

T INNOVATING Times

WINNING LINES

IG's award winning Masonry Support systems helped this Glasgow project win an award for urban regeneration

DESIGNING TO MEET THE PART L CHALLENGE

Help is at hand when planning demands compliance with Part L 2013 and there could be advantages by engaging early with an expert

BUILT AS DESIGNED

An innovative roof window is enabling architects to fight back against the performance gap between designed and built performance

04

WHAT IS THE FUTURE OF OFFSITE?

Everyone's talking about offsite construction so we take a snapshot of some architects' views.

06

NO LIMITS TO DESIGN CREATIVITY

IG's innovative offsite solutions are revolutionising the delivery of masonry support and brickwork design.

08



WINNING LINES

IG's award winning Masonry Support systems helped this Glasgow project win an award for urban regeneration.

10



NO ORDINARY ARCHITECT

Take inspiration from a remarkable architect who keeps rising to new challenges.

14

INDULGE IN DETAIL

An innovative brick detailing product opens new doors for architectural design.

16

PRACTICE IN PROFILE

We get an insight on the key issues affecting a practice which services some of the UK's biggest house builders.

20

EVERYDAY OFFSITE

We look at some popular offsite options.

22

ACTIONS... NOT WORDS!

How The Keystone Group are innovating in a move towards 'fixing our broken housing market'.

24



DESIGNING TO MEET THE PART L CHALLENGE

When planning demands compliance with Part L 2013 help is at hand. There could be advantages with expert engagement early in the process.

26

INNOVATIVE CARBON REDUCTION

A new Lintel turns out to be an unexpected carbon warrior. Find out how.

28



BUILT AS DESIGNED

An innovative roof window is enabling architects to fight back against the performance gap between designed and built performance.

30

STRENGTH IN NUMBERS

Discover the full range of technical support and advisory services available from The Keystone Group's extensive technical team.



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In an increasingly unpredictable world, we believe the best response is to focus on innovation which enhances the way we work and meets the challenges faced by the industry today.



Welcome to the first edition of Innovating Times, The Keystone Group's response to challenges affecting design and performance within the construction industry.

As we go to print we are reflecting on the government's most recent white paper 'Fixing

our broken housing market' and how we can address the challenges it presents. We are investing heavily in our new timber division and in a range of innovative offsite solutions which will provide answers to the well documented skills shortage and the housing crisis.

Further challenges include carbon reduction and the need to develop construction products with enhanced energy efficiency. Our aim is to enable design professionals to meet and exceed both the spirit of carbon reduction and the requirements of future regulatory demands.

The challenge to close the gap between designed and built performance is one that will be around for awhile and should feature heavily within the R&D team of any building material manufacturer. It is important that the construction industry delivers both the design quality and build quality of the architect's vision, unhindered by an onsite shortage of skills or labour.

This is a challenge for construction material producers, to innovate and evolve simple-to-use products, which facilitate the efficient delivery of that vision.

At The Keystone Group, we are addressing these challenges through a process of continuous improvement, and we always welcome feedback and engagement with architects to understand their views and priorities. Even though recent events have shown we can't always control the world around us, we believe that together we can make a lot of things better.

Sean Coyle
Chairman, Keystone Group

What is the FUTURE of offsite?

The offsite construction sector accounts for an estimated 7% of total construction output in the UK, worth over £1.5bn to the economy. Offsite technologies now have the potential to address some of the most persistent challenges facing the industry, including severe skill shortages and the drive to eradicate risks to workers' health and safety onsite.

The debate is now raging in the housing sector, where the Government's plan to build two million new homes by 2020 is thought to be unachievable without a rapid switch towards alternative construction methods.

We asked
some architects
where they see
the future of offsite

Armstrong Burton Architects



Derek Burton
Director
Armstrong Burton
Architects

I think we're all aware that we have a skills shortage problem and I think the only way that this can be resolved, apart from training more people, is to make construction easier - offsite solutions are the answer to this. Offsite will continually evolve due to this diminishing availability of skilled and unskilled labour, the need for improved speed of erection whilst maintaining quality and consistency and to meet future regulation. I think it comes back to health and safety also, we do need to be more and more conscious of health and safety concerns and offsite solutions can deliver that security.

Angel Architecture



Kim Sankey
Historic Building Architect
Angel Architecture Ltd

I am often asked to design contemporary extensions to listed buildings. This is where offsite construction and modular building can come into its own, not least with the speed and efficiency it delivers, but also avoiding months of waiting for individual products, particularly bricks and windows, which often require a long lead in time. I generally prefer a timber frame option in these cases as they go up quicker and, having regard to CDM, involve less risk than steel and masonry options. I would be keen to learn more about modular building since it could revolutionise the way we build and combat the housing shortage for example.

PRP Architects



Scott Sanderson
Director
PRP Architects

Offsite simply has to be an integral part of the industry response to the continuing, chronic shortfall in housing supply and our ambitions to improve quality, safety and performance.

We see two clear streams emerging. First, there is increasing interest and confidence in the deployment of fully volumetric housing systems, albeit in the short term volume will be relatively limited, whilst system detailing and consumer confidence become better established and manufacturing capability builds.

Secondly, there is welcome and increasing focus on a component driven approach. This is based on building confidence to specify early to secure quality, deeper and earlier connections with the Tier 2 & 3 supply chain and a push to deliver downstream asset management information using BIM.

Clear Architecture



James Mors
Associate Director
Clear Architecture

Control of costs, design, quality and safety of workforce are all key elements that make this procurement route most attractive. We often specify SIP panels for the superstructure of our projects and we believe it to be very successful in terms of procurement and the end product.

No limits to design creativity

IG Masonry Support's technical expertise allowed us to create a single storey entrance appropriate to the scale of the 9 storey Rotunda.

Cullinan Studio



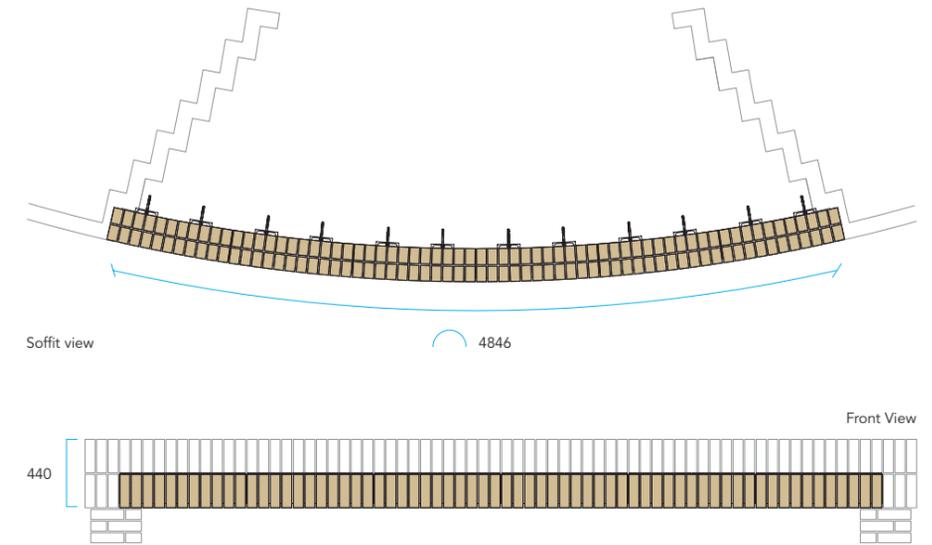
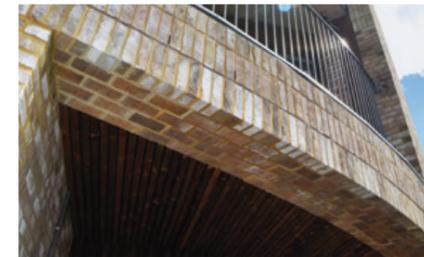
Stonebridge Park

Residential Development
Stonebridge Park, London

Products Used
Brick Slip Masonry Support

Architect
Cullinan Studio

Contractor
Durkan



Description

Stonebridge Park's £16.6 million development has created an entirely new neighbourhood, producing 117 new homes in the area. Modelled in three different types of accommodation, each apartment building exhibits distinct and diverse characteristics. These prominent structures would require a range of IG's prefabricated solutions.



Challenge

The Rotunda, a 9 storey, circular building, exhibits impressive brick feature elements. The ground floor main entrance to the Rotunda would require a 4.8m wide, 3.6m tall, 2m deep corbelled brick feature.

IG had to accommodate the external wall radius of the cylindrical structure, developing manageable brick slip units to achieve this complex design. The soldier course detailing would marry both onsite and offsite building methods, with the top course of brick laid traditionally above each masonry support installation.

Solution

Constructing the corbelled brick detail required a welded brick slip masonry support solution. Produced offsite and delivered in 38 individual brick slip units, IG ensured the brick feature was comprised of manageable components to facilitate optimum adjustability.

IG supplied installation drawings and a step by step method statement to support the brickwork contractor onsite. An IG engineer attended the site prior to and during the installation, ensuring the prefabricated system was installed effectively, achieving the desired facade.

FIND OUT MORE



Technical Helpline
01283 200 157
igmasonrysupport.com

Winning lines

The crisp lines of this award-winning project were facilitated by an innovative masonry support and soffit system.

Description

The Laurieston development provided a significant opportunity for transformation, regenerating part of central Glasgow.

The £22 million first phase development enriched the typical residential block concept, incorporating more compelling character.

The Challenge

The Laurieston project exhibits a refreshing, contemporary alternative to the standard design of residential blocks. The elegant courtyards and the exchange of typical bay windows for long spanning balconies are all contributors towards the award winning qualities of this regeneration project.

IG's specialist team were appointed to supply Brick Slip Masonry Support solutions. The technical challenges involved 327mm deep brick soffits spanning over 8m as required for the recessed balconies.

The Solution

IG Masonry Support combined bespoke Brick Slip Masonry Support Systems and Brick Slip Lintels to ensure seamless and structural brick clad soffits for all openings.

IG received a consignment of the bricks being used on the project, which were then cut down to 25mm slips. The brick slips were bonded to the patented steel system, which enabled the BBA approved resin to mushroom through the perforations in the steel and form a mechanical lock.

The revitalised contemporary homes offer a newfound vibrancy to the community, whilst also ensuring the retention of clearly defined blocks to reinforce the grid of the city.

The area has been revived with affordable high quality living, a project that has since been awarded with the 'The Best Urban Regeneration Project' at the prestigious Brick Awards.



Laurieston

Residential Development
Laurieston, Glasgow

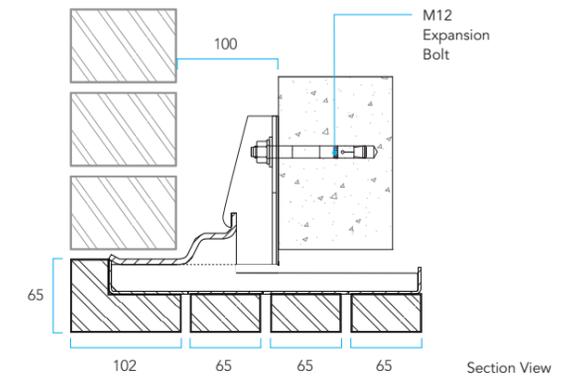
Products Used
Brick Slip Masonry Support & Lintels

Architect
Elder Cannon / Page Park

Contractor
McTaggart Construction

IG's Brick Slip Masonry Support Systems are one-piece prefabricated units manufactured offsite and delivered to site complete with bricks bonded to them. This system offers a major reduction in onsite labour and installation time.

WATCH igmasonrysupport.com/installation-videos



FIND OUT MORE

IG Masonry Support

Technical Helpline
01283 200 157
igmasonrysupport.com

No ordinary architect

WITH
DAWSON STELFOX

Innovating Times catches up with the remarkable Dawson Stelfox MBE, whose achievements include the ascent of Everest, the restoration of a parliament building and past Presidency of the Royal Society of Ulster Architects.

WHO IS DAWSON STELFOX?



When you first meet Dawson Stelfox, Chairman of the Belfast based Consarc Design Group, you are immediately impressed that this is a man with a mission and the determination to succeed. However, not with the brashness of many high achievers, rather a more understated style normally associated with strategists.

Undoubtedly, his greatest personal achievement was to become the first person from Ireland to climb Mt Everest and the first from Britain or Ireland to climb the North Ridge, scene of Mallory and Irvine's disappearance in 1924.

Since this epic achievement in 1993, Stelfox has continued climbing but has also gone on to achieve much in his profession, making a lasting impression on the built environment of his native city Belfast and beyond.

What drives you to success?

Doing what interests me ensures I enjoy whatever I am doing and drives me to success. Also, a vital element for me is being passionate about what I do. My lifelong passions of mountaineering and architecture have expanded as I have grown older, now extending to building restoration and conservation work. Spending time in the mountains exposes you to inspirational sights and vistas which spark ideas for some interesting buildings.

How did you get started in architecture?

It was slightly accidental, my grandfather was a professional botanist and my father was an engineer. At the time of choosing a career path, I decided on architecture as it was a long course with lots of holidays so I could go climbing. As soon as I started I realised I was fascinated, I enjoyed the work of local building conservationist Hugh Dixon who had dedicated himself to recording important buildings at risk.

What still appeals about architecture?

I don't think I will ever tire of the satisfaction that comes from designing something completely new or the buzz of bringing a ruin back to life. It's particularly appealing to work on schemes breathing new life into old buildings and I have been fortunate to have had the opportunity to work on some really significant historic projects.

Few careers enable you to translate one's vision into practical reality but architecture is a daily challenge all about visualising changes in advance and the process of delivering those ideas into structures which meet a complex set of user needs and regulatory demands.

Work needs to be motivating and our philosophy at The Consarc Group is that every day we want to learn, create and improve.

INTERVIEW ARCHITECT IN FOCUS

PROFILE

Consarc Design Group

The Consarc Design Group works across the UK and Ireland on a diverse range of design projects including conservation and new build. The specialists within the 45 person team deliver architectural design, quantity surveying and project management.

Not many practices are in existence for the almost 100 years that Consarc has been helping to define, shape and restore the building fabric of Ireland and beyond. In its more recent past Consarc Design Group has been at the helm of some of RIBA's and the RIAI's award winning building projects including the Odyssey in Belfast, Queen's University and Parliament Buildings Stormont.

Tell us about some of your favourite projects

I actually enjoy all projects and probably my favourite will always be whichever one I am working on at the time you ask as it has the greatest intensity. However, I particularly enjoyed a recently completed conservation project at The Graduate School at Queen's University Belfast.

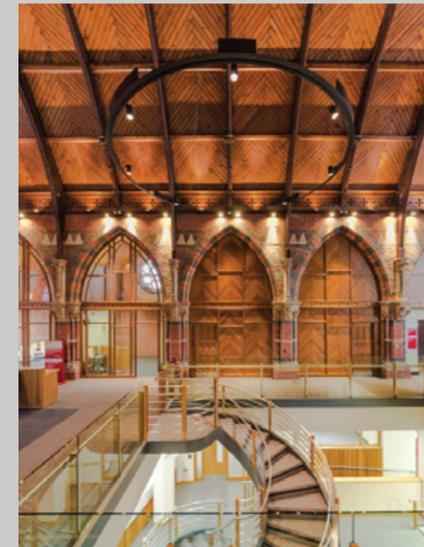
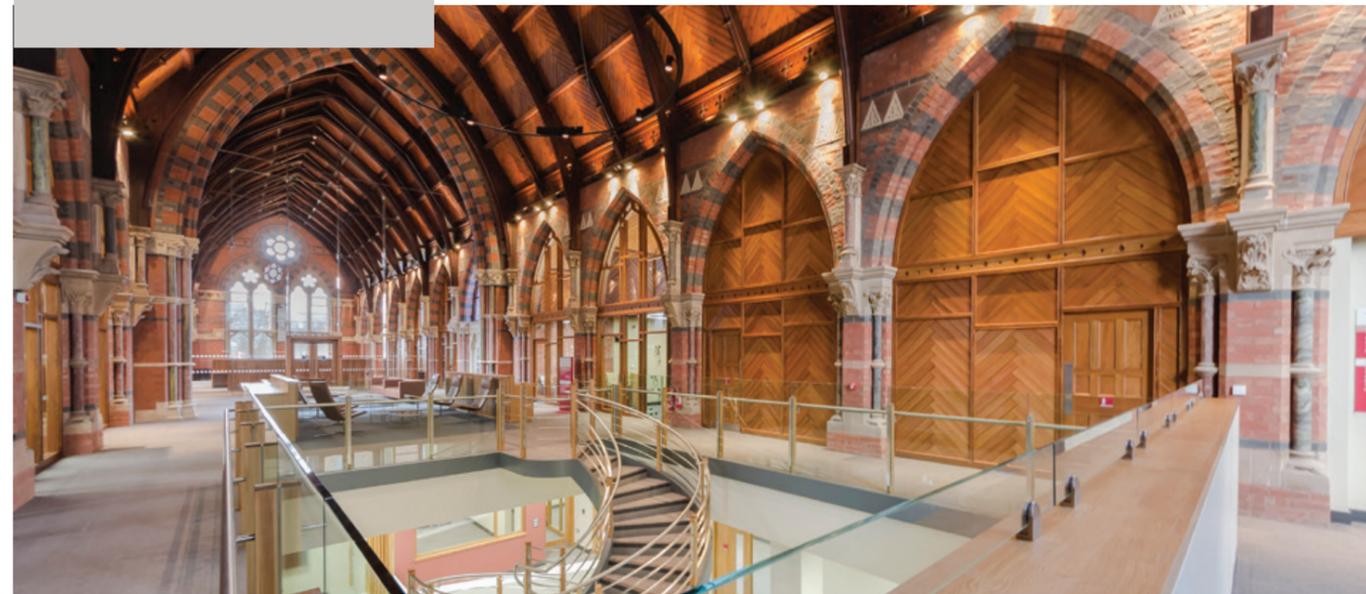
This scheme involved the redevelopment of the former Library Tower as a prestigious new home for the School of Law and a new social hub as part of a £350m investment by the university, developing world-class facilities for staff and students and helping to attract new postgraduate students.

Another notable project in the past was the restoration of the Parliament Buildings at Stormont, which is one of the greatest architectural set pieces in Ireland. This was a big conservation/restoration project after a disastrous fire destroyed the original chamber. This restoration work brought the chamber back to life and of course is now the seat of our devolved government.

What have been your biggest challenges in life?

The biggest challenge in my life professionally was guiding the company through the difficult times of the 2007 recession. The crash in Ireland was much deeper and longer than the UK's and was fatal for many architectural practises along with every other part of the industry. However, at a time when construction work was dramatically slashed, we managed to become more efficient and came through to become the company we are today.

Personally, the Everest Expedition 24 years ago was a huge personal challenge. In 1993, after years of planning, I became the first person from Ireland to climb Everest and the first from Britain or Ireland to climb the North Ridge, which was the scene of Mallory and Irvine's disappearance in 1924. I climbed Everest with an amazing team who I still climb with regularly and we have gone on to complete numerous other mountaineering expeditions.



Do you prefer new build projects or restoration / conservation work?

I enjoy both, but I get enormous satisfaction out of taking buildings that have been left abandoned and derelict and bringing them back to life. There is great pleasure in working on pure conservation work such as historic buildings, giving them a new lease of life and seeing new generations enjoy them.

You are clearly inspirational, do you have any words of wisdom for us?

My key advice is that you need to be interested and passionate in everything you do. You will only succeed if you put your heart and soul into it. Passion and interest help to contribute to change and always make room for adventure.

What is your attraction to brick and what do you feel it adds to a project?

I like the scale of brick and the way it adds texture, it is a very traditional method of construction and defines the colour and impact of a building. One of the great benefits of brick is that it enables you to build a variety of complex features and decoration. It also lends itself well to seamless repairs and the distinction between old and new extensions to a listed building, something which I value highly as a conservationist.

Everyday we want to learn, create and improve.

Indulge in detail

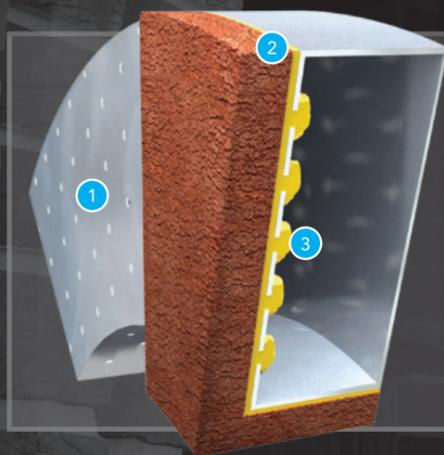
Innovation in materials and manufacturing is enabling architects to indulge in brick detailing with confidence. Keyslip Brick Feature Lintels provide an effective means to achieving even the most complex brickwork designs.

This comes as brick continues its resurgence in British architecture, and while this trend may have been restricted by skills shortages on sites the investment in innovation by Keystone is removing that barrier.

These completely bespoke Keyslip products are used frequently in refurbishment or new build 'heritage' projects. However the same process can also be used to deliver contemporary brick detailing. Keystone combines its outstanding structural expertise with its patented brick slip adhesion system to produce incredibly effective brick detail.

Each Keyslip unit is produced offsite in factory controlled conditions using exactly the same brick from the main project. By specifying the Keyslip system, architects are able to view CAD drawings of the brick elements prior to manufacture which gives a greater degree of certainty for the visual quality compared to brick work built onsite.

This recent projects demonstrate the quality that is achieved when adopting the Keyslip system.



Keystone's patented design enables BBA certified adhesive to interact with a perforated steel backing plate to form a strong mechanical bond with the brick slips. Like many of the most innovative ideas this concept is incredibly simple but has proved to be highly effective and reliable.

- 1 Perforated design allows the adhesive to pass through the steelwork
- 2 Brick slips are bedded in a high performance BBA approved adhesive
- 3 The adhesive 'mushrooms' to form a mechanical lock on the inner side of the steel

Whyte Gates

Private Dwelling
Whyte Gates

Products Used
Brick Slip Feature Lintels

Architect
Stephen Langer Architects Ltd

Contractor
Ascent Building Ltd



Solution

Keystone's Brick Feature Lintels offered an offsite solution which would achieve the decorative elements across the dwelling's exterior façade. Manufactured bespoke to order these brick feature components included a 2.4m span corbelled arch which defined the porched entrance to the property. This single piece unit saved Ascent Building significant installation time.

The level of quality control which could be achieved with these products was a major advantage for the architect as all the brick cutting and bonding took place in a controlled environment, free from wet weather, extreme temperature and excessive dust. Keystone collected a consignment of the brick being used on site and the brick feature units were delivered to site with bricks bonded, ready for installation and final pointing, ensuring that the arch blended seamlessly with already constructed brickwork.



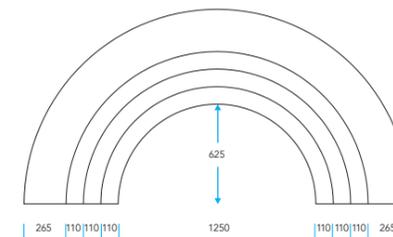
Keystone also supplied a range of other brick feature components including flat gauge arches, full arch lintels and bullseye lintels, all of which were manufactured bespoke to create the elaborate brick features on this stunning home.

Description

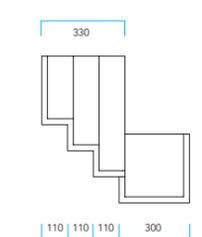
Whyte Gates is an elegant 6 bedroom, 3 storey property, exhibiting features reminiscent of the arts and crafts movement. This project was a replacement dwelling constructed with high quality materials and significant attention to detail throughout. The original family home was demolished, providing a blank canvas for Stephen Langer Architects.

Challenge

Ascent Building Ltd were assigned with delivering the architect's vision. The intricate brick detailing required around the openings would require a great deal of skilled labour and brick cutting onsite if constructed using traditional methods. This would have been a time consuming task and required a high level of accuracy to ensure consistency across the brickwork.



Soffit View



Section View

FIND OUT MORE



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Technical Helpline
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iglintels.com



Practice in profile

WITH
DEREK BURTON

Architect Derek Burton shares his views from a busy practice with a special focus on housing design for developers and house builders.

Is offsite the big story of 2017?

Currently, there would appear to be a major drive by the industry, which is aligned with the Government's 2020 ambitious targets and its thinking on the need for more offsite solutions to provide the housing stock required for the country.

We have to improve the housing numbers across the country, everybody knows that, it's in the news almost every week, and we have skills shortages and time scale issues. If offsite can assist that then it is the way the industry will want to go. As far as we are concerned, we want to be at the forefront of this in advising and delivering alternative architectural solutions for our clients.

I think in the industry press we have certainly seen more commentary on offsite and frequently more positive attitudes towards alternative methods and the benefits these can bring.

Undoubtedly we now have more clients keen to consider modern methods such as modular construction, pods and alternative construction approaches including timber and steel frames. House builders will talk to us more and more about these alternative options before they make a decision on which way they want to go.

We need offsite producers to invest in efficient support.

INTERVIEW FOCUS ON HOUSING

What's driving the interest in offsite?

I think it is a combination of factors. Undoubtedly it's the desire to reduce personnel onsite, not having the skills onsite, wanting to build more quickly. Builders also want to improve health and safety and they know that offsite has a reputation for reducing risk. If there wasn't a cost benefit at the end of it then clients maybe wouldn't consider it - so I would probably say that it's costs and health and safety because I know these are major concerns for a number of clients.

Have you found it easy to engage with offsite?

For most factory built elements we are relying on the supplier to provide detailed drawings and specifications because each project is different and manufactured to order. So assuming that the offsite supplier is efficient then it should be a simple and straightforward process for our team to incorporate their details into our drawing packages.

On this basis it shouldn't be a problem for architects to accelerate their adoption of offsite but we will certainly need the offsite producers to invest in efficient support if the process is to run smoothly. We find that the producer's technical advisors clearly know their systems inside out. However, sometimes they forget that customers will not be so familiar and may need more basic assistance.



Give us your real world opinion of BIM?

I believe that it is widely recognised that BIM will become the normal way of working just as the drawing board gave way to CAD. To me it is inevitable that it will become the norm, the standard. Clearly the advantages are already being shown on large complex building projects and it is a government requirement on public sector projects.

It has been more difficult to translate those benefits to housebuilding but gradually more major housebuilders are either implementing BIM or considering the options and timescales for its introduction.

Although, in the first instance, this is used in development of standard house types perhaps from a central design office and it has yet to move out to the majority of regional offices.

A large part of this reluctance is the high capital investment involved in putting the software into all of their regions and there is also a training issue, as many people don't yet have the expertise within the internal design departments to fully implement it.

Of course a large part of BIM is collaboration and house builders are good at this with highly developed supply chains and standardisation. Taylor Wimpey, for example, have provided a service for the last 10 years where collaboration has been a core function with their supply chain.



WHO IS DEREK BURTON?



MD of Armstrong Burton Architects based in Sutton Coldfield, Derek works with a number of the UK's leading house builders and is uniquely placed to provide an insight into how trends are working through at the sharp end of the industry.

What type of offsite systems are you currently specifying?

We have worked with Smartroof and other roof systems as well as different construction solutions such as metal/timber frame and panelised systems. Smartroof is an example of one offsite solution which has worked exceptionally well because of its simplicity onsite and it has proven to be an excellent choice for our clients, so on this basis we are happy to specify it on appropriate projects.

How has your practice developed recently?

We did a lot of work in 2016 involving the national space standards. Obviously developing existing house builders' house type ranges and expanding those to have options for the national space standards.

The opportunity arose to start working on our first large-scale timber frame project. We always had clients expressing interest in using timber frame or metal frame structures in the past but they always went away from it at the last minute, whereas this project was with a contractor who has a specialist timber frame division. It is an interesting project - an Extra Care development of 70 apartments and supporting facilities.

More and more planning applications now need to be supported by the use of 3D modelling and sketch up modelling so we decided to expand our capabilities in this regard including housing layouts, design and graphics.



What's next for Armstrong Burton Architects?

We are rebranding for the first time in twenty years and along with that will come a new website, a change of colour and a new logo so it's all very exciting but there's a lot of work involved. In terms of projects ahead we are looking at a new apartment range for a national house builder - I think it gives an indication that more apartments are being planned in addition to housing.

Our first full BIM project is also expected this year. We haven't actually been instructed on one but a number have clients have indicated that their next project will be full BIM so this will be a new departure for us. We do have six full BIM workstations ready to go once we get that instruction.

In addition to mainstream house building we also specialise in the retirement and Extra Care sectors for older people. The product for this market is evolving with people living longer, both in terms of lifestyle and care. I am hoping to be involved with the development of these new products over the next twelve months or so - it is very much my speciality.

Outside of that we are concentrating on business development, expanding our work with national house builders and housing associations. We aim to be more focused on this than perhaps we have been in the past. We have been heavily reliant on repeat business from clients, so we are trying to concentrate this year on developing additional new relationships for example with other regional offices of existing clients.

We'd also like to develop relationships with new house builders and housing associations. We've not done so much work on the commercial and industrial front since the recession so we would like to initiate that as well. So it's certainly looking like a busy year!

Everyday offsite



Offsite technologies come in different shapes and complexities but these examples offer architects an easy opportunity to experience many of the benefits.



Offsite is not being promoted as the answer to every situation because, for some bespoke builds with a high degree of personalisation, factory built offsite solutions may not be cost effective. For many architects however, new offsite options are delivering welcome advantages for both the designer and the client.

The much reported skills shortage is a reality and while complete factory built or modular houses are not yet appearing in volume, the use of offsite components is now widespread.

A dormer window would be a good example of a labour intensive task for a skilled joiner onsite and requires multiple trades to construct and finish it. Compare that process to a factory built dormer which can benefit from economies of scale and the process can be quality managed at every stage of production. The process to insulate the dormer in a factory environment for example is likely to result in a far superior finish without voids or gaps which could occur if insulated onsite leading in time to cold bridging problems.

For the architect engaged on larger schemes this brings the opportunity to engage with IG Elements to discuss the logistical and performance benefits which offsite can bring. In addition to these speed and quality benefits the industry also values the contribution offsite makes by reducing onsite risks such as working at height.



IG ELEMENTS

IG Elements is at the forefront of the offsite manufacturing sector and supply many of the UK's leading house builders with a range of factory built components.

WHO IS WYCKHAM BLACKWELL?

Wyckham Blackwell is a structural timber specialist with fifty years' experience of design and manufacture.

In 2016 they entered into a strategic partnership with Keystone to develop new products and offsite technologies.



Architects can engage directly with the Wyckham Blackwell technical team who will provide advice and a specialist design service to achieve the required roof or floor detailing optimised for each project.

Timber trusses were perhaps some of the first modern offsite products to be adopted. The factory built alternative to an in-situ cut roof has introduced significant advantages to the industry, firstly in terms of the computer aided structural design which enables spans to be increased with less timber.

The latest generation of timber engineering includes CE certified integrated metal web floor and rafter solutions which have the ability to eliminate steel beams from many projects.

Modern attic trusses can deliver huge benefits when it comes to maximising living space within a roof.

FIND OUT MORE



Technical Helpline
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igelements.com



Technical Helpline
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wyckhamblackwell.co.uk



Actions... not words!

In advance of the launch of an offsite house, Commercial Director, Sean Og Coyle explains what actions The Keystone Group are taking to meet the challenges outlined in the Government's white paper 'Fixing our broken housing market.'

"This country doesn't have enough homes. That's not a personal opinion or a political calculation. It's a simple fact." Stark words indeed from Sajid Javid, Secretary of State for Communities and Local Government, but it is a reality with which the British public are faced.

The Government's determined focus on the need to address the housing crisis has thrown down the gauntlet to the house building industry. Ambitious targets, hampered by the lack of skills and labour shortages, leaves every house builder in the country considering how they can join the current "offsite" revolution in our industry.

Of course none of this comes as a surprise to those of us in the industry which is why The Keystone Group has progressively invested in design and manufacturing capabilities to meet these challenges.

We operate at the sharp end, working closely with house builders to develop the innovative solutions which are most likely to be adopted on the basis that they are commercially sound and inherently practical.

Central to the themes of this latest white paper are the issues of increasing the speed of construction and diversifying the market. The government have given their commitment to exploring innovation and to embracing modern methods of construction, citing the many advantages this will bring to this broken industry:

The white paper reports "...homes constructed offsite can be built up to 30% more quickly than traditional methods and with a potential 25% reduction in costs. They are high quality, reliable, more productive and can be highly efficient. They can require fewer people onsite, helping to mitigate the skills shortage. Some firms are increasing their use of these methods, but we need to go further."

Given the above assertions, we believe that the future supply of housing will be met by either factory built modular homes or a more versatile factory fabricated flat pack system. The Keystone Group's extensive product range covers all the major components needed to deliver the latter and we are currently partnering developers in delivering this solution.

The opportunity for architects is now to embrace the industry's change to modern methods of construction and consider how house design might change to meet the challenges outlined in the white paper while at the same time be optimised for offsite builds.

The opportunity for architects is now to embrace the industry's change to modern methods of construction.

Creative architecture will play an important role in optimising land use while enhancing the home owner's living experience. To achieve the density required in cities and social housing, designers must develop new house types and address the external landscape which forms the sense of place in communities. The white paper makes it clear that change will have to occur across the board if the future is not to be a repeat of the past.

"Keyhouse" draws on the expertise within our timber division including our own roof truss company, our newly acquired timber frame house company and market leading Smartroof. The reality is that factory built homes can literally be installed onsite in days rather than months. This dramatically reduces the pressures currently associated with the skills shortage and the need for multiple skilled trades onsite.

Our reputation in the industry is built upon our existing award winning innovations across a range of offsite products. This track record attracts interest amongst major developers and leads to their engagement with our R&D team who get involved in their strategic planning for new building methods.



We have recently engaged the services of Chris Hagan to spearhead the Keyhouse project, therefore demonstrating our commitment to this product. Chris's experience at Space4, the timber frame division of Persimmon Homes, will help us to serve the market with a factory built house, maintaining the expertise and customer care that customers have come to expect from The Keystone Group.

Keystone's track record in offsite to date has been strong. We have focused on developing factory built housing components which enable house builders to enjoy the key benefits of offsite. These include build quality, enhanced energy efficiency and a reduction of onsite risks to the health and safety of staff.

We need to build many more houses, of the type people want to live in, in the places they want to live.

The Rt Hon Theresa May MP, Prime Minister

FIND OUT MORE



Technical Helpline
01283 200 199
smartroof.co.uk

Designing to meet the Part L challenge

WITH
JON BODINGTON



Sustainability expert Jon Bodington of AES claims architects have a lot to gain by engaging with consultants early in the design process.

Innovating Times asks how?

First and foremost, engagement with a good sustainability consultant assists architects to maintain design freedom and still meet the client's needs for build efficiency. Obviously this has to be achieved whilst still achieving compliance with the requirements of the legislation and any additional planning obligations relevant to the site.

By working in partnership with an energy assessor the designer can add real value to their role in the eyes of the client by assisting them to build schemes more cost effectively. This can be a win win situation when this early intervention also helps the architect to protect the integrity of their design in the finished build.

Experienced assessors, such as AES, bring an added advantage due to their in-depth knowledge of both the built environment and up to date information on innovative products that, when viewed holistically in relation to the whole house enable the architect to create specifications resulting in reduced build costs.

In addition to the SAP assessments many good consultants will identify early in the design process whether there is any potential risk of overheating that can lead to health and wellbeing issues for the occupants. The SAP assessment can indicate potential risk, however, it is not an accurate assessment and in order to evaluate the true risk, dynamic simulation would potentially be required.

Through carrying out this additional level of analysis the risk can be more accurately assessed and potential mitigation measures proposed. These can involve design changes such as the introduction of shading etc. which can be sensitively designed in at an early stage. Through close liaison between the sustainability consultant, client and architect, the most cost effective mitigation measures can be agreed without threatening the design integrity of the finished build or resulting in significant add-on costs to the project.

How early in the design process do you recommend architects should engage?

It is extremely important to engage as early as possible with a good quality consultant, ideally at planning stage, to ensure that the energy strategy can be developed to meet the site specific requirements most cost effectively but most importantly, in such a way that won't threaten the original design on site.

Early engagement can also assess risks of overheating so that any mitigation measures are incorporated early into the design, avoiding any costly re-working of design or planning delays further down the line. We can also help identify any conditions that are open to challenge or offer advice on alternative approaches that could be acceptable to the planners that, if successful, would lead to significant cost savings for the developer.



What is your view on renewable technologies that rely on serviceable items?

I'm always supportive of innovation, especially if it leads to an energy demand reduction. Fabric first is always the method we would advocate initially because it delivers a benefit for the lifetime of the property and it's not reliant on mechanical solutions that tend to have a far shorter lifespan.

Most technologies such as photo voltaic, solar thermal, heat recovery systems etc. require some level of maintenance in order to function efficiently and will need replacing at some stage, meaning further cost for the homeowner. In terms of air quality, there's a lot of innovation in this market with heat recovery systems and ventilation systems.

They definitely have a place, especially with the way we are building much more thermally efficient and air tight properties. Whilst this is positive on one hand in terms of energy reduction, there's a risk we could be storing up problems for the future in terms of air quality and the potential for ill health in this country.

The other major issue is the risk of overheating which is something that we deal with on a daily basis. We advise clients on overheating risks, helping the design team design in mitigation measures. I know there's a lot of discussion regarding this within the industry and the Zero Carbon Hub were focusing on this.

What part can innovative products like the Hi-therm lintel play?

The way that we measure heat loss in any property has evolved considerably over the last 10 years and one of the things that has long been a problem is the heat losses through continuous linear thermal bridges as opposed to repeated thermal bridges. However this has been addressed in Part L and is now included in the way we carry out assessments. Now we are looking at the majority of the bridges between the construction elements and the two main areas where heat loss occurs through that bridge would be floor junctions and lintels. If you have a steel lintel that's bridging the cavity you're going to have a significant amount of heat loss at that junction. The Hi-therm lintel, in the way it has been designed and manufactured, dramatically reduces that heat loss, so as a standalone product I think it's fantastic.

The Hi-therm lintel cannot on its own meet the requirements of the overall property in terms of the heat loss calculation. It's part of a solution, whether it be lintels, construction elements, insulation or boilers. They can all form part of the solution - they aren't the solution alone.

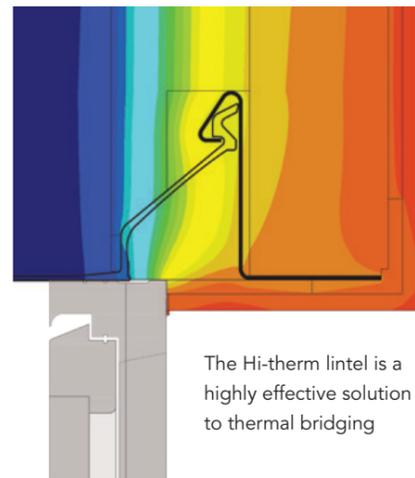
Innovative carbon reduction

The BBA certified Hi-therm Lintel is up to 5 times more thermally efficient than a standard steel lintel.



The call to combat thermal bridging

Thermal bridging and Psi values may not have been factors which rated highly on your checklist previously but now they must be addressed seriously. The latest regulations require this focus on heat loss caused by thermal bridging at junctions which now impacts on both the dwelling CO² emission rate (DER) and fabric energy efficiency rate (DFEE) which is calculated within SAP.



The Hi-therm lintel is a highly effective solution to thermal bridging

How can a lintel make so much impact?

Lintels over doors and windows account for a significant amount of a building's non-repeating thermal bridging and thereby associated heat loss. By specifying the Hi-therm lintel it is possible to reduce a dwelling's thermal bridging by up to 30%, which makes a significant contribution towards Part L compliance.

Hi-therm's innovative design incorporates a GRP thermal break into a steel lintel. The structural performance and easy build characteristics of a traditional lintel are retained but a dramatic improvement in thermal efficiency is gained through the reduction in thermal bridging.

What are the real benefits within SAP?

Because SAP is a cumulative calculation, the gains made by reducing thermal bridging can deliver dividends in other areas, benefiting the designer and developer alike. For example the enhanced performance may negate the need for enlarged cavities, giving more living space for the same exterior footprint. Other benefits might include a reduction in the PV panels required and while each design will differ, the use of Hi-therm has the potential to deliver savings in the total build cost.

If you are designing new homes with a London zero carbon target or just for a site to comply with Part L 2013 regulations then the innovative Hi-therm lintel is an ideal place to start.

DOWNLOAD



keystonelintels.com/downloads

Keystone have produced an informative white paper which contains a useful introduction to the issues surrounding energy efficiency and Part L 2013.



New Psi value calculator now available

While U-value calculators have been around for a while, The Keystone Group has become the first lintel manufacturer to offer an online Psi value calculator. Architects can now obtain a Psi value for alternative wall specifications with just a few mouse clicks, completely free of charge. These calculations are produced using the certified Trisco software and the Hi-therm tool issues a certificate for each detail.

Previously this information was only available from specialist energy companies typically costing between £200 - £400 per detail, on a 7-10 day turnaround.

By using the Hi-therm tool, specifically calculated Psi values for the lintels can be used within SAP helping to lower the thermal bridging Y-value, assisting with Part L compliance.

You can access the Psi value calculator at keystonelintels.com/hi-therm-lintel/psi-value-calculator iglintels.com/hi-therm-lintel/psi-value-calculator



FIND OUT MORE



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Technical Helpline
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iglintels.com

Built as designed

An innovative roof window from Keylite is helping specifiers to close the gap between designed and built performance.

The Performance Gap

Despite raised energy efficiency standards in UK building regulations, the gap between designed and built performance remains a major challenge for the industry. Field work carried out by Zero Carbon Hub prior to their demise uncovered a 26% discrepancy in energy use between design stage SAP and what was actually built. Thermal images from this study showed significant heat loss around windows and doors, caused by poor detailing, to be a major issue.

This point is particularly relevant when specifying roof windows due to the fact that their installation requires an oversize opening and therefore a physical gap around the perimeter of the frame. Manufacturers do produce separate insulating collars to close this gap but research has shown that up to 97% of all roof windows from other manufacturers are not sold with a thermal collar. This means that once these windows are installed, a void could be left around the window, contributing to the performance gap mentioned above.

The GAP if left unfilled can lead to:

- Lower U-value than stated by a roof window manufacturer
- Increased thermal bridging
- Reduced airtightness

This poor detailing will result in increased energy use and will also increase the risk of mould growth on surrounding surfaces caused by thermal bridging and its resultant condensation.

It might be reasonable to think that problems with mould would be long behind us in new build properties but ironically the overall improvements in insulation and airtightness work to accelerate the problem in situations where poor detailing creates cold spots on internal surfaces.

Computer modelling confirms the risk of condensation forming on the interior frames of uninsulated roof windows using typical interior temperatures and humidity levels during winter when external temperatures fall to zero.



Innovations

A Keylite window closes the performance gap:

- Unique built-in expanding thermal collar incorporated at no extra cost
- Combats thermal bridging
- Enhances U-values in the roof opening
- Combats Condensation and mould risk
- Fabric first solution delivers long term energy saving.

Innovative Solution

The good news is that specifiers can now choose a roof window that was designed to eradicate these problems. Keylite's innovative solution to the performance gap was to design and patent a unique expanding thermal collar which is built into the roof window's frame at no extra cost. Once the window is fixed in position the collar is activated simply by pulling a tape which causes the collar to expand and close the gap.

This innovation highlights the value of architects working closely with building material producers to find solutions to the performance gap. While many products appear strong on paper, their performance may be over reliant on complex detailing on site. Keylite's approach is to make it easier for builders to achieve effective detailing without adding any additional barriers such as added cost or specialist skills.

Naturally save energy

Incorporating roof windows into your design can also save energy due to their efficiency as they can provide three times more daylight than a vertical window of similar scale.

A study by the De Montfort University uncovered that 15%-20% of floor area dedicated to rooflights reduces CO² emissions. This can be achieved with a combination of roof windows. The energy balance for roof windows is generally better than the energy balance for facade windows and all Keylite roof windows with standard Thermal glazing provide a positive energy balance.

$$\text{Solar Gain (G-value)} + \text{Heat Loss (U-value)} = \text{Energy Balance}$$

Exterior Aesthetics

Keylite's innovative approach also extends to the visual quality of the installation. To minimise the impact on exterior aesthetics Keylite windows now have a recessed fit enabling them to sit 12mm lower in the roof window as standard. Each of these enhancements enable the specifier to take more control of the final performance outcomes in a build which we understand is a welcome opportunity in the fight against the performance gap.



FIND OUT MORE



Technical Helpline
01283 200 158
 Keyliterateofwindows.com

Strength in numbers



With over 80 qualified technical engineers in our team we are driven by innovation and are dedicated to delivering industry leading technical support.

Each Keystone Group company has a dedicated team of qualified civil and structural engineers ready to assist you at every stage of the construction process from design to build. These professionals are on hand to discuss the most appropriate product selection for your project and are renowned for their ability to find creative solutions to technical challenges. In particular they are focused on helping the architect to achieve their design goals in the most technically efficient way.

Please refer to our Hotline numbers for the appropriate technical team.

[Lintels, Windposts & Brick Feature Lintels](#)
UK T 01283 200 150
NI / ROI T 028 8676 2184

[IG Masonry Support](#)
T 01283 200 157

[Keylite Roof Windows](#)
T 01283 200 158

[IG Elements](#)
T 01283 552 205

[Smartroof](#)
T 01283 200 199

[Wyckham Blackwell](#)
T 01675 442 233



Book CPD Seminars

Our current CPDs are available as follows:

[Keylite](#)
Improving natural daylight through a range of innovative roof window solutions.
A best practice guide to optimising natural light and energy efficiency.

Bookings can be made online
keyliterateofwindows.com/cpd-booking

or by contacting us at
T 01283 200 158

or email
CPD@keylite.co.uk

[Keystone / IG](#)
A Fabric First approach to sustainable construction.

Understanding the impact that lintel innovation can play in improving the fabric energy efficiency of a building.

Bookings can be made by contacting
T 01283 200 150

or email
CPD@keystonelintels.com



Download CAD Files

A range of Fastrack CAD drawings are available for download.

[Lintels](#)
fastrackcad.com/cad.asp?company_id=97
iglintels.com/technical-information/cad-drawings/

[Keylite Roof Windows](#)
keyliterateofwindows.com/architects/downloads/cad-drawings/



Download White Paper

Keystone have produced an informative white paper which contains a useful introduction to the issues surrounding energy efficiency and Part L 13.

keystonelintels.com/downloads



View BIM Models

BIM models for our steel lintel range are available to download on the IG and Keystone websites.

keystonelintels.com/bim-downloads/
iglintels.com/bim-downloads/



Calculate Psi Values

Our unique Psi Value Calculator enables you to print a certificate for the Psi value of your chosen wall construction when using Hi-therm lintels.

iglintels.com/hi-therm-lintel/psi-value-calculator/
keystonelintels.com/hi-therm-lintel/psi-value-calculator/

Hi-therm™

LINTELS



Remarkably advanced

Hi-therm, the single most cost efficient solution for lowering carbon emissions within SAP.

WINNER

BEST BUILDING FABRIC PRODUCT 2013 & 2014

NATIONAL HOUSEBUILDER AWARDS

New

Psi value calculator available on: hi-thermlintels.com

Available from:

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