ADJACENT PLANNING & BUILDING CONTROL TODAY

SCOTLAND

BIM: What can a manufacturer bring?

IN THIS ISSUE

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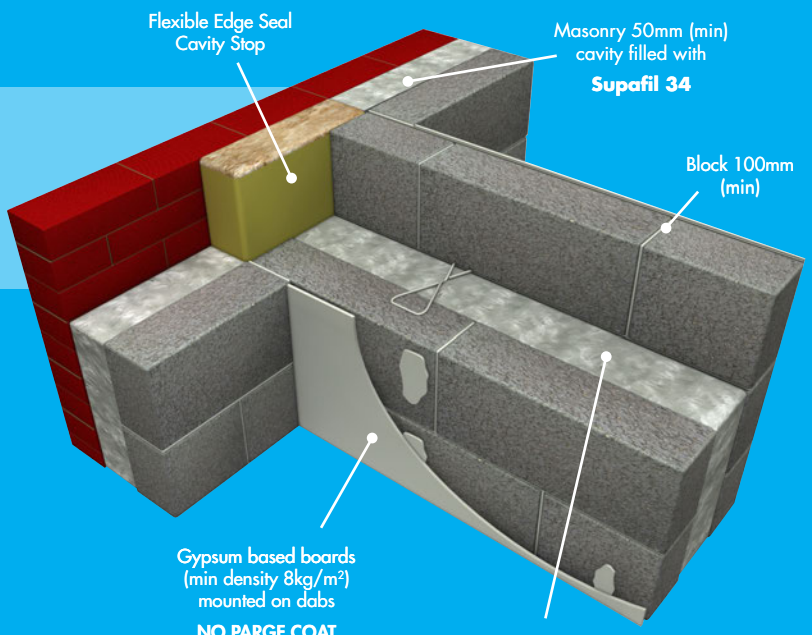

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Introduction

Welcome to the first edition of Planning and Building Control Today – Scotland.

As we finalise this edition, the results of the Scottish Referendum are sinking in and although the result is clear, there is still a significant proportion of the voters who would like to see independence. That hope is now dashed, but the promise of more powers has been made and the entire UK could see a constitutional change that has not been seen in a lifetime. It remains to be seen however what these changes will mean, and perhaps more interestingly in the short term, how the politicians will agree on the terms.

Construction and property leaders in Scotland could soon be welcoming a surge in work now that uncertainty regarding Scotland's future has been removed, with investment in public infrastructure that would secure long-term economic growth. If approached right, Scotland will be an attractive proposal for foreign investment and for private sector businesses due to potentially advantageous tax conditions.

However, economic growth in Scotland will rely on an affordable supply of homes along with the supporting infrastructure to meet an objective of 'sustainable economic development'. In this edition, Blair Melville, Head of Planning Strategy at Homes for Scotland examines if the National Planning Framework 3 and the revised Scottish Planning Policy will provide the basis to solve the scale of housing required. We also address the UK wide issue of energy efficiency within our homes highlighting the benefits of insulation, and of course we shed light on the continuing uptake of BIM and the many benefits this will bring to construction.

I welcome your thoughts and feedback on any of the issues covered here.

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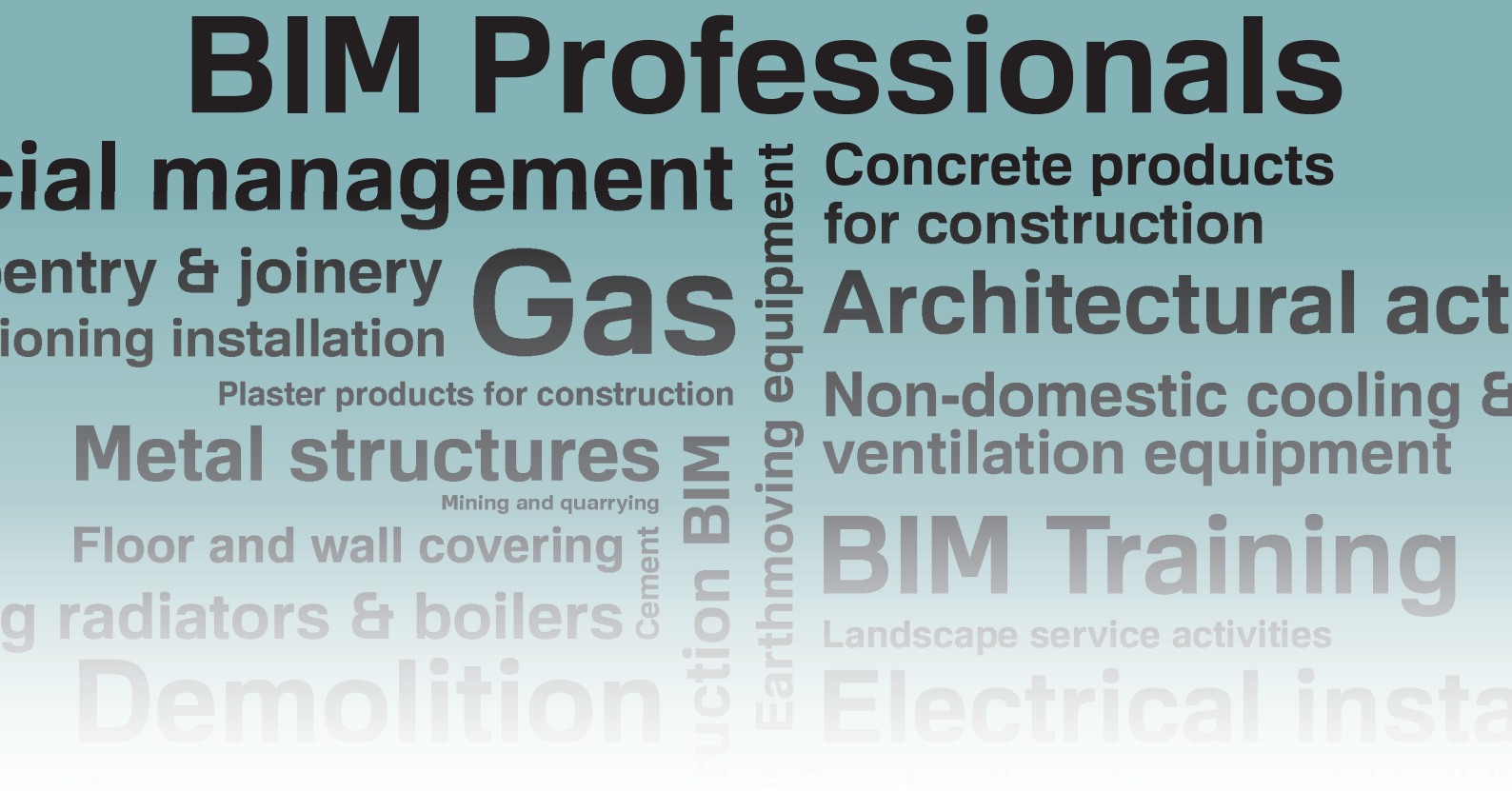
September 2014



YOUR ONE-STOP-SHOP PLANNING DIRECTORY

The National Planning and Building Control Directory aims to be the one-stop-shop for anyone seeking help and advice or products and services from the construction industry.

In conjunction with the now strongly established 'Adjacent Planning & Building Control Today' digital magazine which carries heavyweight content from both the trade and government, this essential tool is already well on its way to being the most comprehensive guide currently available.

Having built a huge database of over 50,000 email contacts for the construction industry, the Directory is growing at a rapid rate with subscribers joining every day.

www.adjacentgovernment.co.uk/npbc/

NATIONAL PLANNING & BUILDING CONTROL DIRECTORY
THE ONE-STOP-SHOP FOR PLANNING & BUILDING CONTROL

Scottish Planning Policy – Homes for all?

Can Scotland's National Planning Framework 3 and revised Scottish Planning Policy help to solve the scale of housing required? Blair Melville, Head of Planning Strategy at industry body Homes for Scotland, examines the situation...

Scotland's National Planning Framework 3 and revised Scottish Planning Policy, published in June, place clear emphasis on the Scottish Government's principal objective of "sustainable economic development".

I stress "development" for, without development, society stagnates. Yet every day, the media, at local, national and even professional planning level, contains reports opposing development and its alleged negative impacts on communities.

The earlier introduction of NPPG in England was accompanied by similar wailing and gnashing of teeth – a "developers charter" according to many. But what has it achieved in practice?

There has certainly been a short-term increase in planning consents, particularly for housing, but this is in a context where fewer homes are being built than at any time since World War II.

It's a must to have up-to-date development plans, plans for projected growth, and have sufficient effective housing land or face the consequences of decisions being made for you – a reality check for planning authorities perhaps? But these are core statutory duties, not something planning authorities should be reluctantly dragged towards.

The same gap in understanding is evident in the Scottish political environment. Councils and even some communities want economic growth, employment, affordable housing, new infrastructure, community facilities – the list goes on. Yet many seem entirely unable to see the illogicality of a position which opposes the very development which provides or supports all these benefits.

Take Scotland's capital city and key financial and cultural centre as an example. Edinburgh has for years sought to export its housing demand to other areas with the result that its housing market area now extends 25 miles or more in all directions. Ask any Lothians resident for a list of environmental problems and commuter traffic congestion will be high on that list. The connection is too obvious to require explanation.

And what about Aberdeen – a world centre of oil and gas activity? While the planning authorities seem to recognise the need for growth, they still seem to underestimate the scale of housing required to support it. Energy companies are now openly telling the Councils that they cannot recruit staff because housing shortages are so acute.

So does the publication of a new national planning policy really get to grips with these issues?

The Scottish Policy is now very similar in content and ambition to its English equivalent, including the introduction of a "presumption in favour of sustainable development".

What is clear from English experience is that political impetus from the top (ie Westminster) has been the real driver of any changes in the planning process. Ministers have had the will to impose change and to ensure that the Inspectorate backs this up. They have also had the will to identify sanctions against poorly-performing authorities. Yet they have backed

off strongly-held community views, such as major changes to Green Belt, and they continue to try to balance national policy with Localism.

Scottish Ministers, probably correctly, do not wish to copy the English approach of too much central direction. The Scottish Government has in place a Concordat with Local Government which devolves more decision-making to local level provided key Government outcomes are being delivered. Consensus and persuasion is the Scottish modus operandi, not coercion.

However, it is clear from a range of indicators – house building figures, planning authority performance statistics and so on – that rates of development are not picking up in Scotland to the same extent as in England.

Certainly market conditions may vary, but the development industry in Scotland is clear that the performance of planning authorities remains unacceptably poor. Whilst we appreciate that successive rounds of budget cuts, with more to come, are impacting on planning staff levels, we also agreed to an increase in planning application fees last year on the basis that the extra revenue would improve planning services. There is no sign of that happening.

The central question remains – will planning improve simply through introducing more policy and more changes to process? Will planning improve through gentle persuasion from Ministers? Or does the real issue lie amongst those communities and those local elected members, who cannot or will not acknowledge the inevitable correlation between physical development and economic and social progress?

In twenty or fifty years time, will our children and grandchildren see our era's greatest achievement as preserving some fields from development? Or will they condemn our legacy of homelessness, lost job opportunities and failure to capitalise on our indigenous talents and natural resources?

Planning is only a tool – an important one, but still just that – to help us achieve our goals as a society.

Whether Scotland is independent or not, whether it promotes slightly different planning policies or not, it is those wider social priorities which will determine how planning contributes to our future. ■

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A New Model for Affordable Housing

How has a collaborative student-designed project become one of the first of its kind designed to some of the world's most stringent design codes? Stacey Temprell, New Build Sector Director for Saint-Gobain, tells us how the world leader in sustainable habitat paired up with The University of Nottingham on the project.

Stacey Temprell
Residential Sector Director

"The project is the result of an extraordinary journey that provides an exemplar 'zero carbon' solution that is a viable, repeatable family home suitable for the UK housing market of the future."

Nottingham H.O.U.S.E (Home Optimising the Use of Solar Energy) is a full-scale, fully functioning family home that complies with the future Fabric Energy Efficiency Standard (FEES), likely to be the requirement for the 2016 Zero Carbon Homes performance requirement.

The house has been designed to perform at a very low level of energy usage by optimizing both the building's fabric and services to meet the Zero Carbon Hub's FEES and the Government's agenda for reduction of impacts on climate change and fuel poverty.

FEES is the proposed maximum space heating and cooling energy demand for zero carbon homes.

This is the amount of energy which would normally be needed to maintain comfortable internal temperatures. In a dwelling, this can be influenced by a number of factors, including building fabric U-values, thermal bridging, air permeability, thermal mass, external heat gain (solar) and internal heat gains such as metabolic activity or as a by-product of services.

FEES should ensure that a good minimum standard of building fabric (the longest-lasting part of a home) will be embedded in all new homes. It is measured in kWh/m^2/year and is therefore not affected by carbon emission factors for different fuel types. For the majority of homes, levels of 39 and 46kWh/m^2/year are proposed. Nottingham H.O.U.S.E achieves 36kWh/m^2/year on the fabric alone, exceeding fabric standards required under FEES for even an apartment block. With an EPC rating of B, this represents a 46% reduction in CO_2 emissions compared with Part L 2010 Building Regulation requirements.

Saint-Gobain contributed a range of products and systems selected for their appeal of minimizing total energy consumptions and maintaining an inexpensive structural scheme, as well as assisting the students with the specification of the house and providing technical support.

Find out more about the Nottingham H.O.U.S.E project by visiting:

http://www.saint-gobain.co.uk/university-students-zero-carbon-house.aspx

SAINT-GOBAIN

WRAP up on the embodied carbon challenge

As the opportunities of addressing embodied carbon become more well-known, PBC Today speaks to Gareth Brown, Programme Area Manager at WRAP about the Embodied Carbon Database and the challenges faced by industry...

In an effort to address the embodied carbon (EC) challenge, resource efficiency experts WRAP (Waste and Resources Action Programme) and the UK-GBC (UK Green Building Council) launched the first publically available Embodied Carbon Database for buildings in April this year, during UK-GBC's 'embodied carbon week'.

The database has been created in the context of the partnership between industry and government to transform the construction industry – Construction 2025[1]. The ambition is to reduce emissions associated with the industry by 50% by 2025, and the database should be instrumental in helping organisations by providing an essential source of data where people from the entire supply chain can benchmark building designs, and as a result, identify where carbon reductions can be made.

The Green Construction Board has set some very specific targets for measuring and reducing EC, laid out within its Low Carbon Route Map for The Built Environment[2], as adopted by government in its vision for the industry. The Route Map model shows that in 2010 operational carbon represented around 80% of emissions of the built environment, with EC representing 18%. However, the model shows a prediction that by 2050, EC is expected to be at 40%. Of course, we are addressing operational carbon quite well at the moment with Part L, solid wall insulation and the like, but addressing EC can make a huge impact on carbon emissions.

In the Embodied Carbon White Paper from Guy Battle, Director of Sustainable Business Partnership, he states that:

"Embodied carbon now makes up one of the largest proportions of carbon emissions of a building through its lifetime. For commercial offices over 40% of lifetime emissions are accounted for even before the building is occupied, and for some sectors such as industrial warehousing it is over 70% of lifetime emissions."

The Embodied Carbon Task Force which arose following the UKGBC Embodied Carbon Week with over 1000 attendees, is working to "build cross industry consensus on how embodied carbon should be measured and reported, and for Embodied Carbon to be included as an Allowable Solution within the definition of Zero Carbon Building regulations, for both Residential and Commercial Property such that the objectives of Construction 2025 and the Green Construction Board may be met".

Specifically the aim of the document is to deliver the following:

- Agreement and proposals for minimum standards for measurement and reporting;
- Proposed methodology for Embodied carbon as an Allowable Solution
- Identify gaps in knowledge and further work required;
- Develop a road map for delivery of Construction 2025 with respect to embodied and capital carbon.

Many people have suggested that EC should be included within the 'zero carbon' definition for 2019,

but it seems increasingly unlikely to happen. I asked Gareth Brown if this was a feasible idea. Not surprisingly, as we all heard in the Queen's speech, it certainly isn't on the table for 2016, but he did agree with Guy Battle in that "industry are keen to move forward in at least considering it as an Allowable Solution to 2019 and potentially to cement it into the definition as well."

"There's certainly good understanding in the product sector, and as we move forward, the understanding in the architecture community, the designers and the consultants, the contractors, and all the people that make up quite a complicated sector in construction will also increase."

In the interview with Gary Newman of the ASPB in the April edition of PBC Today, he outlined that the arguments surrounding an agreed methodology were not an excuse not to develop standards from which to include embodied carbon data. Brown added that the people involved in carbon profiling, making measurements and arriving at assessments, have all collaborated to inform the White Paper from Battle, proving that there is agreement and enthusiasm on how to take these things forward.

Brown highlighted that: "There are currently plenty of life cycle assessment (LCA) databases that provide detail and data. People are engaged in environmental product declaration and using the framework of the CEN TC 350. There are a number of developers in the commercial environment such as British Land, Derwent London and Land Securities that have contributed to the White Paper and have been undertaking assessments on some of their projects to get a better understanding of where they are".

The construction industry certainly faces challenges in incorporating EC into designs and building forms, and there is often a debate between the product sectors around the benefits of different construction products. Brown added that: "it's really about optimising the use of different products depending on the type of building that is being built and the outcomes that people are looking for. If you look in the broader context of resource efficiency it's not about one thing being more important than the other, it's about optimising those choices to get the outcomes you're looking for. So, recycled content is important, as is low carbon and end of cycle recyclability. All of these things have a part to play, so it shouldn't be about one aspect that overrides another".

There are encouraging signs related to the European Directive CEN TC 350 (now a British Standard BS EN 15978) setting out a methodology for EC and whole life carbon analysis, in that many are starting on the journey. It is fairly early days but Brown appears optimistic: "There's certainly good understanding in the product sector, and as we move forward, the understanding in the architecture community, the designers and the consultants, the contractors, and all the people that make up quite a complicated sector in construction will also increase. There are some that are leading in these areas where it's very well understood, but it does take time. From a collaborative perspective, when it comes to data, BIM has a big part to play in this too.

"There are contractors out there at the moment mandating BIM on every project, whether it's a client requirement or not. BAM for example are doing this and are committed to deliver projects fully in that environment. Once you've started on this journey, then doing these sorts of things becomes a lot easier."

Many believe that only through legislation will industry really take on board the benefits of including embodied carbon in projects, and Brown admits it might be an option adding that "It will get more traction from those that are more forward thinking, involved, and understand the opportunity with what is happening already. They will do it because they see the commercial opportunity and the imperative to do this". Brown believes that how EC is incentivised is an important aspect and the database could certainly be used to inform the benchmark ranges if legislation came into being, by expanding our knowledge of EC for different building typologies.

Continued on page 14...

A Sustainable Future Begins With Retrofit

It is estimated that 22 million houses in the UK need to be thermally upgraded in order to achieve a worthwhile level of energy saving, with 8.5 million homes over 60 years old and considered hard to treat. But how are we tackling this and how has the past 12 months shaped up to meeting the UK's long-term targets? Mark Weaver, Project Director for Retrofit for Saint-Gobain in the UK, explains the importance of retrofitting to reduce the energy consumption of the UK's older, inefficient housing stock.

It is recognised that the UK has probably the oldest and least energy efficient housing stock in the western world. Residents in such properties feel the effects of this in the form of high energy bills, leading to unacceptable levels of fuel poverty. In order meet the UK's 2050 CO_2 commitments, the existing housing stock needs to be a high priority amongst Government policies.

Upgrading the thermal performance of the building envelope will reduce the energy required to maintain a comfortable environment. Insulation solutions and low emissive glazing are solutions at the core of Saint-Gobain's construction products sector. They can tackle all house types and elements of the building – walls, floors, roofs, windows and doors. Individually, treating these areas of the house can offer significant energy and savings on bills.

However, as demonstrated by Saint-Gobain's unique Energy House project, carried out in conjunction with leading academics from Leeds Metropolitan University, the University of Salford and Saint-Gobain Recherche, taking a whole-house fabric first approach to retrofitting a house can prove hugely beneficial for thermal improvement, air tightness and comfort for the habitants of the building.

During the three-month project, we identified that, with the installation of multiple measures, energy savings of up to

63% can be easily achieved, especially on poor performing properties, with a 50% reduction in unwanted air leakage.

Representing 21% of the UK's hard-to-treat housing stock, the Energy House is a full-scale typical 1919 end-of-terrace house. Built in an environmentally controlled chamber, tests can be accurately monitored, varied and repeated while maintaining exactly the same conditions – something that most whole-house testing cannot achieve when done outdoors.

There has, and continues to be, much publicity about energy efficiency in the domestic retrofit sector in both the industry and national press. Much of it started late last year with the political debate around so-called 'green levies'. This ultimately led to significant changes and the dilution of the original Energy Company Obligation (ECO), and, most recently, the sudden closure of the Green Deal Home Improvement Fund (GDHIF). The GDHIF initiative offered up to £7,600 for home improvements such as solid wall insulation, cavity and loft insulation and heating measures. This series of events has resulted in an increased number of energy efficiency schemes being operated, but industry is reporting that fewer installations are actually being carried out.

I'm confident that things will improve, but 2014 is unfortunately shaping up to be a year of missed opportunities for the market. Perhaps this illustrates the need for more structural fiscal incentives such as discounts from council tax rates for homeowners installing energy efficiency products in their homes. Saint-Gobain is supportive of such measures to create sustainable growth in this sector.

However, we need to look to the positive elements and celebrate the retrofit projects that are happening across the country, many of which Saint-Gobain businesses such as Weber, Isover and Celotex are supplying to. These include social housing projects still funded by the smaller and newly defined ECO, the Green Homes initiative in Scotland, where interest has been high, the 24 Green Deal Communities schemes for street-wide solid wall insulation and the one-off homeowner retrofits through the first wave of GDHIF vouchers. We are beginning to see genuine 'blending' of finance streams to deliver affordable retrofit for public and private properties – exactly how the Green Deal structure was envisaged. These are encouraging examples; we'd like to see the volumes reach a healthy level for industry investment, alongside a consistent policy framework for greater industry confidence.

In the meantime, Saint-Gobain will continue to develop retrofit solutions to meet the needs of the existing housing stock, and train and educate installers and contractors through the nationwide network of Saint-Gobain Technical Academies, leading the industry in providing a competent workforce to tackle the significant retrofit challenge.

SAINT-GOBAIN

Gareth Brown, Programme Area Manager, WRAP

Continued from page 11...

So how is the database performing so far? "It's a couple of months since the launch and we are pleased with how it's progressed", Brown explained There was a lot of interest before the launch, with quite a number of projects uploaded as data for the 'embodied carbon week' of events. We have people registering every day for access, and now have more than 230 assessments uploaded, and almost 450 queries have been run (queries are when a user has searched the database in some way to view the data, selecting the filters to determine which projects are displayed to them).

"Embodied carbon now makes up one of the largest proportions of carbon emissions of a building through its lifetime. For commercial offices over 40% of lifetime emissions are accounted for even before the building is occupied, and for some sectors such as industrial warehousing it is over 70% of lifetime emissions."

"Some people are using it to see if they can get some meaningful benchmarks from it to set project expectations and quite a number of consultants are using the database to get access and information. The critical thing is that the more data that is entered, the more meaningful the benchmarks for the different archetypes will become, and the more useful it is for everyone".

EC is certainly gaining momentum within industry and some are clearly leading the way as mentioned earlier, but perhaps the benefits are not as widely known as they should be and better education within industry is required. Every year that passes only represents more emissions that could have been prevented, and the earlier the methodologies are recognised, the sooner we can reap the rewards. The EC database should go some way to achieve better, more robust knowledge and convince any 'nay-sayers' that action should, and can be taken now. ■

To get involved in the Embodied Carbon Database visit the site here.

[1] https://www.gov.uk/government/publications/construction-2025-strategy

[2] http://www.greenconstructionboard.org/index.php/resources/routemap

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BIM Level 2: Mapping the road to success

The UK construction industry is making a good start in embracing BIM, providing the opportunity for reform and economic success as global leaders. Peter Hansford, Government Chief Construction Adviser details the value of BIM for the UK...

Technology is moving fast – including in construction. We are moving quickly towards a digital economy which is starting to have profound implications for our built environment. We must act now to ensure UK construction is, and remains, at the vanguard of smart construction and digital design, and have made a good start in embracing this through the BIM programme. Indeed, the UK BIM standards and processes are working as a world-wide acknowledged benchmark for industry digitisation.

For the public sector, BIM offers HM Government the opportunity to industrialise and reform its built environment through a digitally enabled procurement process. Indeed, the level 2 BIM programme is already helping cement significant savings: early adopters such as the Ministry of Justice (MoJ) are reducing cost and improving quality through their BIM library concept, where they have standardised and digitised many of their assemblies. This process has also helped them drive down area requirements and determine solutions which will make it easier to ultimately economically dispose of their assets – such as courthouses – by formulating standard grid solutions compared to traditional non-standard layouts.

Our present goal is that all centrally-funded public procurement projects be delivered using Level 2 BIM by 2016, and the government's commitment to this

Peter Hansford
Government Chief Construction Adviser
Department for Business Innovation and Skills

target – set out in the Government Construction Strategy – remains firm. It provides a strong drive towards digitising our industry and, I am glad to report, one that is going well with significant progress and appetite from the departments to adopt BIM within standard procurement practices and operations. We are on track with our plan for getting BIM Level 2 production ready, which will position the departments perfectly for increasing the rollout of BIM across projects and making it business as usual.

With around 2.9 million people employed within our industry, the biggest challenge is not within the government departments, but raising awareness, building capacity and capability within the supply chain. Our whole sector approach to BIM is making organisations challenge preconceived ideas, and encourages techniques and incentives to standardise ways of working in which 3D geometry and data is stored throughout the lifecycle of buildings and infrastructure.

Key to this is the creation of Level 2 BIM maturity by the BIM Task Group who, along with BSI, have developed a number of standards, documents and guides to explain clearly how BIM should be applied. This is the big challenge for the supply chain: better controls and definitions of both data deliveries and data classification. The Level 2 BIM programme is a key enabling strategy for the UK developing both these processes, and open data definitions. Creating a capable, informed work force will cement the UK as the recognised leader in vision, policy, capability and results for Digital Construction World Wide.

Creating and managing digital data sets for transactions and queries is undoubtedly a step change for industry. Within the supply chain we are seeing early adopters offering levels of efficiency, reduced costs, faster delivery and ultimately, delivering buildings and infrastructure that are 'right first time', and offerings consistent with sectors that have made a switch to digital working and process automation. Communities such as the BIM4 working groups are helping articulate the business case for BIM, and help demystify what needs to be done within their relevant populations to make level 2 BIM happen. The fact that they can build in beta digitally and debug before executing flawlessly on site makes it all worthwhile.

The Industrial Strategy for Construction – Construction 2025 – set out a vision of "an industry that is efficient and technologically advanced". It is therefore essential that we are prepared for a sector switch from analogue to digital given the size of the prize. Economists have estimated that the UK market for BIM-related services will be an annual £30bn by 2020. In a global context, UK-based firms already export £7bn of architectural and engineering services. Pursuing a global leadership position in developing BIM capabilities will provide strong potential for further export growth, and enable our industry to deliver higher quality and a more sustainably built environment for future generations. ■

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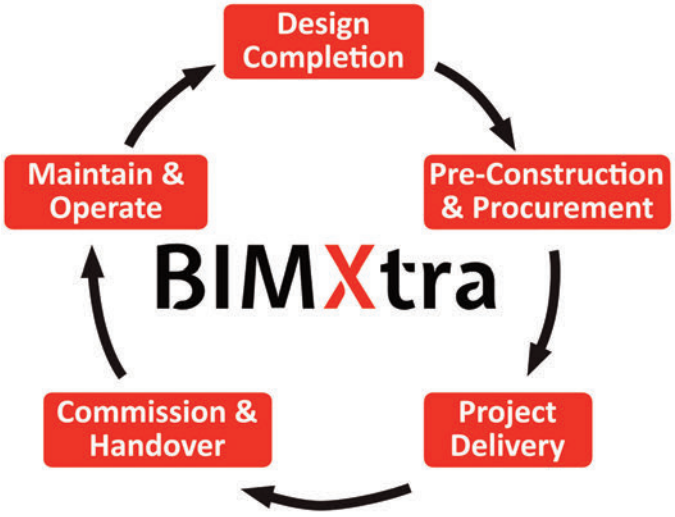
Bringing the simplicity and opportunity of BIM to all

BIM means lots of things to many people and risks being one of the most misused words in construction, however BIM represents the enabler to a transformation that is engulfing not only the UK but also the global design, engineering & construction market; and why, because BIM enables us to work together more easily, in a modern digital environment. Using BIM we are encouraged to share information bringing efficiency and visibility, to ultimately, reduce the risk and cost of our projects. In addition we influence and improve the ongoing operation of our assets, delivering a better more intelligent output for our clients and in doing so providing them with more value in their portfolio of assets.



BIM enables people to interact with their projects in a visual environment, but is increasingly focussing on "the I in BIM", the INFORMATION, which is held within the modelled objects as data. With modern BIM tools, information previously held in separate and disconnected documents, can be created and held within the modelled objects as the central repository for core project information.

Like the automotive industry before us, the efficiency and simplicity of a managed information process contributed to the renewed success of manufacturing. The effect has been that we buy more cars, appreciate the fact that they are more reliable, last longer and cost less to use and maintain – vehicle manufacturing is in new health.

The expectation is the same for the construction industry, allowing us to define and communicate our requirements better, iron out issues before arrival on site, remove unnecessary waste in the process and provide, for the Client, a better service and an intelligent model that can help better manage the clients asset through its operational lifecycle.

Not surprisingly achieving the utopia from this transformation, like all transformations has it's challenges, however, much has been done to address the needs of industry through new technology, and the guidance for the new BIM enabled project delivery process is established in the British Standard and PAS 1192 series, but to maximise the benefits of these new tools we need to consider the working practice changes that are also needed in many environments.

Driven by a focus on low cost procurement that can result in uncertain end out cost and, subject to your position in the supply chain, insufficient consideration of whole life operational cost, together with margins driven ever lower in a highly competitive market we are often faced with risk aversion rather than more proactive risk management.

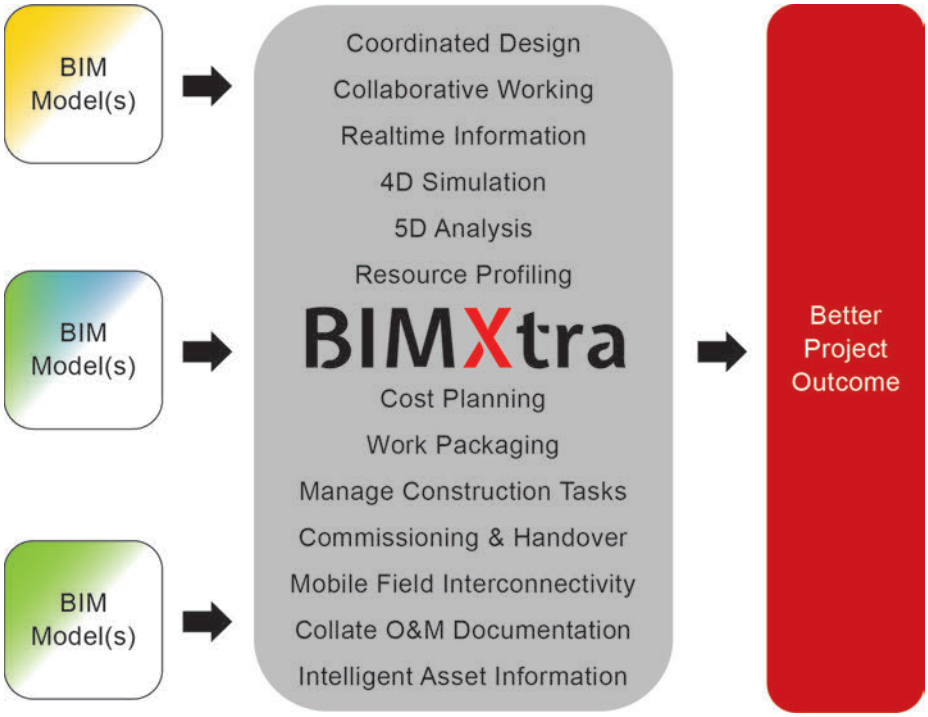
However, in some parts of our industry suppliers and manufacturers are fully integrated with 3D CAD-CAM tools either direct to manufacture or through the creation of fully co-ordinated pre-assembled or pre-manufactured modules that dramatically reduce the onsite work and risks in installation and in doing so provide a higher quality product, manufactured and tested in a controlled environment.

The vision of BIM is that all parties in the supply chain collaborate across the same source of information, and make informed decisions based on better information with an improved awareness of the repercussions on others.

BIM delivers the maximum benefit when all parties take part, the leadership of key Clients like Government, who acknowledge the benefits in project delivery and on-going asset management has been instrumental in establishing BIM as a modern working practice.

The prize for all of us is a better, more efficient, higher quality, world leading industry.

Providing a simple solution to the technology and workflow issues of BIM is where Clearbox can support the process.



Clearbox

Clearbox are a technology provider looking to bring the opportunity of BIM to all through their digital information hub BIMXtra which enables simple access to the information based around a true common data environment. BIMXtra addresses many of the issues of BIM by bridging the gap between the complexity of the BIM authoring tools and the plethora of project tools that characterise the current construction market. BIMXtra not only supports project delivery during the design and construction phase but delivers out the intelligent asset information at handover to provide a new level of opportunity for Facility Management and Asset Management.

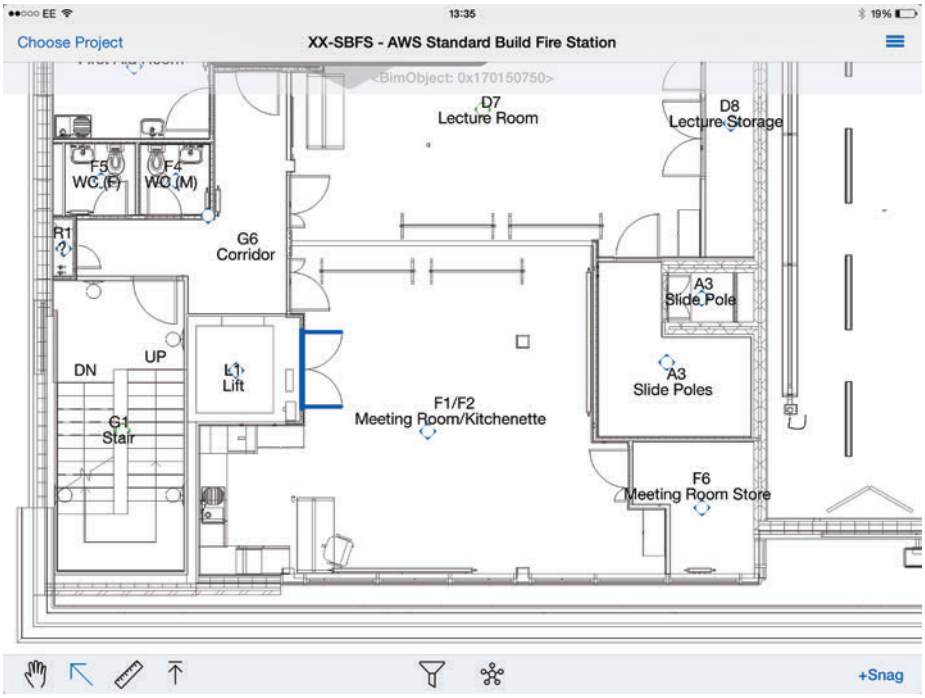
BIMXtra takes information from BIM and makes it available to all in the simplest of approaches. Each user has access to the information they need in the right format at the right time, allowing the influence of BIM to be shared out from the design through the entire project delivery phase. BIM in BIMXtra not only enables interrogation and exploitation of the visuals but also extends and enables the full digital information management of the project.

Developed by individuals with years of experience of delivering design and build projects, and who use BIMXtra tools themselves on their own projects, BIMXtra will help enable consultants, contractors, and SMEs alike to enjoy and benefit from BIM.

So if you are starting your journey or have uncovered some of the complexities of BIM then we can support you to meet the

requirements of Level 2 BIM and beyond as a hosted solution. As 2016 approaches and the gap between the haves and have not's of the BIM world grows there is no better time to jump on board and benefit from the lessons learnt from some of the early adopters.

In this, the first of four articles leading to the 2016 deadline we aim to take you on a journey of the simple functionality that is now readily available, as well as reassure individuals of the benefits of BIM that can be realised in case studies. In the next papers we will address the solutions and some case studies to allow users to appreciate the scale of the benefits and the simplicity and ease with which this can be achieved starting with the interface to programme.



Graeme Forbes

Graeme Forbes is the Managing Director of Clearbox a technology and consulting business that brings years of experience in the BIM space through new collaborative tools that help to bring simplicity to the delivery of BIM based projects.

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BIM and the SMEs: Opportunity is knocking

SMEs are key to the UK's BIM journey, so their uptake is vital to ensure our BIM leadership. David Philp, Head of BIM at Mace and the UK BIM Task Group explains their importance...

In 2013, there were 4.9 million businesses in the UK, with over 99% categorised as small or medium sized businesses (SMEs) i.e. employing between 0-249 people. Of this populace the SME community's share of construction turnover in the UK private sector was 72.4%.

Given that SMEs are the backbone of our sector, we must ensure that they have sufficient digital capacity and capability to ensure that the UK remains at the forefront of BIM leadership across the globe. But why should they care? Why should they consider investing in change?

The reality is they have to compete on a new basis with fierce international competition for the provision of skills and products and ever tight project affordability constraints. It is self-evident, therefore, that to flourish with the backdrop of these challenges they must reform and unlock more efficient ways of working.

BIM really offers SMEs the opportunity to raise their game and contend in the heavy weight classes. Despite often being resource constrained, the SMEs are a motor of innovation with inherent change characteristics often not found in bigger organisations, coupled with faster decision making processes. It is essential, however, that SMEs build adequate knowledge capital in the BIM space to improve their value creation processes to:

- Sell or export this knowledge to another organisation as part of their offering; and,

David Philp MSc BSc FRICS FCIOB FGBC
Head of BIM at Mace and
Head of UK BIM Task Group

- Improve their offering, such as manufacturers who can liberate the data associated with their products to increase exports, create new markets or simply get specified earlier in the construction process.

There is much evidence to support the hypothesis that digital enabled workflows benefit the SME in the built environment. Organisations such as David Miller Architects (DMA) have seen both direct and indirect benefits through their BIM implementation; growing from a small to medium size practice through the efficiencies they are achieving, but also how they are being perceived differently by clients and through meritocracy competing for larger and more prestigious commissions.

Additionally, the tier 2 and 3 communities play an important part in enabling the larger tier 1 organisations. It is therefore essential there is a symbiosis between these parties to help each other up-skill and exchange digital data.

So where should an SME start their journey? Firstly start with the free stuff.

1. Perhaps I am a tad biased on this but visit the BIM Task Group website www.bimtaskgroup.org . This is a treasure trove of great resources on the BIM standards and processes. Be sure and visit the labs space and read the fortnightly newsletters.

2. Read PAS1192-2:2013 and PAS1192-3:2014 which looks at information management for the capital and operational phases of construction projects using BIM. These can be downloaded free of charge from the BSI website. They can be also be accessed via the BIM task group website.

3. Build a network – trust me, BIM is about open innovation and collaboration. Join the dots with your local Regional BIM Hub http://www.bimtaskgroup.org/cic-bim-regional-hubs/ and the BIM4SME working group http://www.bim4sme.org/ who are doing great work to raise the awareness and value proposition of BIM for smaller organisations.

4. Capability. You are probably already doing some BIM efforts but perhaps you don't even realise it. Have a review of how you create or manage your digital data. Do you use a common data environment? Work out where you are on your point of departure and determine what up-skilling is necessary to close the gaps. Consider both: knowledge of processes as well as skills on digital toolsets.

5. Have a play about. Most technology vendors offer free viewing, or indeed in some cases, free clash detection tools. Often viewing and reviewing models will be all you need and you can do it for free.

Do your duty. Ensuring the UK construction sector builds on its rich heritage and makes a big step into the digital frontier will be massively driven by the uptake of the SME community, so remember you can't hit a home run unless you step up to the plate.

Our digital universe is growing exponentially as are the opportunities. Big data, and the increasing value of the internet of things will all create new exciting prospects for the SME players in our fast changing built environment.

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BIM – where will the product information come from?

The potential impact of BIM on all stages of construction is undeniable. Expectations on the part of clients and other stakeholders are great and growing all the time as experience accumulates and as case studies based on successful projects emerge.

Part of the reason for this is that BIM can best be seen as belonging to a suite of related technologies and new ways of working – such as off-site manufacturing, smart buildings, data management, higher performing buildings – which collectively have been called digital engineering. The impact on how the built environment is designed, constructed, maintained, operated and dismantled or rebuilt will be profound.

Such statements are becoming commonplace and almost taken for granted. Indeed, to illustrate this, the Construction 2025 strategy launched last year is to a large extent formed around the idea that properly implemented, digital engineering will be capable of supporting the industry's need and desire for transformation, to perform at an altogether higher level (33% lower cost, 50% faster delivery, 50% lower impact).

It is becoming clear that as an industry either we already have the necessary tools, or that tools will be developed in the foreseeable future. BIM itself will continue to evolve and we can expect the flow of innovation to continue, but it is also clear that we face a step

Products manufacturers, like Saint-Gobain, carry out extensive testing on their products, both in laboratory conditions and on-site. With access to all this test data, who is best placed to provide high quality BIM datasets?

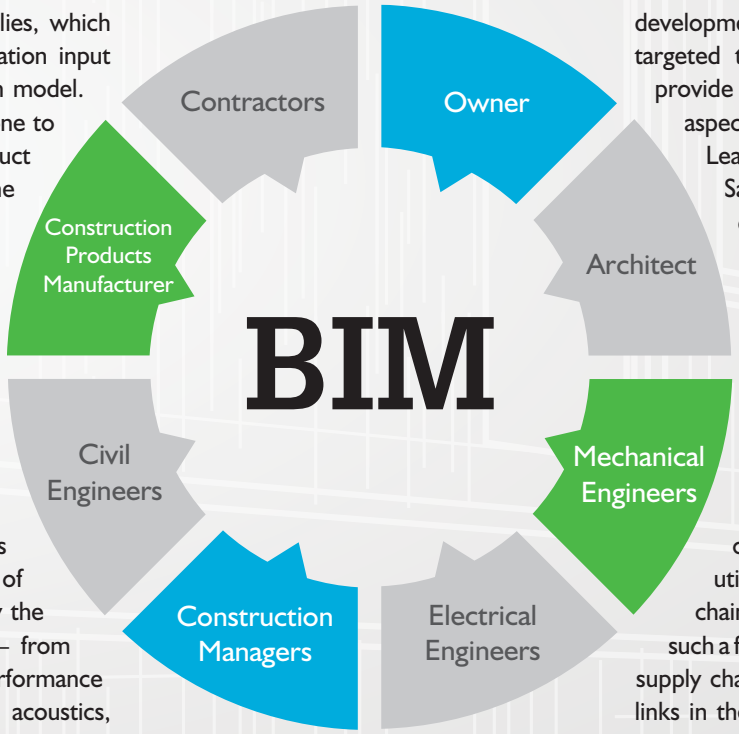
Image showing on-site temperature measurements being taken as part of whole house test programme.

change, or a discontinuity, initially as more of the industry gets on the first rungs of the ladder of this new way of working. It is easy to see BIM level 2, namely forming and using the digital libraries of core information, as representing these first steps. Having addressed level 2 we will need to embrace BIM level 3 and all that that might bring with it, which many observers are expecting to enable the real transformation of the industry which is ultimately sought.

However good and efficient the software tools are, it is easy to overlook the other elements which need to be in place to make the whole design and build process work to actually deliver the quality and benefits expected by stakeholders, supply chain and clients. Some of these elements, such as collaborative working and sharing of information, are touched on in the other articles in this supplement. One specific area, of interest to manufacturers and suppliers like Saint-Gobain, is to do with the data, especially that to do with products, materials and assemblies, which form one aspect of the information input into the building or construction model. A moment's reflection enables one to realise that the library of product information being used by the BIM design tool needs to be appropriate, accurate and up to date, or errors will be hidden only to emerge at a later date in say the build or assembly process, or during operation, which will potentially be very costly to resolve.

As the use of BIM progresses from level 2 to level 3 it is clear that the depth and range of product information required by the designer will continually grow – from dimensional data, to include performance (thermal, structural properties, acoustics, embodied carbon, recyclability etc). Since BIM is not just about working in a different way but it also includes the idea that ultimately the client expects it to contribute to higher performance at a lower cost, then competitive commercial pressures will be brought to bear and will help to shape how BIM is used. To win work the designer will need to have confidence that the optimum design is being offered, in all senses, and that this design can be delivered in reality. This means that the task is not just about the elimination of errors and uncertainty in the raw data, but that the right products are being used and those products have the precise properties (and associated data) sought and assumed by the designer in assembling the solution to be offered to the client. As additional dimensions of data start to be integrated into the BIM model this challenge will only grow.

One solution offered is to use a library of generic product data – using average or typical data taken from across the market of a number of different versions of similar products (insulation, glass, wall linings, structural components, cladding etc). At first sight this solution may appear to offer a way through: a third party takes on the task of collating, interpreting and analysing the data to form a set of typical numbers which the BIM model can then simply connect with and extract. But what are the disadvantages and is there a better way?



In any industry, manufacturers will vie with each other to develop and bring to market more competitive products and solutions. Construction is no exception. In the information-rich age of BIM, an integral part of this improvement process is the dataset associated with each product which will enable competent modelling and design optimisation. The use of generic or average data, of ill-defined ownership, would increase the risk of inaccurate data as well as resulting, in all probability, a sub-optimal design with the consequent risk of it also being less competitive commercially than one resulting from the use of better quality data relating to the actual physical solution being proposed.

Where does this higher quality, more useful, data come from? Manufacturers are in the best position to be able to offer this: they own the raw data for their particular product portfolio; they understand how to use their products in terms of design and installation; they invest in product development to bring to market solutions targeted to address specific needs; they provide technical support services on all aspects of their product or solution. Leading manufacturers, such as Saint-Gobain, are developing the delivery of this information in an on-line format for BIM so that the data is 'live'.

In the digital engineering age – where a building is built twice, once virtually in the BIM model and once on the construction site – product characteristics need to be captured in the form of electronic datasets which can be utilised and relied on by the supply chain. If a product feature is not in such a format its value is reduced. For the supply chain as a whole, and for individual links in the chain, to operate at maximum effectiveness and competitiveness the best quality data, namely the latest live data from the manufacturer, should be used. As digital engineering evolves, and demand for richer information grows, it will become even more critical to use manufacturers' live data.

SAINT-GOBAIN

Empowering the world's BIM community

The take up of BIM is growing, and with the help of a specialised online networking service dedicated to the construction industry, engagement should increase. Andera Al Saudi, Business Director for The BIM Hub sheds light on their vision...

The global construction industry is enormous, with over US $7.2tn worth of construction projects completed every year, and is expected to grow by 67% to $12tn in 2020. The construction industry is complex, fragmented and rife with problems such as delays, rework, standing time, material waste, poor communication, conflict and being over budget, compounded by the global slowdown and the need to address sustainability issues.

The challenge we all face is to encourage continued investment in tackling these issues in a market made 'nervous' by a reduction in the value of property and subsequent threat to profits. A way to restore investor confidence is through reducing investment risk by producing more at a lower cost, which can be achieved by eliminating waste and improving overall productivity across the construction process.

The BIM process

The Building Information Modelling (BIM) process and technologies have been developed specifically with these problems in mind and have been very successful in resolving them. BIM is a business process supported by technology, which itself is optimised by deploying the process. While traditional methods use technology in isolation, the BIM process uses technology in collaboration.

With the take up of BIM growing daily, the construction industry is going through change which many construction professionals believe will revolutionise the industry. Whilst adoption is increasing the actual level of BIM, the use is mostly limited to quantity take off and coordination of multi-discipline activities at the office. However, the use of the different 'BIM uses' is slowly but surely growing including project management and construction sequencing. The full impact of BIM in the construction industry sector is yet to be realised.

To help the construction industry have a better understanding of BIM, a number of initiatives have been set up such as BIM associations, BIM forums, BIM task groups, BIM committees, BIM events, BIM conferences etc. all aimed at construction professionals to help them with information sharing and education. The greatest challenge in the construction industry is to connect the BIM stakeholders in a single specialised networking service, enabling the BIM community to work together.

Thousands of companies have started to promote their businesses in line with the BIM adoption in a quest to be more competitive, and are aiming to get a bigger stake of the AEC market. These companies have initiated changes within their organisations by setting up BIM departments and teams, or outsourcing to BIM service providers/consultants to help with the change process. This has led to an exponential increase in BIM related articles including presentations, papers, case studies, reviews, research material etc. which can be found through a quick search for 'BIM' on the internet. Whilst this enormous amount of BIM information is valuable, it is quite unstructured and takes a considerable amount of time to filter down to what the reader is looking for, and quite often the reader ends up spending hours upon hours searching the internet with little or no benefit in return.

Many of us actively use sites like Facebook and Twitter to promote our businesses. When looking to connect

with more business-related contacts we usually turn to sites like LinkedIn to develop relationships with people we have worked with or may want to work with. LinkedIn groups support a limited form of discussion area, moderated by the group owners and managers. The active use of these social sites has helped the growing use of social networking by business professionals. However, these sites are not really suited for meeting the growing need in supporting BIM professionals.

The BIM Hub is a pioneer in providing specialised online networking services dedicated to the construction industry. It provides the first social platform that brings all the construction industry into a single hub. The BIM Hub's goal is to empower the BIM community to better **connect**, **learn**, **develop** and communicate real world data and help people better understand and engage with the places we live, work and play, and together build a more connected, liveable and sustainable world. Features include the world's first BIM Company Directory, networking with construction and BIM professionals and an expertly-curated set of resources for all industry professionals. In the coming months The BIM Hub will include BIM related projects, tenders, careers and events.

Connect: Until now, connecting with others about BIM has been a formidable challenge. But when the strength and might of the construction sector is harnessed, streamlined and brought together through BIM, the industry as a whole will become stronger, more efficient and more effective. This will lead to improved efficiencies and profitability for those that adopt and adapt.

The BIM Hub enables everyone in the construction industry to network and connect whether they are government officials, project managers, consultants, architects, engineers, contractors, manufacturers, management operators or educational bodies.

Learn: Learning about BIM requires a great deal of time and effort. Construction companies and organisations are working in silos, left to their own devices.

Before The BIM Hub there were no online websites that covered the full spectrum of BIM information required to implement BIM. The BIM Hub is about usefulness and relevance of information today and tomorrow, in a trusted environment. The BIM Hub works to provide professionals with the best-curated content on BIM.

Develop: The BIM Hub develops the capacity of people to understand and implement improved policies, enhanced processes and overall, a better way of working to shape the evolution of BIM. The BIM Hub showcases the work of leading companies involved in BIM, developing and enabling businesses to benefit from interoperable processes and technology.

Join the BIM community free at www.thebimhub.com and help shape the future of the construction industry. ■

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BIM – defining better information management

BIM, despite being a small acronym, is a big word in construction. While there has been a lot of hype around BIM over the last few years we see the conversation is starting to shift toward companies asking – what's really in it for me? However, the discussion needs to further evolve to start looking at how BIM can help define and create better business outcomes.

Models are important but they aren't the be all and end of the information revolution – it's the data that's important, and for many in the industry that will still be shared in familiar 2D products like MS Word or Excel.

BIM allows clients, operators and maintenance teams to have all their data for an asset in one place. It allows for meaningful analysis across a wider selection of business information to be carried out rather than making business decisions based upon anecdotal guesses. By combining disparate data sets together – linked around a model of the asset – it becomes possible to review infrastructure data in a much more powerful way and as a result, manage assets better.

Implementing and using shared data sets with feedback of what actually works – proven by hard evidence – will improve design in the future. However, this shift of how we manage information requires more than just using software, it requires a behavioural change. This is the real change that BIM brings to businesses. It breaks down silos and enables individuals, groups and departments to share information openly and transparently. This doesn't mean that all information needs to be shared with everyone all the time – BIM provides the opportunity for relevant information to live in the model and only be accessed when needed.

While BIM has and is continuing to help evolve and change the construction industry the next big step will be harnessing remote sensing and telemetry. Real time feedback on the performance of structures such as bridges and tunnels will allow managers to understand how their assets are actually performing. Automating processes so that out of range figures trigger further analysis or inspections, creates the ability for pre-emptive maintenance to be carried out in a structured way rather than just having reactive or end of life strategies in place.

BIM can mean something different to everyone and that's not a bad thing. But better data sets make for better decision making and help owners, operators, designers and installers work much more efficiently from a position of knowledge rather than ignorance.

Tekla Structures BIM software

We constantly test and develop Tekla Structures and help you to get started with it.

Models created with Tekla BIM software carry the accurate, reliable and detailed information needed for successful Building Information Modelling and construction execution. Welcome smoother workflow to your company with Tekla Structures and constructable models.

Tekla works with all materials and the most complex structures – you set the limits. Our customers have used Tekla Structures to model stadiums, offshore structures, plants and factories, residential buildings, bridges and skyscrapers.

Help with implementation

Tekla staff and our resellers help with implementation of the software. We work closely with our customers and offer local support, training and consultation.

Open approach to Building Information Modelling

Although Tekla is ready to use, the software is also highly customisable. As Tekla has an open approach to BIM, you can run other providers' solutions and fabrication machinery and still interface with Tekla. Extending and enhancing Tekla Structures is easy with Tekla Open API, the application interface.

Duncan Reed, Digital Construction Process Manager, Tekla

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With the almost daily BIM announcements by clients, contractors and suppliers identifying their increased efficiencies and greater value by adopting BIM, not to mention the Government drive towards adoption by 2016, Tekla recognise that forming a BIM strategy alongside responding to CE Marking and ISO requirements can seem a daunting task.

We can help with the implementation of BIM within your organisation - advising on making the right business decisions, getting the most from your software and help with workflow procedures to ensure you are ready for the challenge ahead.

For further information on how Tekla can assist with BIM implementation and other consultancy services we offer, please call 0113 307 1200.

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CDM Regulations 2015: Better safety for all?

The revised CDM proposals have been debated and analysed by many in the industry. Here, James Ritchie, Head of Corporate Affairs at The Association for Project Safety examines the revisions in addition to what they should mean for the smaller contractor...

Throughout the months of April and May the Health and Safety Executive (HSE) have been running their consultation process on proposals to revise the Construction (Design & Management) Regulations 2007. This is the third iteration of these regulations since they were introduced in 1995.

During that time, the fatal injuries rate in construction have dropped from 105 in 2000/01 to 39 in 2013/14 and more importantly the Fatal Injury Rate for construction workers has dropped from 6.0 per 100,000 to 1.9 per 100,000 over the same period. Since the introduction of CDM 2007, the UK has become a global leader in construction health and safety with UK construction companies working across the globe and taking CDM 2007 procedures with them. So you might be forgiven for wondering why the HSE are making wholesale changes to the regulations.

The HSE have set six policy objectives for the CDM 2015 proposals:

- Maintain or improve worker protection;
- Simplify the regulatory package;
- Improve health and safety standards on small construction sites;
- Implement the Temporary or Mobile Construction Sites Directive (TMCSD) in a proportionate way;
- Discourage bureaucracy; and
- MPeet better regulation principles.

These objectives are all admirable and I would have thought that everyone within construction would agree with them. Irrespective of the final format of the revised CDM Regulations, due to come into force in April 2015, certain issues are known:

- The Regulatory package will be much simpler in format than the current regulations;
- The onus will be on dutyholders to comply with the regulations through implicit rather than explicit requirements;
- Reliance on guidance documentation will be much greater than currently;
- SME Contractors will have to get their act together with regard to CDM as they will have much greater responsibilities, including taking on client duties if they are working on a domestic project;
- There will no longer be an independent CDM Coordinator to provide clients, and others, with advice and assistance regarding construction health and safety;
- In many cases the first designer appointed will have to take on the health and safety coordination role currently dealt with by the CDM Coordinator;
- Health and Safety coordinators must be appointed for any construction project that will have more than one contractor working on site;
- Contractors will self assess the contents and suitability of their Construction Phase Plans.

The HSE seem to have been caught between a rock and a hard place. They are looking to improve on the current CDM 2007 Regulations but have to meet Government requirements to reduce the regulations down to the absolute minimum. We also know that the UK Government has to change the regulations to meet the European Temporary or Mobile Construction Sites Directive (let's just call it the TMCSD) otherwise they could face an embarrassing prosecution. If the issue was just meeting the TMCSD to ensure the UK did not face prosecution, then changes could be easily made without incurring the likely disruption and cost that the HSE's proposals look to bring to the industry.

The CDM 2007 Regulations, when implemented correctly and proportionately, have been proved to bring considerable benefits to the construction industry and construction clients. The problem has been the abject failure by a proportion of the construction industry to understand and implement the regulations correctly, and this has not been helped by what some see as the failure of the HSE to encourage, cajole and enforce compliance – particularly with regard to the early appointment of the CDM Coordinator – at the smaller end of the market.

We currently have a two-tier industry in terms of health and safety and, whist the large contractors and project teams are taking construction health and safety seriously and reaping the consequential rewards in terms of reduced accidents, ill health and better profit margins, the smaller and domestic

sectors of the industry still have not caught on to taking health and safety seriously. Many people still do not realise that CDM applies to all projects, thinking that it only applies to projects likely to last longer than 30 days.

The HSE have written the proposed new CDM Regulations specifically to address the problems with poor health and safety on smaller construction sites and even if the industry has no choice but to accept that the CDM Regulations are going to be re-written, the HSE should be applauded for attempting to tackle these problem areas. One can't help but think that it is more a culture change that is required rather than a regulatory one – a culture change amongst designers generally and SME contractors in particular – and the domestic construction sector is going to get a real shake-up with health and safety coordinators required on all projects where there is more than one contractor working.

The HSE's consultation process that ran from 31st March through to 6th June 2014 generated a lot of discussion in the industry and the main areas of concern seemed to be:

- The perceived watering down of health and safety standards leading to a possible reduction in worker protection;
- The over-simplification of the regulations raising concerns that some sectors of the industry will take advantage of the lack of clarity;
- The likely increase in bureaucracy with the introduction of a requirement for coordinators and principal contractors on many more smaller projects;
- Worries about the way responsibility for discharge of domestic client duties are being thrust upon contractors;
- The placing of health and safety coordination duties upon designers who might not want to do this;
- The loss of an independent health and safety adviser for clients and design teams – something seemingly valued by clients and designers;
- That the proposed revisions appear to be driven primarily by government 'better regulation' cost reduction policies rather than a need to make a significant improvement in construction health and safety.

Whatever the outcome the construction industry will have to make the CDM 2015 Regulations work, and work better than CDM 2007, particularly at the smaller end of the industry. This will require everyone in construction to be fully aware of what their responsibilities are, and be prepared to work as integrated teams to eliminate, reduce, inform and control risks on construction projects. ■

You can find out more about the proposed CDM2015 regulations at www.aps.org.uk/cdm2015.

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The height of roof safety

Paul Haxell, Chair of the Institution of Occupational Safety and Health (IOSH) Construction Group outlines the risks of working at height and what mitigation steps should be taken...

There continues to be a high level of fatalities caused by falls within the construction industry, according to the latest Health and Safety Executive (HSE) statistics.

Some 59% of construction fatalities – 23 deaths – were caused by falls in 2012/13. Over the same period, 28% of reported major injuries and a further 12% reported over a 7-day absence are caused by falls from height. In total, some 920 injuries in construction were caused by falls.

The law, Work at Heights Regulation 2005, requires that employees and the self-employed undertake a risk assessment for all work at heights. The risk assessment should then inform the development of a safe working method which is planned, communicated to employers and implemented in the workplace.

A specific hierarchy of controls exists to mitigate the risks of working at height. In priority order, the following are to be applied:

- Avoid work at height where it is reasonably practicable to do so.
- Where work at height cannot be avoided, prevent falls using either an existing place of work that is already safe, or the right type of equipment.
- Minimise the distance and consequences of a fall, by using the right type of equipment where risks cannot be eliminated.

Around 1 in 5 deaths in construction involve roof work. Some of those killed are specialist roofers whilst others are involved in routine maintenance, like gutter cleaning and minor repairs.

Of those deaths and major injuries caused by roofing, falls from the roof through openings, off edges or through fragile surfaces are the main causes.

Many of these accidents would have been prevented through the use of suitable equipment and if those doing the work had been given adequate information, instruction and training.

Safe access to a roof requires careful planning, particularly where work progresses along the roof.

Typical methods to access roofs are:

- General access scaffolds;
- Stair towers;
- Fixed or mobile scaffold towers;
- Mobile access equipment;
- Ladders; and
- Roof access hatches.

Falls from roof edges occur on both commercial and domestic projects and on new build and refurbishment jobs. Many deaths occur each year

involving smaller building operatives working on the roof of domestic dwellings.

Sloping roofs require scaffolding to prevent people or materials falling from the edge. You must also fit edge protection to the eaves of any roof and on terraced properties to the rear, as well as the front. Where work is of short duration, (tasks measured in minutes), properly secured ladders to access the roof and proper roof ladders may be used.

"Around 1 in 5 deaths in construction involve roof work. Some of those killed are specialist roofers whilst others are involved in routine maintenance, like gutter cleaning and minor repairs."

Falls from flat roof edges can be prevented by simple edge protection arrangements – a secure double guardrail and toe board around the edge.

All roofs should be treated as fragile until a competent person has confirmed they are not. Do not trust any sheeted roof, whatever the material, to bear the weight of a person. This includes the roof ridge and purlins.

Fragile roof lights are a particular hazard. Some are difficult to see in certain light conditions and others may be hidden by paint. ■

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The fire safety competency challenge

The fire sector has responded to questions raised by Brandon Lewis, former Fire Minister, at a recent conference. Here, Graham Ellicott, CEO of the Fire Industry Association (FIA) provides an overview of the discussions...

The opening address at a recent 'fire event' in the Palace of Westminster was given by Brandon Lewis, Department for Communities and Local Government (DCLG) former Under Secretary of State (aka the 'Fire Minister') with responsibilities that include fire. He laid emphasis on the fact that prevention and protection are now the front line for the Fire and Rescue Services.

The evidence of this is there for all to see, as over the last 10 years there has been a 35% reduction in domestic fatalities so this approach, in conjunction with the efforts from other fire stakeholders is paying dividends. Brandon threw down 2 challenges to all in the fire sector, namely:

- How can we keep up this reduction in fire fatalities?
- How can competency become the norm for all in the fire sector?

Other speakers at the event addressed the issues highlighted by Brandon. For example, a senior fire engineer commented that competency is required from all involved with fire safety whether their buildings be 'code compliant' or fire engineered. He went on to say that it should be remembered that however good the fire design of a building, it can be 'undone' by poor construction and maintenance. A discussion ensued as to whether all fire engineering is value engineering as there had been some comments about this earlier on, most of it being anecdotal with no hard evidence.

The competency theme was built upon by a representative from a fire research facility who asked why Building Regulations 7 (materials and workmanship) and 38 (provision of fire safety information to the responsible person) aren't adhered to so that the building is 'safe' and its subsequent occupiers are fully informed of its fire protection systems. To supplement these comments it should be appreciated that Approved Document B (the fire guidance document to the Building Regulations) says:

"Building Control Bodies may accept the certification of the installation or maintenance of products, components, materials or structures as evidence of compliance with the relevant standard. Nonetheless, a Building Control Body will wish to establish, in advance of the work, that any such scheme is adequate for the purpose of the Building Regulations."

Continued on page 36...

Don't gamble with **your** fire risk assessment!...

If you are responsible for a business premises, the law requires that you have a fire risk assessment. To find competent providers, you need BAFE.

Under the provisions of the Regulatory Reform (Fire Safety) Order 2005, the Duty Holder or Responsible Person for a building is required to make a Fire Risk assessment to clarify the fire precautions necessary to ensure the safety of staff, customers and property.

At present there are no adequate means to ensure the competence and reliability of a company commissioned to carry this out.


BAFE
British Approvals for Fire Equipment
This is to certify that
A Sample Fire Company Ltd
having satisfactorily complied with the requirements of the BAFE adopted scheme
SP205
for Life Safety Fire Risk Assessment
has been added to the list of BAFE Registered Companies
signed on behalf of BAFE by:
Chairman of Council
BAFE certificate No: 1234SX
Date of issue: 29/13/2012
Expiry date: 28/13/2013
ISO Cert Body certificate No: XYZ987
BAFE

BAFE scheme SP205 has been developed specifically to address this situation, and will provide reassurance to the Responsible Person that they are doing everything possible to meet their obligations.

So don't leave everything to chance. Make sure that your suppliers are registered with BAFE.

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BAFE

Promoting Quality in Fire Safety

Continued from page 34...

In part this answers Brandon's competency challenge, as if the Materials and initial workmanship are dealt with by certification schemes and then if the appropriate paperwork and associated information are passed on to the responsible person, then they can ensure that the building is kept 'fire safe'. However, Brandon could bring influence to bear by ensuring that only competent people (those that are members of suitable schemes) are used on all buildings or as a minimum on those that employ the use of taxpayers' money.

A National Social Housing Fire Strategy Group representative echoed the previous speaker's views by arguing that there is a real need to sort out Building Regulation 38 and the way that it is implemented and enforced. Indeed, one has to ask the question as to who has heard of Regulation 38 and my bet is that few hands would go up in any room; so if nobody's heard of it then it's a fair bet to say that it's enforcement is likely to be negligible as well. The Fire Sector isn't happy with this state of affairs as information supplied under the auspices of Regulation 38 provides a very good basis for the 'production' of a good fire risk assessment for the building in question. In order to address this situation a working group has been set up to report the Fire Sector Federation's Technical Guidance Workstream. It is expected that this working group will report back later in 2014, so we may be able to discuss more of that in the future.

A thoughtful presentation from the Fire Protection Association posed the question as to why the government won't legislate to protect:

- The most vulnerable in society from fire;
- Those people affected by others over whom they have no control when it comes to fire;
- Very large premises from the ravages of fire which can cause loss of life, property damage and reduced levels of employment.

In particular, the comment concerning the most vulnerable in society would drive down fire deaths in this demographic group. Such legislation would include the provision of the appropriate fire protection systems (fire detection, suppression etc.) at the change of a tenancy. Indeed, past Westminster events have included presentations on the level of fire deaths in rental accommodation, and in particular those properties where there is no working smoke detection. A similar piece of legislation applies in Scotland under the 'Repairing Obligations' so one must ask why the English rental property is not treated in the same way? Hopefully Brandon is now listening as government announced on 20 November 2013 that it would be carrying out a review as to whether new rules are required for carbon monoxide and smoke detectors in private accommodation. This Rented Sector Review closed on 28 March 2014 and the results of this have not yet been issued.

The government's own champion for fire safety in rental accommodation gave a presentation concerning Firemark, which is a training and advice tool for all of those involved with fire safety in rental accommodation. He indicated that when he asked Brandon's predecessor Bob Neill about the implementation of Firemark, he was told 'you don't get it do you, just get on with it'.

Now, that last comment is a pragmatic attitude that could be applied to all of us in the fire sector including the Minister, and only time will tell if he takes note of the answers from the fire sector to the questions that he posed – only time will tell. ■

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JCB Insurance Brokers

Tackling Personal Injury Claims

We are all fed up of the number of injury claims that get brought, either by employees for 'accidents at work' or members of the public for alleged accidents that they've had as a result of someone else's negligence.

If someone has a genuine injury caused by someone else's negligence, then of course they are entitled to a fair and reasonable amount of compensation. For us though it's a case of 'where there's blame, there's a claim' gone so far that it's created a compensation culture and an entire industry of personal injury lawyers who actively 'farm' claims.

Insurance companies have started mapping hotspots around the country where there are concentrations of personal injury claims. It is no coincidence that these areas are exactly the same areas as where there are the most personal injury lawyers.

The Government has, to be fair, recognised that this is a problem and has taken some steps to try and tackle it: Earlier this year, government banned the referral fees that insurance companies can earn by selling your details to a solicitor if you've had a non-fault accident – that's how you get all the phone calls inviting you to make a claim after an accident.

Also, from August this year, the Ministry of Justice reforms have tightened up the process for injury claims and more importantly, capped the amount that a Solicitor can earn from making a claim on someone's behalf. All the Solicitor can earn now is 25% of the award that the claimant gets if he's successful. So, gone should be the days when the claimant got a payment of £3,000 and the Solicitor got £4,000 – all he'll get now is £750.

It's not all good news though – Disease claims fall outside of the Ministry of Justice process (the portal, as it's called) so the Solicitors fees are not capped on these.

This is why we are now seeing a huge increase in the number of claims for people claiming to have conditions such as Vibration White Finger or Industrial Deafness. These take a lot longer to administer because all of the companies a claimant has worked for during his career might all be pulled into the claim and if it's over a long period of time, it might be difficult to identify all of the insurance companies involved.

So, the solicitors that previously 'farmed' injury claims are now actively targeting disease claims in order to make sure that their fee income is protected.

Recently we've heard of one solicitor who set up a 'Deaf Booth' in a shopping centre. People approached shoppers and in a quiet, whispered voice asked 'have you ever been exposed to excessive noise at work?' When the person replied 'Pardon?' because the question was asked so quietly, they were whisked off into the 'deaf booth' for a quick hearing test and guess what? Many of these people were told that their hearing wasn't what it should be. 'Don't worry though, we'll make a claim on your behalf and get you the compensation you deserve'.

We genuinely admire the steps that government has taken to try and tackle this problem but in many ways it's just pushed the problem downstream. An entire industry has grown up around compensation claims and it will adapt to the environment and find new ways to encourage people to make claims, whether genuine and justified or not.

All we can do is work together to try and stop them coming in altogether or if they do come in, make sure we have our houses in order and are able to mount a strong defence.

JCB Insurance Brokers specialise in arranging all types of insurance for the construction industry. We feel very strongly about this subject and work hard to make sure that, where possible, insurance companies strongly defend claims against our clients that appear to be spurious.

JCB INSURANCE

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Our aim is to ensure that our UK customers benefit from over 40 years of knowledge and experience in the construction sector. Since 1970 we have remained true to our customers – helping them to survive 4 recessions. In the good times we are also there to help businesses grow. We will always focus on the needs of our customers and treating them fairly.

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- Total lending 1970-2012 – just over £8.0 billion
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- In 2012 JCB Finance provided 21.3% (some months touching 40%) of all HP and Lease finance in the UK construction machinery market (according to Finance and Leasing Association asset finance statistics).

* JCB Finance Ltd is regulated and authorised by the Financial Conduct Authority. JCB Finance only provides asset finance facilities to businesses in the UK.

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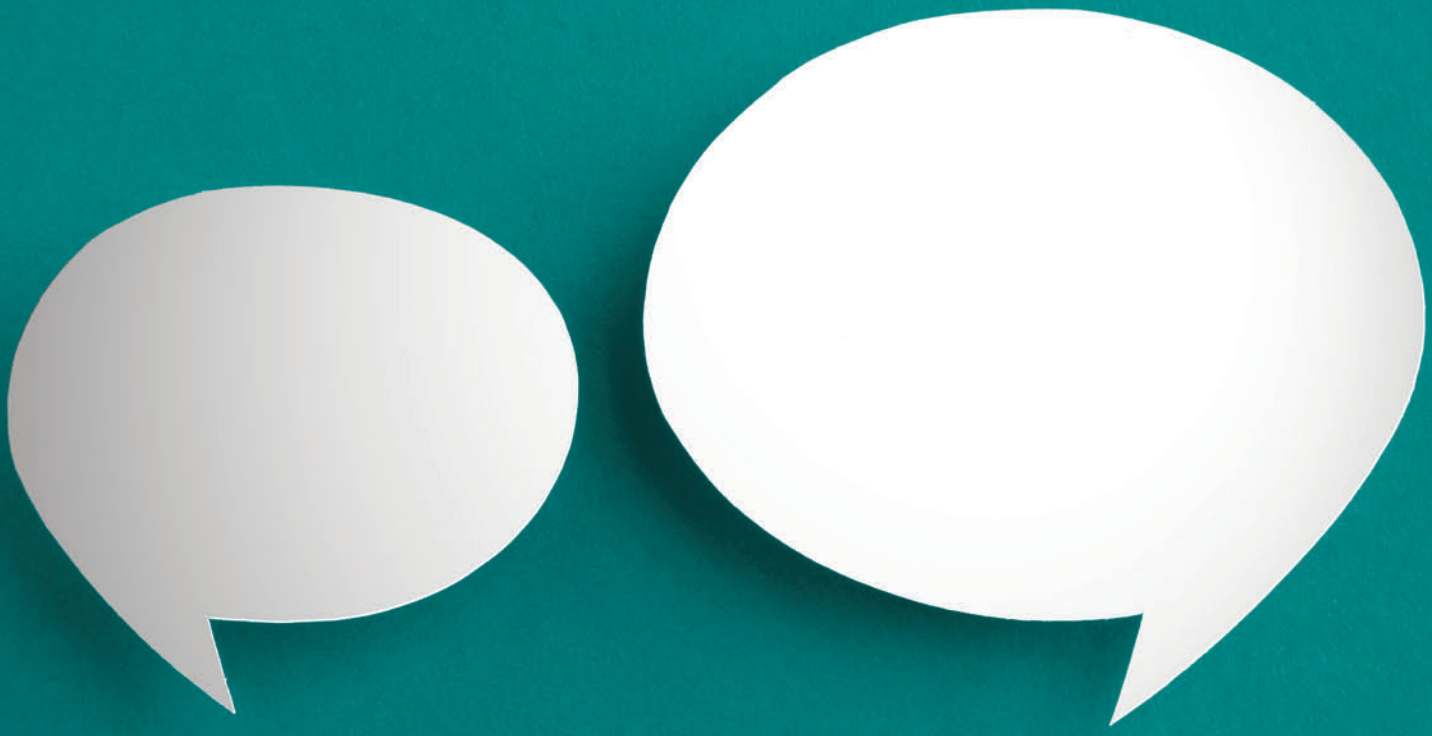

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The case for insulating party cavity walls

Recognising that cavity walls are a source of heat loss, Nick Ralph from the Mineral Wool Insulation Manufacturers Association (MIMA) looks at the background to the changes and the solutions available...

Historically, there was an assumption that cavity party walls were an area of thermal equilibrium between two heated spaces and not a source of heat loss. However, studies by the Buildings and Sustainability Group of the School of the Built Environment at Leeds Metropolitan University between 2005 and 2007 showed that, for example, in a mid-terrace dwelling the heat lost through the untreated party cavity walls could be greater than that which is lost through all of the other external elements combined.

The study demonstrated that heat energy from both dwellings can escape into the party wall cavity. This causes free moving air in the cavity to warm and rise up through the cavity, bypassing the loft insulation and - in a majority of cases - continuing to the roof line where the air and heat energy escape to the external environment. As the warmed air in the cavity rises, cool air from adjoining external cavity constructions is drawn into the party wall cavity, forming a chimney stack effect and a significant source of continuous heat loss. In addition, windy conditions can induce differential pressure that leads not only to heat losses at the junction of the party cavity with both external walls and suspended floors, but also increased heat loss due to the stack effect of the cavity.

A series of field trials conducted on the party wall cavities of terraced and semi-detached masonry houses revealed that the magnitude of the party cavity wall thermal bypass was equivalent to the party wall having an effective U-Value of the order 0.5 to 0.7 W/m^2K. If not addressed, this has a considerable effect on a dwelling SAP score and needs to be countered through additional enhanced performance in other areas, in order to bring the dwellings SAP score up.

As a result, there was an inclusion in the amended Domestic Building Regulations in 2010 (Part L1A) that party walls would need to be fully filled with

suitable insulation and effectively sealed at the edges in order to achieve an effective zero-value. Full-fill mineral wool insulation is particularly suited, as together with effective edge sealing, it has been proven to comply with the requirements for a zero U-value without compromising acoustic performance. Indeed, since the inclusion, a number of solutions have been approved as Robust Details, and can therefore be used to comply with the requirements of Part E1 in England and Wales without pre-completion testing.

Mineral wool is easy to install and is also non-combustible, providing in-built fire protection and effectively contributing to the fire safety of buildings. Mineral wool insulation is one of the few building materials that saves energy in use and reduces the need for combustion of fossil fuels to provide energy for heating or cooling of buildings. The recycled content and recyclability of the material also reduces waste disposal needs and saves valuable resources both now and in the future. This is reflected in the Green Guide A+ rating of mineral wool party wall insulation products.

The case for retro-fitting party cavity walls

Through its work with Leeds Metropolitan University and the BRE, MIMA has also more recently proven the case for retrofitting existing party cavity walls using blown fibre mineral wool, prompting DECC's plans to include the measure in the latest RdSAP changes for Green Deal and in turn making it eligible for ECO.

Leeds Metropolitan University undertook a series of field tests over four heating seasons between 2008 and 2013, to analyse the effects of filling existing party cavity walls with mineral wool insulation, using conventional cavity blowing techniques. Taking a mid-terrace house, which was built between 1990 and 2001, the study demonstrated an annual saving of 1,978 kWh of energy and 0.38 tonnes of CO2 – equating to a £70 reduction in household energy costs. The performance improvement was modelled on RdSAP at an improved effective U-value from 0.20w/m^2k to 0.05w/m^2K.

It was these results that lead to the measure being included in RdSAP, which is expected to come into force in August 2014.

About the organization

Representing manufacturers of stone and glass mineral wool insulation, MIMA aims to provide an authoritative source of independent information on the products' properties and applications; and is recognised for its contribution to a wide range of consultation exercises relating to energy saving strategies and the improvement of the built environment.

MIMA has been instrumental in bringing about changes to Part L of the Building Regulations and RdSAP for Green Deal to address the issue of significant energy leakage.

The trade body has close relationships with central government, local authorities and research institutes. It is actively involved in the development of relevant directives and regulations; and in particular has championed the use of Building Regulations to drive change in building practices to improve delivered thermal performance and measure real, in-situ performance. ■

For further information on MIMA and technical guidance on insulating party walls visit www.mima.info

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The evolution of party walls

Party walls have seen many changes over the years, driven by the need to improve acoustic performance, prevent thermal bypass and reduce the cost of installation. Tom Foster, senior product manager at Saint-Gobain Isover, looks at the evolution of the party wall and how Isover are supporting the industry in developing a better performing construction.

Acoustic regulations

Developments in the past ten years have primarily been driven by the introduction of Section 5 (Noise) in 2004, which set out a minimum 56dB requirement for party walls, as well as on-site post-completion testing (PCT). The requirement for PCT, while effective at enforcing the regulation, can prove a burden to house builders and so Robust Details Limited established an alternative route of compliance in January 2012, following the success of the scheme in England and Wales.

Thermal Regulations

Despite the improvements of acoustic performance since 2004, masonry and timber frame party walls continued to be seen as a purely acoustic, zero heat loss element of the building. In reality, empty cavities create a path for heat to escape from a building – a concept now known as 'party wall bypass'.

After work was carried out by Leeds Metropolitan University to prove the concept of party wall bypass, steps were taken to address the issue in the update of Section 6 (Energy) in 2011. The regulations stipulate a requirement to remove air movement by fully-filling the cavity with insulation and effectively edge sealing the edges of the party wall if a zero heat loss wall is to be achieved.

The Isover Party Wall Solution

For timber frame constructions, Isover have always provided acoustic insulation for between the studs in the form of Isover Timber Frame Batts and Rolls. In response to the inclusion of party wall bypass in Section 6 (Energy) in 2011, Isover launched Isover Timber Party Wall Roll, an unsplit roll to fully-fill common timber party wall cavity widths between 50 to 100mm. These products can be incorporated in V-WT-1 and V-WT-2 Scottish Robust Details, as well as Section 5 (Noise) Accredited Construction Details.

For masonry constructions, Isover were the first to market with a full-fill solution in 2009, two years before the regulations were introduced, with Isover RD Party Wall Roll. This full-fill roll restricts air movement within the cavity and when installed with effective edge sealing, helps the house builder to claim a zero heat loss party wall. The product is a proprietary component of V-WM-20 Scottish Robust Details.

Summary

Since the introduction of Section 5 in 2004, Saint-Gobain Isover has been at the forefront of maximising acoustic performance, reducing cost of installation, and removing thermal bypass from party wall structures.

Isover offer a party wall solution for both timber frame and masonry construction that meets the requirements of Section 5 (Noise) and Section 6 (Energy) building regulations. As a result, Isover solutions our designed to support the industry in maximising the acoustic and thermal comfort of homeowners in Scotland.

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The ‘Sound’ Choice for Party Walls

Isover RD Party Wall Roll is a proprietary component of V-WM-20 Scottish Robust Detail.

- Helps to deliver a zero U-value party wall
- Meets Section 5 (Noise) without PCT
- No requirement for render or parge-coat

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Thermal bridging: Confidence in accreditation

Addressing the thermal bypass and bridge dilemma can be difficult, especially when dealing with the bridging aspect. John Tebbit, Managing Director, Robust Details Ltd examines the challenges posed and the need for third party accreditation...

Bridges and bypasses are well known to all road users. Indeed they are generally regarded as good things as they get us over obstacles, speed up our journeys and save the inhabitants of the bypassed communities the noise and fumes from road traffic. However, as is often the case, when we move into the area of building physics and in particular thermal issues, what is seen as good in other areas is definitely bad for thermal performance. Rather than speeding up the traffic, we speed up the flow of heat, generally from our warm homes to the colder outside. That means higher fuel use, fuel bills and carbon emissions. It also increases the chances of condensation and mould. All in all, thermal bypasses and bridges are things we want to avoid. Fortunately we do have quite a bit of knowledge and guidance in this area.

Taking the issue of bypasses first, these can be avoided by good design and so then do not have to be considered. These are where warm air can circulate in some way into a colder area and thereby transfer energy. The best known of these is the party wall bypass where air in the cavity sets up circulation taking heat from the warm rooms either side, and moving it to the colder loft where energy is transferred. The effect can be seen in the photograph opposite, where the melted snow on the roofs corresponds with the party wall positions.

The answer has been to stop the circulation and this is typically done by filling the cavity with insulation along with effective edge sealing of the party wall cavity as illustrated above. We have full filled party wall details that have also been tested to prove that filling the cavity did not compromise sound insulation.

Thermal bridging is more problematic in that even with good design the bridge often remains, even if it is no longer a four lane motorway for heat, but a

slow single lane track. Also rather like real bridge design, the calculations to assess the size of the bridge are not easy. It is not something that can be done with a pencil and paper or even a spreadsheet. Typically one needs to use finite element analysis software. To make life even worse, there is not even a rigorous, unambiguous set of assumptions, simplifications and rules on how to use the software. There is guidance such as the BRE paper BR497 but even that has considerable room for judgment.

"Indeed, for the house builder looking for ways to improve the performance of the dwelling it is difficult to be confident about the rigour of assessment that any particular detail has been through, as there is currently no requirement for third party accreditation or even assessment of competence for the modellers."

There is also the issue of whether the design that is intended to minimise bridging is buildable in real life. Details that look good in two dimensional sections may turn out to be impossible to build in three dimensions, or at corners without resorting to hyper dimensional black belt origami with membranes. Anything that requires absolute precision or dry, dust and grease free working conditions is unlikely to be reliably reproduced on a building site.

For these reasons Robust Details and BBA set up a joint venture – Constructive Details (http://www.constructivedetails.co.uk/) to develop and disseminate junctions that were high performance, robust and buildable. A number of companies and trade associations have worked with Constructive Details to deliver a range of junctions all of which are free to download.

There are other places to find junctions including many manufacturers, BRE and government. However, not all will be up-to-date or assessed to the same level of scrutiny. For those who are less worried about how realistic the construction is either in its theoretical performance or for its onsite buildability,

Image: BPC, Edinburgh Napier University

there are no real barriers to so doing. Indeed, for the house builder looking for ways to improve the performance of the dwelling it is difficult to be confident about the rigour of assessment that any particular detail has been through, as there is currently no requirement for third party accreditation or even assessment of competence for the modellers.

It is virtually impossible for a non-expert to look at a junction and its performance data and judge whether it is likely to be true. The chances of building control being able to police this area are almost non-existent. In terms of thermal bridging and the claimed performance of details, if it looks too good to be true, then it probably isn't true. Therefore, until a third party accreditation system is introduced that all parties have to adhere to, this is very much an area of caveat emptor. ■

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The benefits of certification

Dave Hall, Technical Academy Manager at British Gypsum, explains how a combination of independent product certifications and high quality training can help specifiers achieve their individual project requirements.

When selecting materials for construction projects, specifiers have a wide range of solutions to choose from, with many providing particular technical characteristics, to meet regulatory requirements, for example around thermal insulation performance.

This offers a great deal of choice, but can make it difficult to make an informed, confident decision. So how can specifiers be sure that the products they select offer the performance they need, and the contractors they work with are competently trained to fit them?

A mark of quality

To help make it easier for specifiers to identify the best performing solutions, manufacturers have long sought out certification from organisations like the British Board of Agrément (BBA). Recognised across the industry for its approval and inspection services, the BBA independently verifies that construction materials and systems are fit for purpose. Furthermore, systems for use in Green Deal and Energy Company Obligation (ECO) projects must be certified by the BBA.

Manufacturers with certified solutions are subject to regular review to ensure they continue to meet the BBA's stringent standards. As a result, selecting BBA-certified products can help specifiers make confident choices, streamline the selection process and minimise the risk of performance issues in key materials during the construction stage and in use.

British Gypsum has a range of BBA-certified solutions available for specifiers. The Gyproc ThermaLine PIR plasterboard range is the latest of the manufacturer's products to be added to its systems certification by the organisation, demonstrating that it offers high thermal insulation ideal for upgrades to solid wall buildings and room-in-the-roof projects. British Gypsum systems certified by the BBA include its DriLyner RF and DriLyner TL systems, as well as its GypLyner UNIVERSAL and GypLyner IWL solutions.

High-calibre training

However, certification is just one factor in ensuring that materials are fit for purpose. The performance of even the highest quality certified materials can be impaired by incorrect installation, and lack of detailing during construction. Given this it is important that there is support and guidance available from manufacturers to support installers in fitting systems and products correctly. To help, the BBA not only accredits installers through its Approved Installer scheme, but also certifies training schemes by manufacturers. These can provide installers with the skills they need to ensure that fitted construction materials meet specifiers' performance requirements specifically around minimising thermal bridging and reduced air leakage in the finished building fabric.

British Gypsum provides in-depth training in the installation of its BBA-certified wall insulation systems to help ensure solutions are fitted correctly through the Saint-Gobain Technical Academy network around the UK, with centres in Kirkby Thore, Flitwick, East Leake, Erith and Clevedon. The manufacturer has also had all of its internal wall insulation training approved in content by the CITB in meeting the national occupational standard for building insulation treatments – internal wall insulation, which focuses on equipping installers with the knowledge to fit materials in compliance with the Green Deal's strict requirements.

Reassurance

New construction solutions are coming onto the market all the time, so it is important for specifiers to be able to identify the most appropriate products for their project. By using BBA-certified systems and installers trained in BBA-approved schemes and endorsed by the CITB, they can be confident that their finished development will offer a high-quality comfortable indoor space for building users that meets project specifications. In addition, British Gypsum offers SpecSure® lifetime system warranty on all its systems, meaning they have been tested in UKAS-accredited fire, acoustic, and structural test laboratories.

British Gypsum
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Dave Hall
Technical Academy Manager
British Gypsum
www.british-gypsum.com

Now BBA certified

Gyproc ThermaLine PIR

Keeping the warmth within; creating energy efficient homes

Around a third of the heat in an uninsulated home is lost through the walls. Installing British Gypsum internal wall insulation solutions can cut heating costs considerably. Gyproc ThermaLine PIR is an option for retrofitting internal wall insulation to existing walls, and the systems are now BBA certified. For more information visit the product section of our website.

www.british-gypsum.com

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 13/5016

British Gypsum SAINT-GOBAIN

Retrofitting for a sustainable future

Mark Weaver, Sector Marketing Director for Retrofit for Saint-Gobain in the UK, explains the importance of retrofitting to reduce the energy consumption of the UK housing stock...

It is estimated that 22 million houses in the UK need to be retrofitted in order to achieve a worthwhile level of energy saving, with 8.5 million homes over 60 years old and considered hard to treat. But how can we even begin to tackle this?

When we talk about making energy savings and reducing carbon in existing homes, much emphasis is placed on adding sources of sustainable or renewable energy retrospectively. While this is a valid argument, especially as fuel bills from 'conventional' sources are increasing, it is also only one side of a debate that needs a more holistic approach.

While there are numerous initiatives and investment programmes to encourage the supply of future energy, there needs to be equally strong signals on the reduction side of the equation. Improving the energy efficiency in buildings is one of the best ways to achieve this, providing the fastest return and tangible benefits in terms of energy, economic development, jobs and wellbeing. Saint-Gobain advocates this 'fabric-first' approach to treating the UK building stock.

Of course, in practice we need to invest in a variety of energy production methods and combine these with more energy-efficient buildings, which will deliver the immediate impacts needed to meet Government targets.

Saint-Gobain started working with the Energy House at the University of Salford, leading academics from Leeds Metropolitan University and Saint-Gobain Recherché to prove that whole-house, fabric first retrofitting of homes can deliver significantly reduced energy costs, not to mention lower CO_2 emissions and remove 50% of air leakage. We identified that, with

the installation of multiple systems, energy savings of up to 63% can be easily achieved, especially on poor performing properties. In combination with the energy saving, the property would also be much more comfortable for occupants through reducing air leakage and draughts.

The testing facility allowed us to not only demonstrate a whole-house approach but also to look at the individual steps in retrofitting a home to identify the importance of individual elements on that building's performance. This involved installing and monitoring a full Saint-Gobain solution and then removing each energy efficiency measure, such as wall insulation, to determine its impact on, and importance to, the whole-house performance.

The research carried out at the Energy House used conventional systems from British Gypsum, Glassolutions, Isover and Weber to bring levels of thermal efficiency to the building fabric that are typical of newly built homes. The project also set a realistic pre-retrofit baseline – a 1900 house with 'typical' entry-level energy efficiency interventions of 1990s double-glazing, representative of many houses that would benefit from double-glazing upgrades. 'Old' loft insulation was retained and topped up to match today's requirements.

The retrofit programme reflected a typical 'hybrid' approach to domestic solid-wall insulation with internal wall insulation applied to the front elevation and external wall insulation fitted on the side and rear. Our objective was to measure the performance against conventional retrofit to produce realistic statistics according to what we initially predicted. We wanted to ensure that our results related to the current industry approach by using cost-effective widely available solutions.

Clearly adding measures such as solar panels are going to improve the way energy is used but added to a poorly insulated building is merely solving one problem and not gaining optimum results and savings.


Day 1

Day 2


Day 3

University of Salford Energy House

As we continue to analyse the results from the Energy House to develop further solutions, we believe that the initial findings present considerable opportunities for the retrofit market. ■

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Boosting energy efficiency in existing properties

With up to 45% of heat lost through a property's solid walls[1], effective insulation can be a cost-effective way of reducing energy bills and cutting CO_2 on retrofit projects. Harjit Sandhu, Domestic Sector Manager at British Gypsum, explains.

Over the last decade, the construction industry has seen the emergence of a range of technologies all designed to improve the energy performance of a building – whether through energy conservation or generation. However, adequate insulation still remains a straightforward way of improving the energy performance of a building, reducing heating costs and creating a more comfortable environment for building occupants.

"As well as choosing the right product, correct fitting is key. So while British Gypsum IWI solutions are designed to be easy to install, we also offer extensive training courses through a partnership with Construction Industry Training Board (CITB)."

In line with this fabric first approach, British Gypsum recently worked with Derby City Council to improve the energy efficiency of 450 of its homes with Internal Wall Insulation (IWI) with great results. Since its installation, residents have reported a significant decrease in their heating bills, with some estimating savings in excess of £400 over a 12-month period. As this example shows, IWI can have a real impact on energy performance, something that the wider industry is starting to recognise too.

Warm welcome: Thermal imaging shows the heat signature of the wall surface following the installation of Gyproc Thermaline PIR

The importance of IWI

In recognition of the importance of IWI and to encourage its use in projects, regulations are becoming increasingly stringent. For example, the recently launched Part L 2014 in Wales introduced further energy efficiency requirements on work to existing buildings. This included aligning U-value (the measurement of the heat flow through a square metre of any element of a building) requirements on retrofit projects to those of new build projects. What's more, funding can now also be provided for IWI in Room in the Roof projects, as they are now covered under Carbon Emissions Reduction Obligation.

However, with an estimated eight million uninsulated solid wall properties in Great Britain, work to ensure the fabric of the building is energy efficient should also be considered before any further energy saving measures are carried out.

To help planners to improve thermal efficiency through product specification and to take this fabric first approach in buildings, and in particular, solid wall properties, British Gypsum offers four British Board of Agrément (BBA) certified Internal Wall Insulation systems: DriLyner RF, DriLyner TL, GypLyner UNIVERSAL and GypLyner IWL.

The range offers a solution for all projects, from options that can be fixed directly to internally plastered brick or block walls, to those that can be bonded to bare masonry walls. These IWI systems are also typically cheaper than external wall insulation.

Fir for purpose: Installers fit Gyproc Thermaline PIR to internally plastered brick walls

Additionally, the collection features products for more specialist requirements. The GypLyner solutions for instance, can be used where wall surfaces are poor quality or uneven, and all British Gypsum IWI systems also prevent moisture and vapour damage in kitchens and bathrooms.

The importance on installation

As well as choosing the right product, correct fitting is key. So while British Gypsum IWI solutions are designed to be easy to install, we also offer extensive training courses through a partnership with Construction Industry Training Board (CITB).

These specially developed upskilling courses, which are available through our national network of Technical Academies, meet PAS2030 and associated standards, and the content is independently verified for its quality. In fact, these measures mean qualifying companies can apply for grants for their employees and labour-only subcontractors to complete the course.

As this issue of energy efficiency is increasingly a priority for the industry, it's essential that a fabric first approach is thoroughly considered in refurb and new build projects to ensure optimum levels of thermal efficiency are achieved.

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SAINT-GOBAIN

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Insulating the party wall

Steve Smith, Market Development Manager at Knauf Insulation looks at the associated problems with party separating cavity walls and discusses the best insulation solutions...

Although the primary function of a party wall in a building is to provide structural strength and physical separation, it also provides thermal, acoustic and fire separation.

Previously, building standards did not consider the thermal separation between the dwellings on either side of the party wall, as it was assumed that there was zero heat loss due to both dwellings being heated. However, independent robust testing carried out by Leeds Metropolitan University, MIMA (the Mineral Wool Insulation Manufacturers' Trade Association), BRE (Building Research Establishment) and Knauf Insulation has revealed that a significant amount of heat is actually lost through un-insulated cavity party walls via the phenomenon of 'party wall thermal bypass'. This is a process whereby heat is lost due to moving cold air which has entered an un-insulated party cavity wall from external flanking building elements, resulting in heat loss via convection.

The independent testing not only sought to observe and quantify the phenomenon of party wall thermal bypass, but also to develop and provide a solution to eliminate this heat loss. As a result, on-site tests demonstrated that the effective U-value for a party wall in a dwelling can potentially be reduced to zero if the party wall cavity is completely filled with mineral wool insulation and combined with mineral wool cavity barriers at the edges of the party wall cavity.

Additionally however, party walls are required to provide protection from noise between adjoining properties. To achieve the expected level of protection, not only does the party wall have to be designed and built correctly, but particular attention has to be paid to flanking transmission around the building elements adjoining the party wall. It should be remembered that the performance levels measure the protection offered by the dwelling from an adjoining dwelling, not just the performance of the separating element in isolation.

The acoustic performance of a timber frame or masonry cavity party wall is therefore maintained when the cavity is fully filled with glass or rock mineral wool, and those products that comply can be used with Robust Detail walls. For masonry cavity party walls the insulation should have a density no greater than 40kg/m^3 and for timber frame walls the insulation should have a density between 18kg/m^3-40kg/m^3.

Lastly, for those projects that are more environmentally focused, there are insulation solutions available that boast zero global warming potential and even conserve energy through assisting the reduction in fuel demand for the heating and air-conditioning of buildings. At the same time, those that achieve a Eurofins Indoor Air Comfort Gold standard, demonstrate strict compliance with low VOC emissions requirements of all relevant European specifications.

Consequently when choosing the right insulation solution, specifiers should look to dependable manufacturers that have the expertise and range of proven products to meet all relevant performance requirements. ■

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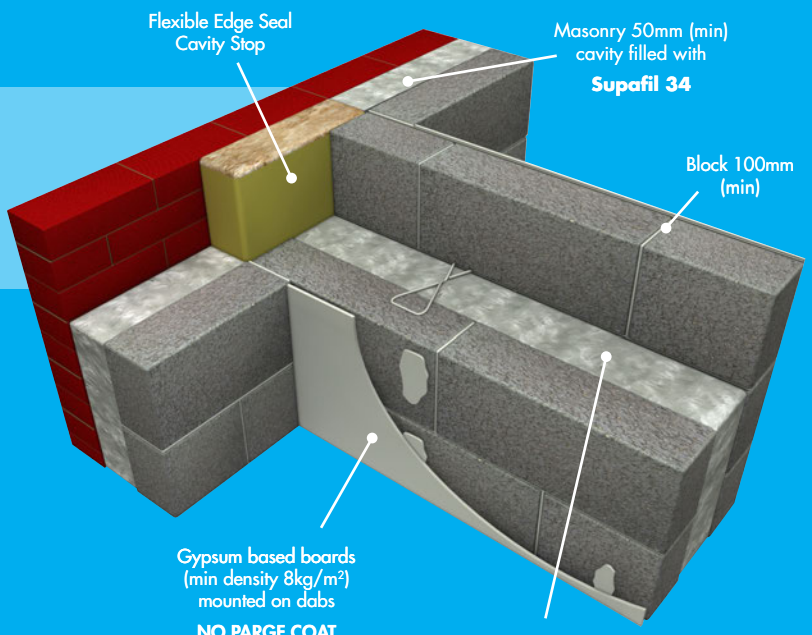

For full information on E-WM-28 visit Robust Details website
http://www.robustdetails.com/TheHandbook/RobustDetail/E-WM-28

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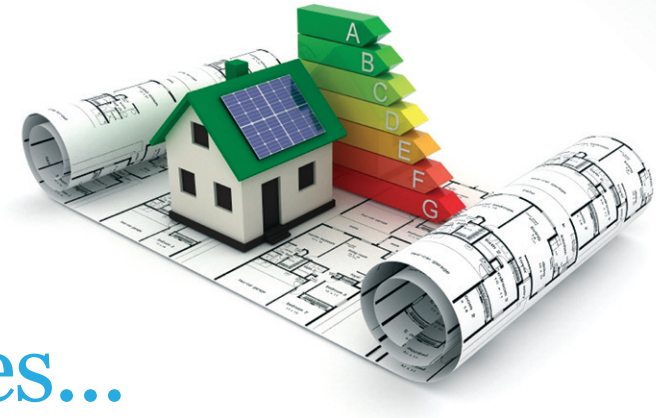

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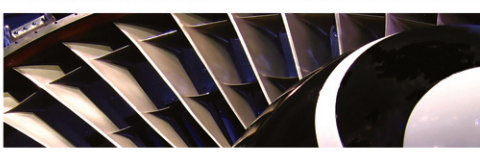

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Scotland

Building Regulations

The Technical Handbooks provide guidance on achieving the standards set in the Building (Scotland) Regulations 2004 and are available in two volumes, Domestic buildings and Non-domestic buildings.

The 2013 Edition of the Technical Handbooks are now available to view or download. These handbooks provide revised guidance and support the Building (Miscellaneous Amendments) (Scotland) Regulations 2013 which were laid before Parliament on 13 May 2013. The amended regulations and technical guidance came into force on 1 October 2013. Through the same amendment regulations, changes are also made to the Building (Procedure) (Scotland) Regulations 2004 and the Building (Forms) (Scotland) Regulations 2005.

All handbooks can be found here:

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/techbooks/techhandbooks

STRUCTURE:

Technical Handbooks 2013 Domestic: Structure

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013dom1

Technical Handbooks 2013 Non- Domestic: Structure

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013ndom1

The structure of a building is fundamental to ensuring the safety of people in or around new and existing buildings and can be affected by a number of factors inside and outside the building including environmental factors. These factors should be considered to prevent the collapse, excessive deformation or the disproportionate collapse of buildings.

To achieve a structure with adequate structural resistance, serviceability and durability the following should be taken into account:

a. the loadings (actions) on the building;

b. nature of the ground;

c. collapse or deformations;

d. stability of the building and other buildings;

e. climatic conditions;

f. materials;

g. structural analysis; and

h. details of construction.

FIRE:

Technical Handbooks 2013 Domestic: Fire

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013dom2

Technical Handbooks 2013 Non- Domestic: Fire

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013ndom2

Life safety is the paramount objective of fire safety. Domestic buildings should be designed and constructed in such a way that the risk of fire is reduced and, if a fire does occur, there are measures in place to restrict the growth of fire and smoke to enable the occupants to escape safely and fire-fighters to deal with fire safely and effectively.

The purpose of the guidance is to achieve the following objectives in the case of an outbreak of fire within the building:

• to protect life;

• to assist the fire and rescue services; and

• to further the achievement of sustainable development.

ENVIRONMENT:

Technical Handbooks 2013 Domestic: Environment

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013dom3

Technical Handbooks 2013 Non- Domestic: Environment

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013ndom3

Water, air and soil are intricately linked and all can be affected by various forms of pollution that affect our environment. Other issues such as condensation have been a constant threat to people and buildings for many years. The Scottish Government encourages the use of previously developed land (brownfield) and local authorities may wish to promote brownfield land in preference to greenfield land. Some of this land will be contaminated and will need to be made safe.

The intention is to ensure that, as far as is reasonably practicable, buildings do not pose a threat to the environment and dwellings, and people in or around buildings, are not placed at risk as a result of:

a. site conditions;

b. hazardous and dangerous substances;

c. the effects of moisture in various forms;

d. an inadequate supply of air for human occupation of a building;

e. inadequate drainage from a building and from paved surfaces around a building;

f. inadequate and unsuitable sanitary facilities;

g. inadequate accommodation and facilities in a dwelling;

h. inadequately constructed and installed combustion appliances;

i. inadequately constructed and installed oil storage tanks;

j. inadequate facilities for the storage and removal of solid waste from a dwelling.

SAFETY:

Technical Handbooks 2013 Domestic: Safety

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013dom4

Technical Handbooks 2013 Non- Domestic: Safety

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013ndom4

Safety has been defined by the International Standards Organisation as ‘a state of freedom from unacceptable risks of personal harm’. This recognises that no activity is absolutely safe or free from risk. No building can be absolutely safe and some risk of harm to users may exist in every building. Building standards seek to limit risk to an acceptable level by identifying hazards in and around buildings that can be addressed through the Building (Scotland) Regulations.

The intention is to give recommendations for the design of buildings that will ensure access and usability, reduce the risk of accident and unlawful entry. The standards within this section:

- ensure accessibility to and within buildings and that areas presenting risk through access are correctly guarded;
- reduce the incidence of slips, trips and falls, particularly for those users most at risk;
- ensure that electrical installations are safe in terms of the hazards likely to arise from defective installations, namely fire and loss of life or injury from electric shock or burns;
- prevent the creation of dangerous obstructions, ensure that glazing can be cleaned and operated safely and to reduce the risk of injury caused by collision with glazing;
- safely locate hot water and steam vent pipe outlets, and minimise the risk of explosion through malfunction of unvented hot water storage systems prevent scalding by hot water from sanitary fittings;
- ensure the appropriate location and construction of storage tanks for liquefied petroleum gas; and
- ensure that windows and doors vulnerable to unlawful entry are designed and installed to deter house breaking.

NOISE:

Technical Handbooks 2013 Domestic: Noise

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013dom5

Technical Handbooks 2013 Non- Domestic: Noise

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013ndom

Noise is unwanted sound. In order to limit the effects of unwanted sound the standards intend to improve the resistance of building elements to sound transmission. Research has presented clear evidence that noise can indirectly contribute to a range of health issues such as stress and anxiety.

Inadequate sound insulation can impair health by allowing noise from other people to disrupt normal life. A number of people in attached homes complain of neighbour noise.

The 2010 edition of Section 5 has been completely rewritten to include:

- an increase in the sound insulation performance of separating walls and separating floors;
- a robust post-completion testing regime;
- guidance for carrying out work to existing buildings;
- guidance to reduce sound passing between rooms in dwellings; and
- section has been updated to reflect then updating of Planning Advice Notes.

Including residential buildings (Non-domestic):

- separating walls and separating floors forming rooms intended for sleeping (Non- domestic)

ENERGY:

Technical Handbooks 2013 Domestic – Energy

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013dom6

Technical Handbooks 2013 Non- Domestic – Energy

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013ndom6

Within Scottish building regulations, improvements in energy standards have been made over many years, culminating in 2007 with the move to a carbon dioxide emission based methodology for assessing carbon and energy performance in new buildings.

In 2007, Scottish Ministers convened an expert panel to advise on the development of a low carbon building standards strategy to increase energy efficiency and reduce carbon emissions. This resulted in The Sullivan Report – 'A Low Carbon Building Standards Strategy for Scotland'. A key recommendation of this Report is staged improvements in energy standards in 2010 and 2013, with the aim of net zero carbon buildings (emissions for space heating, hot water, lighting and ventilation) in 2016/17, if practical.

Domestic: Section 6.0.3 addresses the carbon dioxide emissions and energy performance of all domestic buildings (houses, flats and maisonettes) and ancillary buildings. In respect of dwellings, all parts of a building intended to form part of the dwelling should be within an insulation envelope.

This section should be read in conjunction with all the guidance to the Building (Scotland) Regulations 2004 but in particular Section 3 Environment has a close affiliation with energy efficiency, regarding:

a. heating of dwellings;

b. ventilation of domestic buildings;

c. condensation;

d. natural lighting;

e. combustion air and cooling air for combustion appliances;

f. drying facilities; and

g. storage of woody biomass.

Non- Domestic: This section covers the energy efficiency for non-domestic buildings. Such buildings include: factories, offices, shops, warehousing, hotels, hospitals, hostels and also buildings used for assembly and entertainment.

• ventilation

• condensation

• combustion appliances and

• biomass fuel storage.

SUSTAINABILITY:

Technical Handbooks 2013 Domestic: Sustainability

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013dom7

Technical Handbooks 2013 Non-Domestic: Sustainability

http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/publications/pubtech/th2013ndom7

Sustainable development has been defined as meeting "the needs of the present without compromising the ability of future generations to meet their own needs" by the Brundtland Commission of the United Nations in 1983. It follows that the process of sustainable development and the quality of 'sustainability' to aspire to within the built environment should account for:

- social, economic and environmental factors;
- the potential for long-term maintenance of human well-being in and around buildings;
- the well-being of the natural world and the responsible use of natural resources, without destroying the ecological balance of the area where these resources originate or are processed; and
- the ability for the built environment to be maintained.

The intention of this standard is to:

- recognise the level of sustainability already achieved by the building regulations. By setting the 2010 Standards as the benchmark level, credit is given to meeting the standards within Sections 1-6 of the building regulations. This will emphasise that a degree of sustainable design and construction is not a niche market but must be achieved in all new buildings;
- encourage more demanding sustainability standards through enhanced upper levels;
- encourage consistency between planning authorities that use supplementary guidance to promote higher measures of sustainable construction in their geographical areas. By making reference to this standard, local aspirations can be met by selection of clear national benchmarks. Levels of sustainability have been defined that must include a low or zero carbon generating technology, with reference to Section 72 of the Climate Change (Scotland) Act 2009.

Index

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