure 2: Standard 140 mm wide timber frame, brick clad

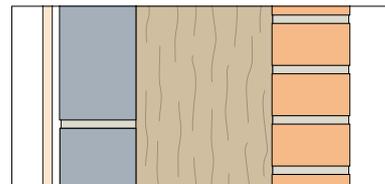


Figure 3: Full fill masonry cavity wall



The image above shows a **Kingspan TEK® Building System** gable wall with a relatively even surface temperature. Very little thermal bridging can be identified. There is also no visible air leakage at the verge. It should be noted that the rooms behind the are well heated which further displays the well insulated nature of the construction.

# Environmental Sustainability

## Global Issues

### Reduce Space Heating Demand and go zero ODP

It is widely recognised that there are four main global sustainability issues: global warming, non-renewable resource depletion, toxic pollution and ozone depletion, and that these global issues far outweigh any local sustainability issues in their need for immediate attention and potential impact from inaction.



Recent studies have shown that the first three issues are essentially one. The extraction and consumption (burning) of fossil fuels is by far the most significant contributor to global warming, non-renewable resource depletion and toxic pollution.

In the UK 60% of fossil fuels are used to heat buildings and half of this is housing. Therefore as far as housing is concerned sustainability comes down to two main issues: reduce fossil fuel use and specify zero ODP products.

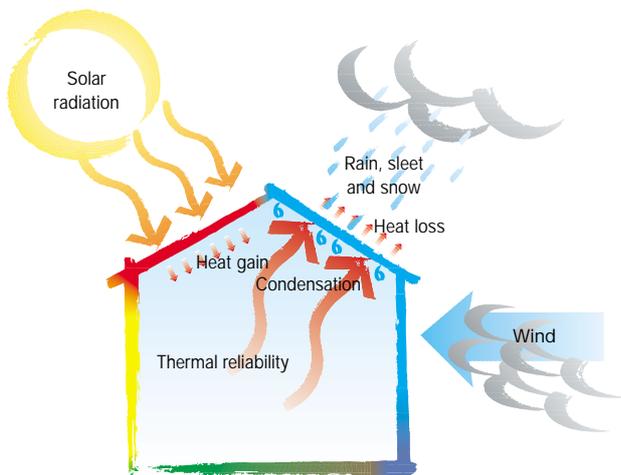
By far the most economical method of reducing fossil fuel use in housing is to reduce space heating demand. The investment for renewable energy sources only becomes convincing once space heating demand is minimised as capital costs are prohibitive to most.

There are two main methods of reducing space-heating demand: reduce heat losses through the building fabric and reduce heat losses from unintentional air-leakage.

The former has been the subject of Building Regulation for 30 years but still has a long way to go before an optimum level is attained. It is estimated that U-values of  $0.1 \text{ W/m}^2\text{K}$  would be the practical optimum. We may have to wait 20 years for Building Regulations / Standards to demand this.

Building Regulations / Standards are only starting to attend to the issue of air leakage, which becomes more significant an effect as U-values are reduced, but it is likely that Building Regulations / Standards will come to focus more on airtight constructions over the next 20 years as U-value get closer to the optimum.

**The *Kingspan TEK*® Building System provides solutions which satisfy all building performance requirements**



## Local Issues

### Reduce Landfill

The UK construction industry generates at least 70 million tonnes of waste per annum. In addition to this, it is estimated that 13% of materials that go to site never get used and go straight into the waste stream. The key issue here is the land for landfill, which is fast running out. The government are currently dealing with this by imposing increasingly heavy landfill taxes. However, a number of EU countries have already instigated a landfill ban on combustible and recyclable materials.

### Reduce Transport

Traditional construction methods such as masonry and timber frame often require delivery of components to site from many different manufacturers or distributors. This can often mean numerous deliveries to site increasing congestion, noise and traffic pollution (which is strictly a global issue), but all of which can have a major impact on the environment.

## Sustainable Building Solution

### Minimum Space Heating and zero ODP

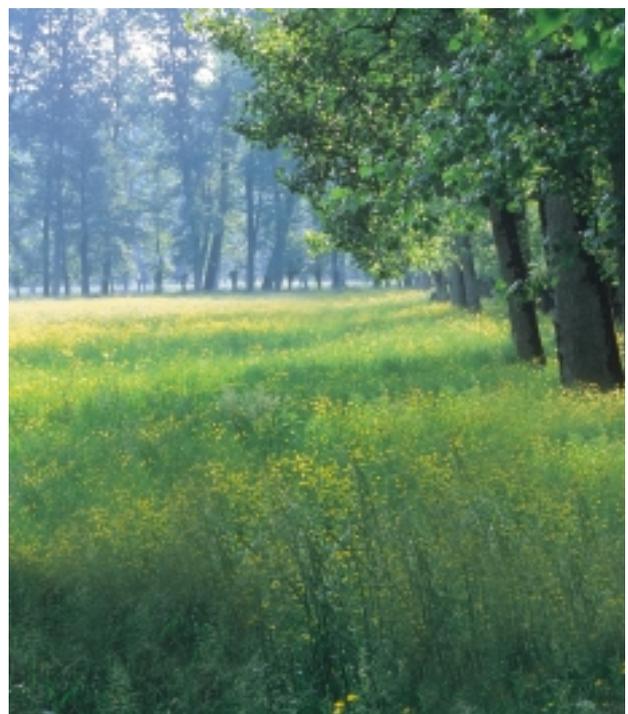
The *Kingspan TEK*® Building System can reduce space heating demands.

### Minimal Landfill

The *Kingspan TEK*® Building System is factory manufactured meaning there is minimal site wastage.

### Less Transport

The complete *Kingspan TEK*® Building System scheme (e.g. panels and ancillaries) comes from one source.



# Benefits of the System

## EGAN Compliant

- Panelised system enables a fast track building process, which helps to reduce construction time considerably
- Follow on trades can start work sooner as the **Kingspan TEK® Building System**, when wrapped with a non-tenting breather membrane (e.g **Kingspan nilvent®** or equivalent) offers a weather tight shell helping the contractor complete the project faster
- Much easier to predict project completion times as the System is relatively simple to erect and requires no wet trades or brick layers
- Accidents are kept to a minimum as only registered **Kingspan TEK® Building System Suppliers** can erect the System
- Defects are vastly reduced due to the factory controlled manufacture of the System and precise engineering and design



## Innovative

- More controllable indoor environment than traditional construction methods such as timber frame or masonry due to the superior air tightness of the System
- Incorporates a room in roof, so it is an excellent solution to Planning Policy Guidance Note 3 (PPG3) in England and Section 5 in the Planning and Development Act in the Republic of Ireland
- First structural insulated panels building system in the UK and Ireland to receive BBA and IAB certification

## Technical Support

Kingspan Insulation offers a wide range of technical support.

- The **Kingspan TEK® Building System** is only erected by a network of registered contractors who have undergone specialist training
- The **Kingspan TEK® Building System** incorporates a comprehensive Design Service. The customer sends fully dimensioned drawings including plans and elevations\* either via email to [design@tek.kingspan.com](mailto:design@tek.kingspan.com) for UK projects and for projects from the Republic of Ireland and Northern Ireland or by post (see address on rear cover) and they will be engineered into a **Kingspan TEK® Building System** scheme to match your design. The scheme will lay out in detail, the way in which the **Kingspan TEK® Building System** panels are to be joined on site to create your building. We will consult you on all aspects of design throughout this process, and a full itemised quotation will be provided along with the final scheme
- We can also convert your house designs to incorporate room in roof design using the **Kingspan TEK® Building System**
- The **Kingspan TEK® Building System Design Service** ensures that buildings comply with the Building Regulations / Standards (Conservation of Fuel and Power / Energy)
- The Kingspan Insulation Technical Services Department can perform a wide variety of relevant calculations including: U-values, SAP, NHER, Home Energy Rating (see rear cover)
- Free condensation risk calculations for specific projects are available upon request from the Kingspan Insulation Technical Services Department (see rear cover). These calculations are performed to BS 5250: 2002 (Code of practice for control of condensation in buildings)
- Every design is certified by independent Chartered Engineers which includes full drawings and structural calculations

\*Only drawings in AutoCAD, DWG and DXF can be sent via email

# What to do Next?

## The Purchasing Process - 10 Steps to TEK

- At the earliest opportunity (e.g. from planning permission) fully dimensioned drawings should be sent to the **Kingspan TEK® Building System** drawing office via post or email ([design@tek.kingspan.com](mailto:design@tek.kingspan.com)) (UK)
- Kingspan Insulation will confirm receipt of the drawings and allocate the project a project number
- Kingspan Insulation will issue a budget quotation normally within two weeks
- Kingspan Insulation will discuss specific project details and any value engineering requirements with you. A revised quotation will be produced if necessary
- A written order will be given to Kingspan Insulation
- Kingspan Insulation will prepare and generate CAD working drawings
- CAD drawings are issued for approval and signing by you, usually within four working weeks
- A delivery date is allocated. This is normally upto six weeks from receipt of signed and approved drawings
- If you wish to use a contractor that is not registered to erect the System, Kingspan Insulation will provide training for that contractor to become registered. Alternatively, suitable registered contractors can be recommended
- If required, a **Kingspan TEK® Building System** representative will make periodic checks on your project to monitor the erection progress

# Contact Details

## Customer Service

For quotations, order placement and details of despatches please contact our Customer Services Department on the numbers below:

UK – Telephone: +44 (0) 1544 387 308  
– Fax: +44 (0) 1544 387 477  
– email (quotations/enquiries): quotations@tek.kingspan.com

Ireland – Telephone: +353 (0) 47 81270  
– Fax: +353 (0) 47 84397  
– email: tek@century.ie

## Technical Advice/Design

Kingspan Century Ltd support all of their products with a comprehensive Technical Advisory Service for specifiers, stockists and contractors.

This includes a computer-aided service designed to give fast, accurate technical advice. Simply phone the Kingspan Century **TECHLINE** with your project specification. Calculations can be carried out to provide U-values, condensation/dew point risk, required Century thicknesses etc. Thereafter any number of permutations can be provided to help you achieve your desired targets.

We can also give general application advice and advice on design detailing and fixing etc. Site surveys are also undertaken as appropriate.

The **Kingspan TEK® Building System** incorporates a comprehensive Design Service. Give us your detailed architectural plans in hard copy or via email (see below) and we will engineer a **Kingspan TEK® Building System** scheme to match your design. This scheme lays out in detail the way in which the System's panels are to be joined on site to create your building. We will consult you on all aspects of design throughout this process.

Please contact our Technical Services Department on the numbers below:



UK – Telephone: +44 (0) 1544 387 304  
– Fax: +44 (0) 1544 387 477  
– email (technical advice): techline.uk@tek.kingspan.com  
– email (plans): design@tek.kingspan.com

Ireland – Telephone: +353 (0) 47 81270  
– Fax: +353 (0) 47 84397  
– email: tek@century.ie

## Literature and Samples

Kingspan Century produces a comprehensive range of technical literature for specifiers and contractors. The literature contains clear 'user friendly' advice on typical design; design considerations; thermal properties; sitework and product data.

Kingspan Century technical literature is an essential specification tool. For copies please contact our Marketing Department on the numbers below:

UK – Telephone: +44 (0) 1544 387 476  
– Fax: +44 (0) 1544 387 477  
– email: literature.uk@tek.kingspan.com

Ireland – Telephone: +353 (0) 47 81270  
– Fax: +353 (0) 47 84397  
– email: tek@century.ie

## General Enquiries

For all other enquiries contact Kingspan Century on the numbers below:

UK – Telephone: +44 (0) 870 850 8555  
– Fax: +44 (0) 870 850 8666  
– email: info.uk@tek.kingspan.com

Ireland – Telephone: +353 (0) 47 81270  
– Fax: +353 (0) 47 84397  
– email: tek@century.ie

*Kingspan Century reserve the right to amend product specifications without prior notice. The information, technical details and fixing instructions etc. included in this literature are given in good faith and apply to uses described. Recommendations for use should be verified as to the suitability and compliance with actual requirements, specifications and any applicable laws and regulations. For other applications or conditions of use, Kingspan Century offers a free Technical Advisory Service (see left) whose advice should be sought for uses of Kingspan Century products that are not specifically described herein. Please check that your copy of the literature is current by contacting our Marketing Department (see above).*



[www.tek.kingspan.com](http://www.tek.kingspan.com)

Your local system supplier is:

Available Through:

