



# High Performance Homes

## PRODUCT SELECTOR



## FOREWORD

Building your home can be one of the most exciting and memorable events of a lifetime but it also requires lots of decisions. Not just the room sizes and the look of the elevation, but also about the quality and performance of the hidden building fabric.

The construction material chosen for your build will dictate the amount of energy used whilst living in your home. How that energy performance is delivered will also impact on running costs and the living space available internally.

Your home is a complete structure consisting of roofs, floors, external and internal walls, plumbing/electrical services and joinery packages. All of these need to fit together and work as a whole. A key advantage of working with us is that our building systems provide all structural elements co-ordinated and designed to fit and work as a whole building structure. In addition our performance package ensures an integrated approach to services installation, SAP compliance and joinery performance. As a single source of supply we take the responsibility of ensuring everything fits, so you can relax knowing that you're not going to get caught out with one supplier blaming another for coordination

difficulties or loss of performance of the building fabric. Kingspan provide a holistic package so you can rest assured that all the parts perform as intended.

We have a lot more information available, if you have any questions just ask our experts, we're here to help.

Contact us to discuss your project 01767 676400

Visit our show centre to see our build systems on display and experience our five show homes.



As part of a global public limited company you can count on Kingspan Timber Solutions for professional standing, technical competence and financial stability. We have been trading for over 50 years and possess a wealth of experience with self-builders, small developers and contractors.

#### **What do we do?**

**Kingspan Timber Solutions Ltd is a specialist provider of engineered timber building systems for house building.**

We design, manufacture and install the insulated building system to form the structural envelope of your architecturally designed home. We are experts in building performance and our systems are specifically developed to lower energy costs, unlock architectural freedom and maximise the floor space of your home.

#### **Taking the stress out of achieving performance**

All our projects are bespoke and are the product of a close working relationship with the Customer's Architectural design team, ensuring the selected system fully meets the project requirements.

Our expertise extends from structural engineering and building regulation compliance to high performance buildings including Passivhaus.

#### **Build better with our professional support**

**Architecture:** We support professional designers with CAD format details, backed by thermal, fire and structural performance data. Our early involvement with the design team ensures solutions are efficiently devised and incorporated into the project right from the start.

**Engineering:** From outline structural appraisals, to specific foundation loads and CAD layouts. All our systems are professionally designed by experienced Engineers to form a coherent and complete building structure including all walls, floors and roofing elements.

**Thermal efficiency:** Kingspan is a name you can trust to provide industry leading innovation on thermal performance. Our systems are designed to lower energy costs by using Kingspan Kooltherm insulation products to improve U values and minimise thermal bridging.

All our systems have 'proven to perform' credentials backed by our extensive Professional Indemnity insurance. We offer piece of mind that your finished home will perform as it was designed to do;

- STA Assure Gold accreditation
- Independent fire testing to EN standards
- SAP assessment and completion of energy performance certification
- Independent thermal modelling of junction details
- Condensation risk analysis of all thermal elements
- Assured levels of airtightness supported by on site testing
- Accreditation to the Quality, Environmental and Health & Safety ISO standards

#### **The route from order to completion is four simple steps:**

- 1. Brief:** We take care to understand your needs and make sure our proposals fit with your budget requirements.
- 2. Design:** We work with our Customers and their design team to design the thermally insulated building structure.
- 3. Manufacture:** We fabricate the structure using high quality materials within a quality accredited factory
- 4. Construction:** We deliver and erect our frames using experienced STA approved erectors and our own contract management team.

# KINGSPAN TIMBER SOLUTIONS BUILD SYSTEMS

## KTS EXTERNAL WALL SYSTEMS

Kingspan Timber Solutions offer three high quality systems factory manufactured from sustainably sourced materials, incorporating the best performing insulation products from Kingspan; TEK®, Ultima™ and Logic PLUS.

The Kingspan TEK® Building System is the product we use to deliver highest level of performance including Passivhaus standard.

Each system is scientifically developed to provide industry leading thermal performance without excessive thickness eroding room sizes or overall plot efficiency.

All of our systems include an integral service zone. Following trades can therefore install services without cutting or drilling the structural timber or compromising the integrity of insulation and airtightness.

## KTS INTERNAL WALL SYSTEMS

Surely there's nothing to differentiate one wall from another? Well actually there is.

As a standard KTS uses 38 x 89 mm C16 structurally graded studwork throughout irrespective of whether the wall in question supports load or not. The end result is a strong wall that can support the loads from shelving and large televisions without distorting.



## KTS ENGINEERED FLOOR SYSTEMS

The floor makes a big difference to the quality feel of your home and it starts by using quality products from the outset.

At KTS we use 22mm high density tongued and grooved particleboard coated with a heavy duty weather resistant coating. This can be exposed to the elements for up to 42 days without any problems and provides improved rigidity with a good level of slip resistance to make life safer for you and your tradesmen. In addition to this quality board we use a high grade water resistant D4 structural glue which is not degraded by water and adheres even in damp conditions.

Floors also need to make your life easy for distributing services, particularly large diameter ventilation ducts associated with MVHR or other ventilation runs.

Cutting holes in solid web joists in the wrong location can cause real problems and so we use open metal web joists.

The structural design of the joists can significantly affect the feel of the floor in use. Joists designed right up to the allowable limits may feel bouncy. So KTS never design to the limits of allowable deflection but aim for a floor that's approximately 15% stiffer than the design code requires. The end result is a well engineered floor that unlocks large open plan spaces often found in architecturally designed homes.



Metal web floor joists are standard with a Kingspan structural system  
Running services has never been easier.

## KTS ENGINEERED ROOF SYSTEMS

KTS uses a diverse range of panelised roofing systems and timber truss configurations complimented with the craftsmanship of our carpenters to form any roof profile

An often forgotten space can be transformed in to valuable usable living space with either attic trusses or panelised roof systems

Kingspan TEK® panels can provide a very high quality room in the roof solution as part of a Kingspan TEK® Building System or as a hybrid solution with Logic PLUS or Ultima™.

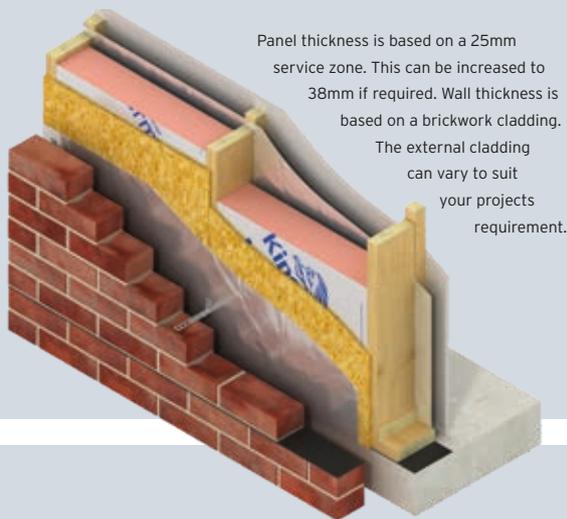


# KINGSPAN BUILD SYSTEMS

## KINGSPAN LOGIC PLUS SYSTEM

Logic PLUS is our base system offering an excellent solution to those wishing to comply with Approved Document Part L.

The closed panel wall consists of sustainably sourced structural timber insulated with premium performance Kingspan Kooltherm phenolic insulation. The wall system is manufactured with an integrated reflective vapour control layer and service batten and is delivered complete with an external reflective breather membrane to enhance performance and protect the structure during construction.



### Advantages

- Powered by Kingspan Kooltherm® phenolic insulation - minimises wall thickness and maximises valuable floor space
- Low cost building regulation compliant system
- Closed panel structural system enabling rapid build and ease for follow on trades
- Engineered and precision manufactured - offering right first time quality
- Fire tested to EN standards
- Fully thermally modelled junctions

### Fire Performance

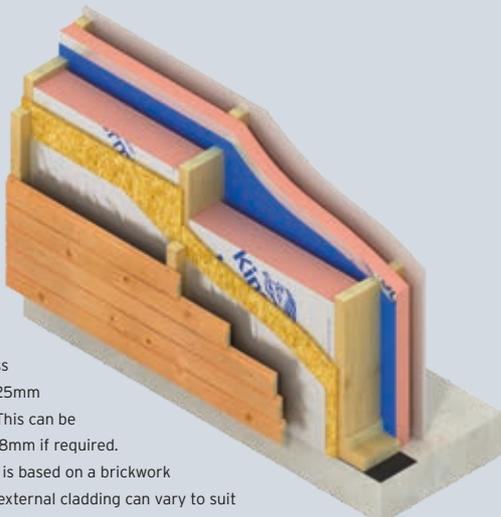
Building regulations require 30 minutes fire resistance for housing. Kingspan's independent fire testing of the Kingspan Logic Plus build system achieved 47 minutes.

### Thermal Characteristics

Parameter	Design Performance
U Value	0.21 W/m <sup>2</sup> K
Psi Values	Good
Typical Y value	0.05
Air tightness	2 - 5 m <sup>3</sup> /m <sup>2</sup> .hr
Complete wall*	288mm
Panel thickness	123mm

## KINGSPAN ULTIMA™

Kingspan Ultima™ is our patented insulated structural closed panel system that delivers exceptionally high levels of thermal performance and airtightness. The continuous high performance Kingspan Kooltherm® insulation lining practically eliminates cold bridging.



Panel thickness is based on a 25mm service zone. This can be increased to 38mm if required. Wall thickness is based on a brickwork cladding. The external cladding can vary to suit your projects requirement.

This closed panel wall system consists of Kingspan Kooltherm overlay insulation on a sustainably sourced structural timber wall with factory integrated vapour control and airtightness layer. The Ultima system includes secondary insulation between the structural studs to enhance Thermal performance and offers a factory fitted service zone.

### Advantages

- Powered by Kingspan Kooltherm® phenolic insulation - minimises wall thickness and maximises valuable floor space
- Exceptional airtightness and practically eliminated thermal bridging
- Minimises thickness and maximises valuable internal space
- Far exceeds Part L unlocking architectural design freedom.
- Facilitates a rapid build solution using highly engineered precision manufacture
- Independent certified performance: Fully thermally modelled & fire tested to EN standards

### Fire Performance

Building regulations require 30 minutes fire resistance for housing. Kingspan's independent fire testing of Kingspan Ultima™ build system achieved 49 minutes.

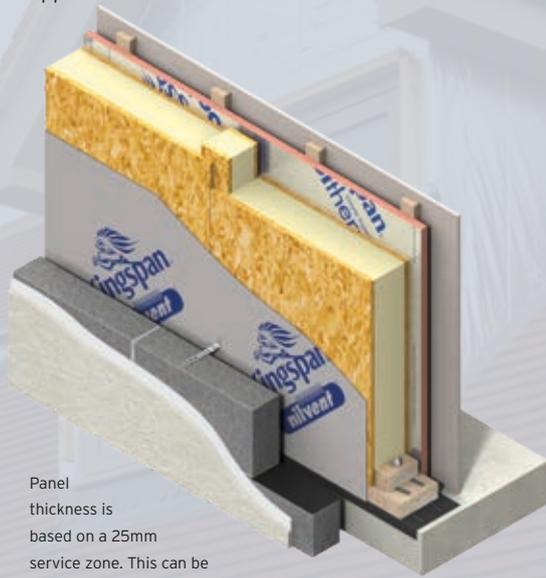
### Thermal Characteristics

Parameter	Design Performance
U Value	0.19 - 0.13 W/m <sup>2</sup> K
Psi Values	Excellent
Typical Y value	0.03 - 0.04
Air tightness	1 - 3 m <sup>3</sup> /m <sup>2</sup> .hr
Complete wall*	313-338mm
Panel thickness	148 - 173mm

## KINGSPAN TEK® BUILDING SYSTEM

The Kingspan TEK® Building System is our premium performance system used extensively to construct Passivhaus homes.

The system has minimal thermal bridging and the jointing system delivers extremely low and robust airtightness whilst maintaining thermal characteristics. This system can also be combined with other Kingspan wall systems for high performance room in roof applications.



Panel thickness is based on a 25mm service zone. This can be increased to 38mm if required. Wall thickness is based on a brickwork cladding. The external cladding can vary to suit your projects requirement.

Kingspan TEK® Building System panels comprise an injected core of high performance, zero ODP, rigid insulation sandwiched between two sheets of sustainably sourced 15 mm Oriented Strand Board (OSB).

Our Kingspan TEK® Building System is the perfect high performance building fabric solution for extremely low energy buildings which require little or no heating at all, such as those designed to Passivhaus standard.

Delivered from our factory with prefixed service battens and external membrane.

### Advantages

- Passivhaus approved product
- 0.1 W/m<sup>2</sup>K U value within a 237 mm panel creating maximum living space
- Airtight by design
- Facilitates a fast build using highly engineered precision manufacture

### Fire Performance

Building regulations require 30 minutes fire resistance for housing. Kingspan's independent fire testing of Kingspan TEK® build system achieved 77 minutes.

### Thermal Characteristics

Parameter	Design Performance Range
U Value	0.18w/W/m <sup>2</sup> K to 0.09 W/m <sup>2</sup> K
Psi Values	Excellent
Typical Y value	0.05 - 0.01
Air tightness	0.5 - 1.5 m <sup>3</sup> /m <sup>2</sup> .hr
Complete wall*	332-442mm
Panel thickness	167 - 277 mm

\*Wall thickness can vary with different external cladding materials.



# ENERGY PERFORMANCE EXPLAINED

## THE THREE PARAMETERS THAT DRIVE PERFORMANCE

The energy your home uses can be considered under three headings:

**SPACE HEATING (40%):** Most commonly provided by a boiler and wet radiators

**HOT WATER PROVISION (25%):** Most commonly provided by a boiler

**APPLIANCES AND LIGHTING (35%):** In other words anything that's built in and uses energy, fridges, freezers, cookers, dishwashers and lighting being the main ones.

There are lots of paths that heat can escape along. To allow us to design out these paths we use three energy performance measures: U value, Psi Value and Air tightness.

### U Value:

A measure of how much heat escapes through a typical one square metre of a building element. So a floor slab, a wall, a roof or a window all have U value characteristics and the lower the value the better the performance.

### Psi Value:

Heat also escapes through building junctions. Typical examples of junctions with Psi values are the perimeter of doors and windows, the junction between floors, roofs, ground slabs & the external wall.

A Psi value measures the amount of heat that escapes through each metre length of a given junction. This is known as thermal bridging.

### Air tightness:

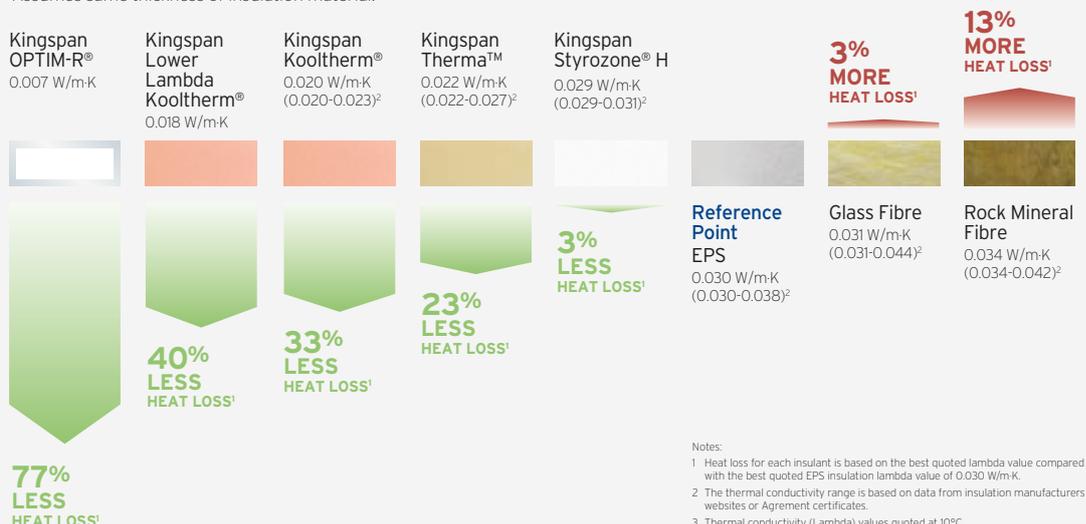
Living in a leaky home is like living with a window permanently open. The more air tight a building the more warm air remains indoors longer.

Buying 'A rated' electrical goods and adopting LED lighting makes a lot of sense when looking at these figures but what can you do to address the largest element: Space heating?

Space heating is basically warming the air in the house and it is the building's external fabric that dictates how much of that warmth leaks out into the garden.

Energy performance and ventilation are dealt with under different parts of the Building regulations. This sometimes causes confusion. Air tightness is good but needs to be balanced by adequate ventilation. The old adage goes "Build tight and ventilate right!" which in the past has just meant putting draughty ventilators in windows but this is not the correct solution for a modern home. Mechanical Ventilation combined with Heat Recovery (MVHR) works well in air tight buildings and improves air quality.

Heat Loss Comparison  
Assumes same thickness of insulation material.



KTS uses Kingspan Kooltherm® to deliver thermal performance. Kooltherm is an extensive range of premium performance rigid, closed cell, phenolic insulation for walls, roofs and floors. Kooltherm has a thermal conductivity as low as 0.018 W/m.K which is one of the most thermally efficient insulation products in the world. Compared to other commonly available insulation products it is the thinnest to achieve any given U-Value.

Kooltherm has a Class O surface spread of flame as defined by the Building Regulations and the closed cell structure resists both moisture and water vapour ingress. Kingspan Timber Solutions uses Kooltherm to provide thermal performance in a slim format panel system that maximises the value of room space.



## MECHANICAL VENTILATION WITH HEAT RECOVERY (MVHR)

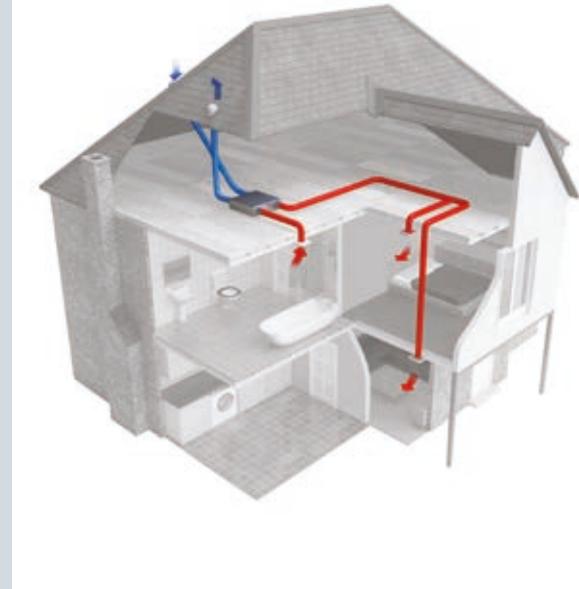
To make a home energy efficient, it has to be airtight with well thought out ventilation to provide good air quality.

MVHR not only ventilates your home, but through an in-built heat exchanger also actively recovers heat that would otherwise be lost during the ventilation process.

- 91% of heat lost through ventilation can be recovered by MVHR
- MVHR maintains a stable air temperature and controls humidity levels.
- Incoming air is warmed and filtered to provide superior air quality.

Poorly constructed dwellings with high levels of air leakage degrade the effectiveness of MVHR significantly. Our systems contribute to MVHR efficiency by providing excellent levels of air tightness

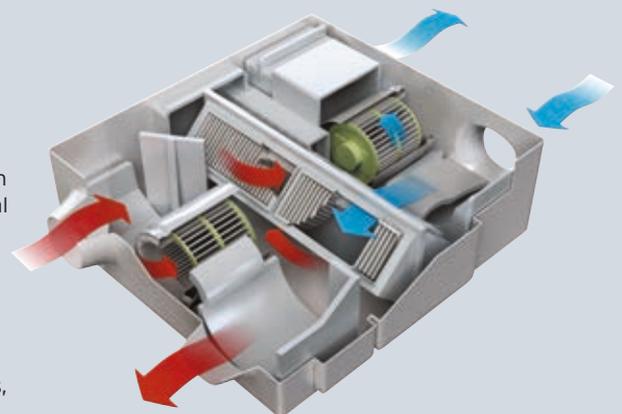
Warm air is extracted from your house and its heat is recovered as it vents to the outside. Cool, fresh air is then drawn in and warmed by the recovered heat, via a heat exchanger, to provide a warmed fresh air supply to your house. In summer its heat recovery can be bypassed to allow cool fresh air replacement of the extracted warm indoor air.



## KINGSPAN TIMBER SOLUTIONS CAN DESIGN, SUPPLY AND INSTALL YOUR MVHR PACKAGE AS PART OF THE PERFORMANCE PACK SERVICE.

KTS understands that coordinating both the structural and mechanical ventilation design can be complex and conflicts can arise where ducts need to pass structural members. We overcome this problem by integrating the MVHR system within the building structure when we design the structural system. The benefits to you are;

- Your design SAP calculation will include precise performance data from the outset.
- Duct routing will be co-ordinated with the floor structure, including steel beams, by KTS so you know it will fit as designed
- A single point of responsibility for the design, manufacture and installation of your MVHR unit



MVHR combined with a Kingspan building system, provides a really effective way to constructing a home you can run for as little as £1\* per day!

\* As declared on the Energy Performance Certificate



# THE VALUE OF LIGHT AND SPACE

One aspect of thermal performance that is overlooked is the impact on light and space.

Kingspan are world leaders in thermal engineering. Using our products the wall thickness required to deliver a specific U value can be minimised thereby increasing floor area and therefore the market value of the finished home.

As an example, for a two storey house with an external wall U value of 0.17 W/m<sup>2</sup>K and a 10m x 8m footprint the impact of wall thickness is often a surprise to our clients.

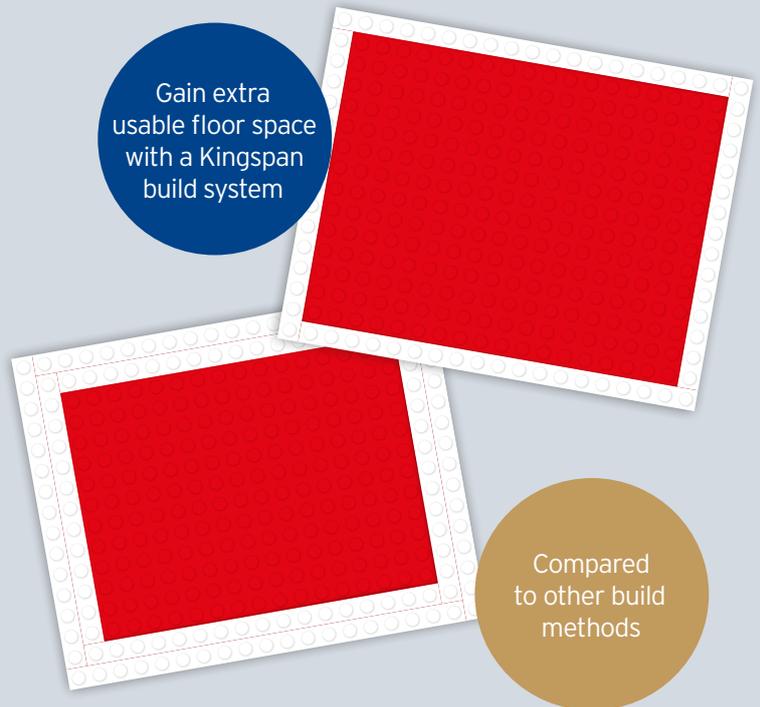
Kingspan Ultima will deliver up to 10.5% more floor area compared to a masonry solution of the same U Value. This equates to up to 13.7m<sup>2</sup> of additional floor area.

U value is not the only parameter that delivers thermal performance. See our guide: 'Energy Efficiency (Not just U value)' where we compare actual SAP ratings to see the real Kingspan benefit'.

Additional space, without growing the footprint of the building, will allow greater freedom of layout and ultimately increase the resulting market value of your home. That's why using your initial build costs alone as a decision maker about how to build your home can be the most costly decision you'll ever make!

And it doesn't end with the advantages of space.

Gain extra usable floor space with a Kingspan build system



Compared to other build methods

Some designs get away with using minimal wall performance by adopting small windows. Small windows mean less light and less feeling of space that light can create.

Light plays a significant role in creating the feeling of space and quality within a home. By using a high performance wall greater architectural freedom is created to choose larger windows and bi-fold doors.

## Did you know?

The external size of your house is effectively frozen once the planning permission is granted. Our systems unlock additional space within the structural walls by offering a slimmer solution than any other commonly used building system. The result is more space and increased value of the finished home.

GET LIGHT AND SPACE  
IN YOUR HOME BY USING  
A KINGSPAN SYSTEM



# YOUR ROUTE TO BUILDING A KINGSPAN HIGH PERFORMANCE HOME

## OUR PREMIUM SERVICE

This is the service all our customers receive:

### Friendly expertise:

We work with you and your Architect as part of the design team helping you get the best from our systems, thereby maximising your energy savings and floor space for a given design. We provide a comprehensive set of build details allowing your plans to be accurate by fully integrating the right system details into your construction drawings.

### Budget Control:

We understand that the route from getting land to finally moving in is neither a straight line nor one without financial limits.

We take time to understand your needs to help you choose the most appropriate building system to meet your budget requirements.

KTS can help keep design and budget in balance as the design develops from "Initial budgets" based on early "thick pen" plans to more accurate quotes as design begins to firm up.

Our final quote is very detailed and defines our scope of work and any options requested. Our quotes remain firm for a period of **six months** and clearly defines the price we state is the price you pay. We don't hide costs in the fine print!

### Structural engineering:

We guarantee that our structural frame will be compliant with the requirements of Building Regulations Approved Document A.

We will work with your Architect to optimise the structural solution by providing a free appraisal service that will give your Architect :

- Optimised roof and floor span directions
- Architectural details showing how the building systems integrate into the building design
- Load bearing wall positions
- Principal beam sizes
- Complete set of frame drawings and calculations for submission to building control.
- Highlight potential issues such as large bouncy spans, service routes and "expensive" details

At the appropriate time we will provide your foundation designer with a dimensioned plan in CAD format to facilitate dimensional co-ordination along with calculated loading to enable economical foundation design.

### An erected quality frame:

All our systems are designed, manufactured and erected to high standards and have a comprehensive scope of supply: A sustainably sourced structural frame fabricated within an ISO 9001 quality accredited factory which will include:

- Insulated external wall (Note: All our systems are fully thermally modelled and airtight)
- Internal load bearing walls and non-loadbearing partitions (All factory assembled & erected)
- Open metal web floor to facilitate services installation
- A weather resistant floor deck fixed with D4 glue guaranteed against rain damage for up to 42 days
- Masonry support steel goalposts as required, including preformed service holes
- Roof structure, including dormers as applicable
- Structural steel as required including preformed service holes
- External fire barriers in compliance with Approved Document B
- ALL erector costs, cranes, delivery, offloading and internal fall arrest is included

Our quotation for your home will describe the exact scope of our works in detail and will include everything needed for us to complete our work.

In addition you will have the benefit of an assigned Kingspan Contracts Manager who will visit your plot, carry out an access check and explain what you need to do to prepare and agree delivery dates.

**FREE** SAP Assessment & EPC  
Certification with each order



# YOUR ROUTE TO BUILDING A KINGSPAN HIGH PERFORMANCE HOME

## NEXT STEPS

It's easy. Just send us a set of your drawings either in hard copy plotted to scale or in CAD (.dwg) format and we will give you a call to discuss how we can add value to your home. Alternatively if you're at an early stage of design why not invite our consultant to meet with your Architect to discuss the options available for your project.

After all, we recognise that building your home involves a lot of thought and we're here to help guide you along the way. We'll work with you and your Architect and when everyone is happy we'll progress to manufacture.

**Email** [info@kingspantimbersolutions.co.uk](mailto:info@kingspantimbersolutions.co.uk)

**Visit** [www.kingspantimbersolutions.co.uk/self-build](http://www.kingspantimbersolutions.co.uk/self-build)

or **Call** 01767 676400

## Systems we offer - How they compare

System	U value W/m <sup>2</sup> K	Thermal Bridging Y value	Air tightness m <sup>3</sup> /m <sup>2</sup> .hr	Panel Thickness mm	SAP Fabric Efficiency DFEE/ TFE %	Cost Hierarchy
Logic Plus	0.21	0.05	2 to 5	123	17%	
Ultima 19	0.19	0.04	1 to 3	148	24%	
Ultima 15	0.15	0.03	1 to 3	173	27%	
Ultima 13	0.13	0.03	1 to 3	173	28%	
TEK 142	0.19	0.05	0.5 to 1.5	167	27%	
TEK 172	0.16	0.04	0.5 to 1.5	197	28%	
TEK Passiv	0.09	0.01	0.6 ach	277	47%	
<b>Performance selection criteria</b>	<b>Lowest value is best</b>	<b>Lowest value is best</b>	<b>Lowest value is best</b>	<b>To suit project specification</b>	<b>Highest % is best</b>	

## QUALITY & AWARDS

Kingspan Timber Solutions have the highest level of accreditation available for both product and management systems, with all of our structural frames manufactured under strict quality control procedures, so you can rest assured that you are not only buying a product of the highest quality but will also receive the highest levels of both technical support and customer service.

However our focus is not purely on quality we are equally concerned about health & safety and the environment having in addition to ISO 9001 both OHSAS 18001 and ISO 14001 accreditation.

## ENVIRONMENT

As a professional and environmentally conscious organisation, we recognise the impact that our operations may have on the environment and are therefore committed to operate in an environmentally sustainable manner through the on-going maintenance of our ISO 14001 - Environmental Management Certification to ensure continual improvement of environmental performance.



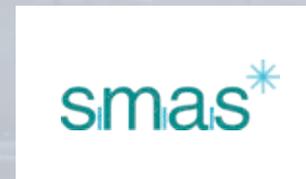
**ISO 9001 Quality Management Certification**



**ISO 14001 Environmental Management Certification**



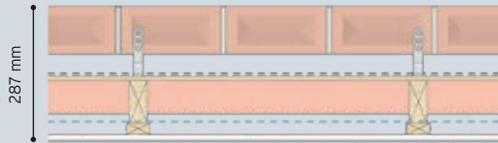
**Passivhaus institute membership**



# KINGSPAN KOOLTHERM® BASED SYSTEMS

## Logic PLUS

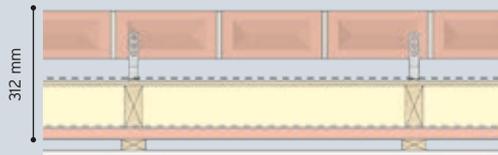
'U' = 0.21 W/m²K 'Y' = 0.05



- Brick Skin\*
- Low emissivity breathable membrane
- Insulation
- Low emissivity vapour control layer
- 25mm service batten

## Ultima 19

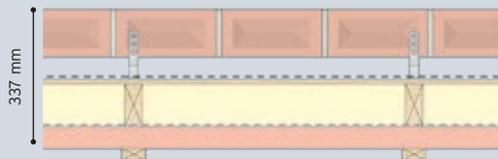
'U' = 0.19 W/m²K 'Y' = 0.04



- Brick Skin\*
- Low emissivity breathable membrane
- Insulation
- Vapour control layer
- Kingspan Kooltherm - 25 mm (unbridged)
- 25mm service batten

## Ultima 15

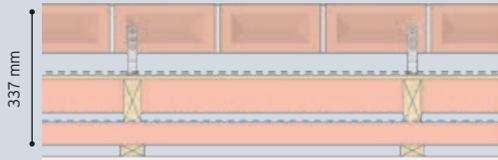
'U' = 0.15 W/m²K 'Y' = 0.04



- Brick Skin\*
- Low emissivity breathable membrane
- Insulation
- Vapour control layer
- Kingspan Kooltherm - 50 mm (unbridged)
- 25mm service batten

## Ultima 13

'U' = 0.13 W/m²K 'Y' = 0.04



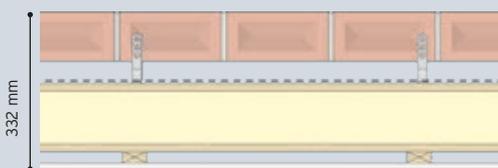
- Brick Skin\*
- Low emissivity breathable membrane
- Insulation
- Vapour control layer
- Kingspan Kooltherm - 50 mm (unbridged)
- 25mm service batten

\* All Kingspan timber build systems are compatible with a range of alternative cladding types. The brick external cladding may be replaced by an alternative cladding material to either slim or thicken the total wall thickness.

# KINGSPAN TEK® BASED SYSTEMS

## TEK

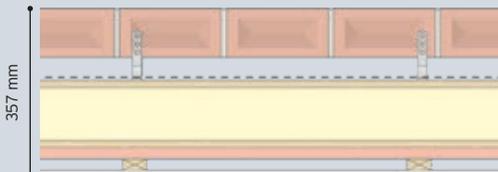
'U' = 0.18 W/m²K 'Y' = 0.05



- Brick Skin
- Low emissivity breathable membrane
- 142 mm TEK SIPS Panel
- No vapour control layer
- 25mm service batten

## TEK Plus

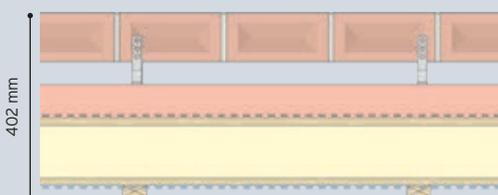
'U' = 0.13 W/m²K 'Y' = 0.03



- Brick Skin\*
- Low emissivity breathable membrane
- 142 mm TEK SIPS Panel
- No Vapour control layer
- Kingspan Kooltherm - 25 mm
- 25mm service batten

## TEK Passiv

'U' = 0.10 W/m²K 'Y' = 0.01



- Brick Skin\*
- Kingspan Kooltherm - 70 mm
- Breathable membrane
- 142 mm TEK SIPS Panel
- Low emissivity vapour control layer
- 25mm service batten

\* All Kingspan timber build systems are compatible with a range of alternative cladding types. The brick external cladding may be replaced by an alternative cladding material to either slim or thicken the total wall thickness.



**Kingspan**<sup>®</sup>



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