



UK CONSTRUCTIONTM EXCELLENCE

JULY 2017



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It's a fine time for construction. According to newly-released figures, industry growth has hit an encouraging 17 month high, thanks in part to the house building sector which has expanded at its fastest rate in over decade.

And yet, for many last month was memorable for all the wrong reasons. Grenfell Tower, one of the worst incidents of its kind in UK history, has laid bare lax attitudes to social housing and shortcomings in the current building regulations.

It is to be the subject of an in-depth inquiry, and Excellence will gauge the industry's reaction over the weeks and months to come.

Appropriately, safety and security is our focus this month, and we've a raft of exclusive interviews and opinion pieces on issues relating to crime prevention and industry best practice.

All this and more can be found inside, along with contributions from guest commentators and breaking news from Great Britain and beyond.

Robert Atherton
Publications Editor



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Building with Numbers: How the construction industry is reducing cost, risk and waste - with maths



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UK Construction growth surges to 17 month high

Industry growth hit a 17 month high in May according to the latest Markit/CIPS UK Construction PMI figures. Output rose to 56.0 - a substantial improvement on April's figure of 53.1. But while the increase remained well above the growth threshold of 50.0, it was still some way off the post-financial peak of 64.6 - last seen at the start of 2014.

May's performance was largely driven by the house building sector, where the upturn was the most pronounced since late 2015. And there was encouraging news elsewhere, with those surveyed reporting a strong pipeline of new development projects and robust underlying demand conditions. The civil engineering and commercial building sub-sectors also performed strongly throughout May. Some respondents noted that economic uncertainty continued to negatively impact client spending but those doubts failed to dampen a considerable rise in employment within the construction industry, with staffing levels increasing at their fastest rate since January.

Cost inflation also seemed to ease in May, as input prices rose at their slowest rate for seven months. Anecdotal evidence revealed that respondents felt the worst of the price rises in construction materials had passed.

Tim Moore, Senior Economist at IHS Markit said: "May's survey data reveals that the UK construction sector has started to recover strongly from its slow start to 2017.

"House building was the key growth driver, with work on residential projects rising at the fastest pace since December 2015. A sustained rebound in residential building provides an encouraging sign that the recent soft patch for property values has not deterred new housing supply. Instead, strong labour market conditions, resilient demand and ultra-low mortgage rates appear to have helped boost work on residential development projects in May.

"The forward-looking elements of the latest survey are reassuring for the construction sector, notably the acceleration in new business growth to its strongest so far this year."



House building expands at fastest rate in over a decade

New research conducted by Glenigan has shown that the planning pipeline for private housing rose at its fastest rate in over a decade during 2016. Judging by the number of detailed planning applications submitted, the private housing pipeline now sits at 135,278 units.

This is the highest figure since 2004, when the number of units reached 164,197. Within four years that pipeline had halved, with detailed applications collapsing by a third in 2007 alone due to the imminent financial crisis.

Glenigan Economics Director, Allan Wilen, said: "With red tape on planning being cut back by the Government, restrictions on social housing provision loosened and government subsidy for both developments and enabling infrastructure available, housebuilders are clearly in an optimistic mood with regards to developing new homes through the planning system."

According to Glenigan, there is the suggestion that housebuilders are increasing the ratio of apartments to housing in their applications, as attempts to develop the private rented sector (PRS) begin to have an impact.

In 2004, 34% of all units in the planning pipeline were apartments. That ratio began to recede over the next decade as housebuilders were left with unsold stock in such urban areas as London, Leeds and Manchester.

Over the next decade, the ratio of flats sank further - falling below 11% in 2015. Last year, the proportion rose to just 12% but the apartment pipeline grew at a far faster rate than either of the other two housing types.

While the number of houses in the pipeline leapt 59% and OAP housing rose 31%, the number of apartments in the planning pipeline ballooned by 82%.

Mr Wilen commented: "This is an indication that attempts to develop the private rented sector are working. The bulk of units in PRS are typically going to be apartments rather than houses as this is what will appeal to tenants."





Iconic Battersea Power Station chimneys rebuilt

Battersea Power Station's iconic chimneys have been rebuilt using the very same construction methods as when they first appeared on the London skyline.

A final pour of concrete into the enormous North West chimney put an end to the rebuild, which first began on 14 May 2015. In total, 25,000 wheelbarrow loads of concrete were required, each hand-poured into Battersea's four chimneys, which stand some 51 metres tall.

Rather than using a hose to pour the concrete, a decision was made to replicate original construction techniques. Around 680 tonnes of concrete were hoisted atop the chimneys, transferred into wheelbarrows and hand-poured into the structures themselves.

A 'jump form' shuttering method resulted in the conspicuous rings that now span the new chimneys. This method involved the use of steel and

timber, and metal rings stuffed with concrete, moved upwards and filled again.

Overall, this hoist has travelled the equivalent of 21 miles, lifting concrete to workers waiting patiently on the high boards above.

According to Rob Tincknell, CEO of Battersea Power Station Development Company: "Battersea Power Station's chimneys have been the backdrop for films, music videos and album covers and really are world famous. On behalf of our shareholders, I would like to say it has been an honour to restore this iconic symbol to the London skyline so that it can be enjoyed by generations to come."

Councillor Ravi Govindia, Leader of Wandsworth Council, commented: "These giant chimneys are recognised the world over and, as the local planning authority, we have a profound duty of care to make sure the rebuilding process is a success. The site's owners

have understood their significance from day one and have gone to great lengths to restore them to their former glory.

And delivered on their promises." And Emily Gee, London Planning Director at Historic England, added: "Historic England welcomes this final stage of the rebuilding of the chimneys, ensuring that the power station will retain its landmark status along this evolving part of London's skyline."

Of the original chimneys, two were erected during the 1930s, with a second pair built some 20 years later. All four were demolished after being deemed unsafe following years of dilapidation. This rebuild isn't just for show however. Once operational, the new North East and South West chimneys will retain their original use and form part of a state-of-the-art energy centre which will provide heating and cooling to the wider development by releasing water vapour from their flues.



Mayor of London outlines 'Smart City' vision

Mayor of London Sadiq Khan has outlined his plans for London to become the world's leading 'Smart City' - with digital technology and data at the heart of making the capital an even better place to live, work and invest. Speaking at the launch of London Tech Week, Mr Khan said technology was vital to solving many of the biggest economic, social and environmental issues facing the UK. He urged the global tech community to help tackle such issues as air pollution, housing and the future of transport. As part of his plans, the Mayor unveiled a new £1.6M Clean Tech Incubator, Better Futures, which will help 100 London-based small businesses to deliver low-carbon products to tackle the causes and effects of climate change. Better Futures will help kick-start the development of a clean-tech cluster for London, developing a hub for low-

carbon industries in the capital. The Mayor would like to see the capital become a global leader in the use of smart technologies and data to improve public services and urban life. In his speech to London's tech community, Mr Khan also reaffirmed his pledge to appoint London's first Chief Digital Officer (CDO). Recruitment has now begun to find the CDO who will work alongside City Hall, the Mayor's Smart London Board, local authorities and the technology sector to drive the development of smart city technologies and build London's reputation as an exemplar that the world looks to for leadership in urban innovation. The Mayor's Office is also scoping the potential for a new London Office of Technology and Innovation to provide a place where London's boroughs can come together to share best practice, build collaboration and drive solutions to the challenges they face.

Mayor of London Sadiq Khan commented: "As Mayor of this great city - the best city in the world - it fills me with pride to see our tech sector thriving. New technologies are having an enormous impact on our way of life - reshaping our societies, our economies and our culture. "My ambition now is to harness the new technologies that are being pioneered right here to transform London into the world's leading smart city. "The potential for cutting-edge technology to tackle a host of social, economic and environmental challenges is immeasurable. From air pollution and climate change to housing and transport, new technologies and data science will be at the heart of the long-term solutions to urban challenges."

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Women in Construction and Engineering award winner announced



Google propose £1Bn Kings Cross HQ

Google has submitted plans for a hugely ambitious new headquarters at Kings Cross. The £1Bn project, known only as 'Zone A', is to be sited north of the mainline station. Lendlease was appointed principal contractor at the top of the year, and the first tranche of sub-contractors is expected to be announced over the coming months. Design work comes courtesy of Heatherwick Studios and BIG (Bjarke Ingels Group) in partnership with renowned architectural practice BDP. This is a major milestone for the much anticipated project, which stalled in the latter half of 2013 following Google's decision to redesign the scheme. The newly realigned plans were submitted to Camden Council in June of this year. Once complete, Zone A will house

Google's London contingent under one roof. Currently, the tech giant has a hotchpotch of staff dotted around Covent Garden, Victoria and Pancras Square. In total, 80,819sq m of office accommodation will be provided across 11 separate storeys with space enough for 4,000 staff. Sitting atop new retail space, Zone A will feature a rooftop garden with a running and walking track and a 25m swimming pool. Joe Borrett, Google's Head of Real Estate and Construction, said: "We are excited to be able to bring our London Googlers together in one campus, with a new purpose-built building that we've developed from the ground up. "Our offices and facilities play a key part in shaping the Google culture, which is one of the reasons we are known for being among the best places to work in the industry."

Balfour Beatty is celebrating after its Business Analyst, Jwerea Malik, was named Best Woman in Highways at the European Women in Construction and Engineering (WICE) Awards. The ceremony recognises the most exemplary women in industry, highlighting their contributions and encouraging companies to train and employ more women. In addition to attending numerous external speaking and networking events, Jwerea Malik is driving forward the Balfour Beatty Women in Business Allies Affinity Network, helping to create a more inclusive environment for the future pipeline of female employees. An active promoter of health and safety initiatives, Jwerea was also recognised for her work to encourage the use of safe reporting, resulting in a marked increase in safety observations. Jwerea said: "It is a real honour to be recognised at the European Women in Construction and Engineering Awards. Improving diversity in our workforce is key for Balfour Beatty, and we are constantly seeking new ways to ensure our business fully reflects the society we serve. "I understand the importance of providing guidance, mentoring and preparing young females for a career in engineering and construction. It gives me great joy to think that together, we can encourage more women to join the industry." Balfour Beatty has long worked to bridge the gender gap within construction. The group has signed up to the Young Women's Trust to help more women enter into the industry through construction apprenticeships. It has also launched the Women in Business Network to help maintain and develop new talent.



Modern Apprenticeships in Scotland on the increase

A rise in Modern Apprenticeships has ensured Scotland is well placed to reach 30,000 by 2020. Minister for Employability and Training, Jamie Hepburn, welcomed the announcement, saying: "These statistics show we are exceeding our Modern Apprenticeship targets, with employers clearly recognising the value of the opportunities they bring to increase skills in our workforce and encourage new talent." Skills Development Scotland statistics for Modern Apprenticeships during the fourth quarter of 2016/17 revealed that, over a 12 month period, the number of Modern Apprenticeship starts exceeded the 2016/2017 target of 26,000.

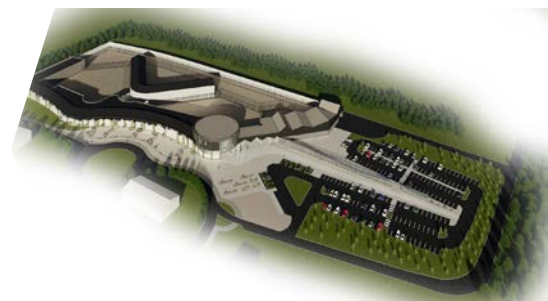
In total, 76% (19,847) of all new starters were aged between 16 and 24. The largest proportion of these (23%) entered into the construction industry. "As we work towards our 2020 target of expanding the number of Modern Apprenticeship starts to 30,000 each year, we are growing, widening and enhancing the apprenticeship programme to respond to employers' needs," continued Mr Hepburn. "This work is paying off as we are among the countries with the lowest youth unemployment rates in the EU. We are continuing to enhance our Modern Apprenticeships so they bring the right balance of opportunities to suit employers and

the workforce. "In 2017 we are expanding the number of Graduate Level and Foundation Apprenticeships, giving more individuals the chance to take on work-based learning through universities and schools. "We have introduced a new Rural Supplement to help support training provision in more remote areas; we are removing public sector restrictions around Modern Apprenticeship funding, increasing the opportunities for apprentices over 25; and we are enhancing contribution rates for disabled people and those under the age of 29 with experience of care."

First Highland prison for more than a century proposed

Commercial property specialist Colliers International has lodged a Planning Permission in Principle (PPP) application that will see the first new prison built in the Scottish Highlands for more than a century. HMP Highland will replace the 112-year-old HMP Inverness, located in the city centre proper, with a brand new 21st century, fit-for-purpose prison facility. Acting on behalf of the Scottish Prison Service, Colliers International lodged the PPP on land situated to the south of Inverness Retail and Business Park. Given that the proposal represents a technical departure from the previous development plan, Colliers' work has required significant pre-application discussions with the Highland Council, in addition to statutory pre-application public consultation.

Meabhann Crowe, Senior Planner at Colliers International, explains: "Identifying a suitable site for a new prison facility is a rare task. Finding a suitable location was not as straightforward as with many other buildings. However, the Highlands, Islands and Moray areas need a modern, fit-for-purpose prison facility and we have found an excellent location for the impressive designs, which the Scottish Prison Service has commissioned. "The new HMP Highland is proposed on a site which we believe to be wholly suitable to this development. It benefits from good accessibility and existing landscaping on the site will assist in creating a setting for the building. The response to the public consultation we carried out was overwhelmingly positive, with 100% of respondents in support of



the Prison Service's aim to create a modern, fit-for-purpose facility." Colliers International has worked in close collaboration with the Scottish Prison Service and specialist consultants - including BakerHicks, ITP Energised, Fairhurst Engineers, TGP Landscape Architects, AOC Archaeology and ERM Consulting - to bring the planning application to life.

MSc/PgDip/PgCert

Construction Management

An effective construction manager understands how to successfully organise and plan complex construction projects, diagnose corporate problems, and manage project teams, procurement, finance and risk. Many graduates use this course to gain the skills and knowledge required to advance their careers and undertake senior management positions.

Course Content .

The development of this course has been led by industry to ensure that it covers current industry trends and emerging future skills areas in construction management. Emphasis is on developing practical skills and tools for a rewarding career in construction. Additionally this course provides hands-on training in the use of state-of-the-art software tools and techniques.

This course will teach you how to successfully organise and plan complex construction projects and you will gain an understanding of international markets. You will also learn how to diagnose corporate problems and manage a multitude of areas including people, finance and risk. Additionally, you will be taught to recognise the significance of processes, technology and people to the success of projects in the construction industry.

This full Masters degree is accredited by the Royal Institution of Chartered Surveyors (RICS), the Chartered Institute of Building (CIOB) and the Association for Project Management (APM); educating you to the highest industry standards.

Delivery:

This course is delivered full-time or part-time on campus, or via distance learning.

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September, January

Duration:

September intake:

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PgCert: Four months full-time; eight months distance learning/part-time

January intake:

MSc: One year and four months full-time; two years and eight months distance learning/part-time

PgDip: One year full-time; two years distance learning/part-time

PgCert: Four months full-time; one year distance learning/part-time

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Applicants of this course must have a minimum of a second class honours degree. We welcome applications from students who may not have formal/traditional entry criteria but who have relevant experience or the ability to pursue the course successfully.

International applicants will be required to show a proficiency in English. An IELTS score of 6.0 (with no element below 5.5) is proof of this.

Modules may include:

- Supply Chain Management
- Finance and Risk Management
- Performance and Integration Management
- Project and Production Management
- Dissertation

For further information about this course please visit:

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FMB urges new Housing Minister to take action

The Federation of Master Builders (FMB) has issued its response to the appointment of the new Housing and Planning Minister, Alok Sharma - petitioning him to implement the proposals outlined in the Government's recent Housing White Paper. The newly-appointed Housing Minister replaces former MP Gavin Barwell - who lost his seat in June's General Election. Born in India, Mr Sharma has represented the Reading West constituency since 2010. The Housing White Paper was unveiled by Central Government last February, and proposed a raft of innovative new measures intended to tackle the housing crisis.

Brian Berry, Chief Executive of the FMB, welcomed Mr Sharma's appointment but warned of the magnitude of the task facing him. "He assumes the role at a critical juncture for the delivery of the Government's ambitious target to build 1.5 million homes between 2015 and 2022," said Mr Berry. "Vital to this will be ensuring that the recommendations within the 2017 Housing White Paper - the aim to diversify the supply of new homes and revitalise the SME house building sector - are delivered in full. "The previous Housing Minister, Gavin Barwell, deserves credit for his work in pushing forward a wide range of reforms, including those designed to

tackle some of the barriers to growth faced by smaller scale builders, and we hope that Sharma can build on this legacy. "That the Conservative Party's manifesto opened up the possibility of local authorities taking a more active role in house building suggests that the Government is still open to new and radical approaches to solving the housing crisis. It would be a shame if such radicalism was now dropped in light of a hung parliament. We look forward to working closely with the new minister, whose experience in the Treasury should hold him in excellent stead for the challenges ahead."

Health sector construction output on the mend according to new research

A new study, conducted by AMA Research, has revealed that health sector construction output rose 7% in 2016, finishing on £3.1Bn overall. This revival came on the back of a 6% increase the year previous. Prior to this period of growth, the sector had flagged following four years of declining output between 2011 and 2014. In its study, entitled 'Healthcare Construction Market Report - UK 2017-2021 Analysis', AMA Research anticipates steady, if moderate, medium-term growth in healthcare construction output, with annual rates of 3-5% currently forecast for 2021 as work on smaller hospital schemes is bolstered by privately-funded projects under Private Finance 2. This tempered forecast of 3-5% growth per annum is based on the steady level of health sector new orders experienced over the past two to three years, and

a renewed focus on the delivery of local services and chronic disease prevention initiatives. Health RMI (repair, maintenance and improvement) into the medium-term is also expected to remain positive but moderate and there are likely to be significant regional differences, especially where demand

for key services is high. The focus on partnerships to drive increased efficiency and productivity, whilst lowering construction and maintenance costs, is likely to continue. Keith Taylor, Director of AMA Research, commented: "The key construction opportunities in the healthcare sector are likely to be in the primary care sector and this may entail further opportunities for the development of hub facilities and integrated GP premises. In the acute and secondary sector, much of the medium-term is expected to lie in refurbishment and extensions. Contractors will also be interested to see how new procurement routes and private finance initiatives, including ProCure22, will be used to procure work in the health sector in 2017/18 and beyond, with the expiration of the Express LIFT framework and future options for health public-private partnerships being explored."





Hundreds of homes evacuated over fire safety

Over 700 flats in tower blocks on an estate in the Swiss Cottage district of North West London have been evacuated due to fire safety concerns, with Camden Council stressing the need for "urgent fire safety works". Residents of the estate attended a public meeting with council officials, including local Labour leader Georgia Gould. According to Ms Gould, the fire service "told us they could not guarantee our residents' safety in those blocks".

Crucially, the estate's cladding is of similar composition to Grenfell Tower in West London, where a blaze is feared to have killed more than 79 residents. The estate in question, Chalcots, was refurbished between 2006 and 2009 by Rydon - the same firm that oversaw a £10M improvement programme at Grenfell Tower in 2015/16. Camden Council now plan to remove the external thermal cladding from five tower blocks on the Chalcots estate. Concerns have also been raised about the insulation of gas pipes going into flats and the provision of fire doors.

Initially, the council only announced the evacuation of one tower block, Taplow, but later extended the move to all five tower blocks checked. One of the five tower blocks - Blashford, which is smaller and has "several different design elements" - was declared safe, allowing residents to return.

The council has since secured hotel rooms and emergency accommodation at Swiss Cottage leisure centre and the Camden Centre in King's Cross.

"We're encouraging all residents to stay with friends and family if they can, otherwise we'll provide accommodation," the council has said. "I know it's difficult, but Grenfell changes everything. I just don't believe we can take any risk with our residents' safety and I have to put them first," said Ms Gould.

The work is expected to take up to three or four weeks. Residents will be allowed into the buildings with an escort from the fire brigade to collect their belongings.

Communities Secretary Sajid Javid

said that other areas - Plymouth and Manchester, for example - had seen measures introduced such as 24 hour fire wardens and did not need evacuating.

He said: "What is very different here is that the local fire service found multiple other failures in fire safety that should have already been in place in the towers. As a result of that, they've made this quite correct decision."

Mr Javid also said that the Government would "work with" any local authority or housing association in need of financial support to carry out the necessary fire safety works in their tower blocks.

"Public safety is absolutely paramount. You cannot put a price on people's lives. So local authorities have to do whatever it takes to get their buildings safe."

A national operation to identify buildings with cladding similar to that used on Grenfell Tower has seen local authorities send samples for independent testing.



CHALLENGING THE REFEREE

I confess to having a dislike for any sports person who challenges the decision of a referee. Being an umpire, referee or an adjudicator is not an easy task. The reality is that one of the parties to the game is not going to agree with your decision, will conclude that you are an idiot and you will go from hero to zero in a pretty short time. As the song goes... that's life.

We all know that the courts have made clear that there will only be very limited circumstances in which the courts will refuse to enforce an adjudicator's decision but it appears that parties are not keen to heed the message. The decision of the Technology and Construction Court (TCC) in *Hutton Construction Ltd -v- Wilson Properties (London)*

Ltd [2017] EWHC 517 (TCC) once again sets out to try and reinforce the position. This is what happened.

Wilson engaged Hutton to convert a property known as Danbury Palace, Chelmsford, subject to the terms of a JCT Standard Building Contract Without Quantities. During the course of the works an argument arose between the parties concerning whether or not a valid Interim Certificate or Pay Less Notice had been issued in accordance with the terms of the contract. The adjudicator decided that Wilson had failed to issue either a valid Payment or Pay Less Notice and Hutton should be paid just over £490,000.

Wilson didn't agree with the adjudicator's decision, refused

to pay and sought to challenge the decision. It did this at the enforcement hearing, by way of a Part 8 claim for summary judgment, claiming that the adjudicator's decision was wrong and should not be enforced. The Part 8 claim fell to be decided by Mr Justice Coulson in the TCC.

It appears that Mr Justice Coulson was not impressed with Wilson's Part 8 claim, rejecting all arguments and restating the basic principle that, provided the adjudicator's decision has answered the questions put to him broadly within the rules of natural justice, then that decision should be enforced, even if the adjudicator has made an error.

Mr Justice Coulson went on to identify two narrow exceptions



We all know that the courts have made clear that there will only be very limited circumstances in which the courts will refuse to enforce an adjudicator's decision but it appears that parties are not keen to heed the message.



to that principle. These are (1) where an error is admitted and accepted by everyone with no arbitration clause in the contract, so that the court has jurisdiction to deal with the issue or (2) where there is a dispute as to the proper timing, categorisation or description of the relevant payment application, notice or Pay Less Notice.

In rejecting Wilson's Part 8 claim, Mr Justice Coulson commented that its challenge should have been the subject of a prompt Part 8 claim, not one that was very late, incomplete and failed to seek any specific declarations. He went on to explain that Wilson was effectively seeking to re-run arguments that had already been aired in the adjudication and to introduce additional factual matters, both of which would have been inappropriate to consider at an enforcement hearing. Finally, Mr Justice Coulson commented that the adjudicator's decision was a lengthy 73 paragraph decision, based on a detailed consideration of the arguments and evidence. If the court was

to reconsider that decision during an enforcement hearing it would relegate adjudication to the first of a two-stage process, which was unacceptable.

Summary

This decision of the TCC reinforces the principle that an adjudicator's decision can only be challenged in exceptional and narrow circumstances. It also makes clear that if a losing party wishes to bring a Part 8 claim to try and resist enforcement, it must do so at the earliest opportunity. Only short, self-contained issues that have arisen in the adjudication will be considered.

A Part 8 claim should clearly set out the issue(s) and declaration(s) it seeks at the earliest opportunity. In order to be considered, the issue(s) must be short, self-contained, have arisen in the adjudication and not require further oral evidence or any other elaboration beyond that capable of being provided during the enforcement hearing. Finally, the issue(s)

must be such that it would be unconscionable for a court to ignore on such an application.

The TCC has again sent a very clear message that it will not allow disgruntled parties to defeat an adjudication at enforcement except in very limited circumstances. The question is, are parties listening?

Peter Vinden is a practising Arbitrator, Adjudicator, Mediator and Expert. He is Managing Director of The Vinden Partnership and can be contacted by email at pvinden@vinden.co.uk. For similar articles please visit www.vinden.co.uk.





FEATURE

Rising to the Challenges of Urban Construction

Metsa Wood explores the possibilities of using timber to help solve the housing crisis in our cities.

Urbanisation is one of the most significant issues facing humanity today. By 2050, two thirds of the world's population will live in cities. Consequently, urban growth is fast outpacing the ability to build affordable and sustainable living space. Cities all over the world are in dire need of new ways to house a rapidly growing urban population. Nowhere is this more evident than in the UK and in our capital city, where space is at a premium and housing the ever-growing population continues to pose a huge challenge. London is at the heart of the housing crisis, with experts forecasting that the city will require 60,000 new homes a year (around double the current rate) to meet new projections. Innovation in building methods and materials is required for house building in urban areas to hit these targets, while ensuring fast and sustainable construction. One obvious, yet often overlooked solution, is to start building up and stop tearing down. Utilising new modern timber materials enables several stories to be constructed on top of existing structures. A building extension constructed with a timber frame can be a fast, sustainable and inexpensive

solution.

At a recent roundtable event hosted by Metsa Wood in London, industry professionals - including architects, designers, planners, and academics - discussed the merits of modern timber and how it could be better utilized in urban architecture.

Speaking at the event, Rory Bergin of HTA Design said: "We find there is still a lot of anxiety and lack of knowledge, particularly on cost. The way to further innovation is to push at the sweet spots where the benefits are indisputable to the client."

These comments were echoed by Nick Milestone of B & K Structures: "The people we need to convince are quantity surveyors. I'm starting to see that firms are now measuring the costs of engineered timber against traditional construction. They are saying to developers they can now build it quicker, lighter and cheaper. It is now a competitive solution. Reinforced concrete frames are becoming very expensive."

Linda Thiel of Sweden's White Arkitekter discussed how timber is being used in her country for commercial and public buildings as well as houses, where it wouldn't necessarily have been considered before. She said: "Too often engineered timber is being used simply

to replace concrete. Once designers see it as a different material, design will flourish and create a new architecture." This is particularly true in urban areas, such as London, where space is at a premium and planners are looking to build on existing structures to maximise every last square foot of space. Research shows that approximately a quarter of existing buildings are strong enough to carry additional floors made of wood. Moreover, it is the only material light enough to build quickly on to existing structures. This makes wood a highly promising building material for providing living space for billions of people, while also preserving the architectural heritage of our cities. One of the other main considerations for timber in urban construction is energy efficiency, not only during the construction process but also the lifetime of the building. This is extremely important in London as it currently has a target of a 60% reduction in carbon emissions by 2025. With homes and workplaces currently accounting for 78% of CO₂ emissions in London and with 80% of the existing housing stock likely to still be in place by 2025, it is essential to improve the energy performance of new builds in order to cut costs and carbon. In the UK, building a million new homes



“Research shows that approximately a quarter of existing buildings are strong enough to carry additional floors made of wood.”

by 2020 in order to meet the demand of the UK housing crisis requires innovative thinking and the need to explore new possibilities, such a hybrid construction using a range of materials including steel, concrete, brick and timber. Through its Plan B project, Metsa Wood has been challenging the perception of architects, engineers and builders as to what is possible with timber construction. As part of the project, which explores the various possibilities of building with wood, Metsa offers detailed examples of how to build recognisable but modern versions of well-known architectural buildings, such as the Empire State Building, using wood as the main material. The models have been exhibited at trade shows across the globe and have helped to raise awareness and spark debate around modern timber construction. Metsa Wood also recently ran a competition, inviting architects to design timber structure extensions to existing urban buildings using Kerto LVL as the main material. Entries were submitted from 69 cities worldwide, including Sidney, Shanghai, New York, Berlin, Paris and London. One of the 16 entrants based in the City of London was the impressive Chrisp Street Market project by Kalpana Gurung and Robert Buss from Studio Hoopla.

Chrisp Street Market is a 3.6 hectare site near Canary Wharf, built in the 1950s as part of the Festival of Britain, having been active as a street market since Victorian times. There are currently plans to build 750 new homes while upgrading the existing retail units. According to Gurung and Buss, the proposal will “destroy most of the site and, with it, businesses, homes and community”. They continued: “London has a housing crisis but tackling this should not come at the expense of quality of life and the destruction of diverse and functioning communities. Our proposal seeks a sustainable future: environmentally and socially, for everyone, by building on the existing structure and community. “The Metsa Wood Plan B competition provided an opportunity to address the socially and environmentally unsustainable trajectory of housing development in London. “Chrisp Street Market shares the qualities of many large redevelopments around London: wholesale destruction of existing buildings, private developers with a stranglehold on profit and the ‘cleansing’ of the city. “We should address the much more difficult but responsible challenge of augmenting the new with the old - both physical and social.

“Laminated Veneer Lumber (LVL) is the ideal material to achieve this; lightweight, prefabricated modules can be craned into place with minimal disruption to the everyday life of the market. “Existing residential blocks are extended upwards, using Kerto-Q and Kerto-S LVL modules while new blocks sitting on the podium itself use the same system. The timber is protected from the elements but visible through an aluminium-glazed screen and is exposed throughout residential interiors, providing a highly insulated and high quality finish. “This system could be adapted and replicated across London and other cities, as a way to address the tide of wholesale gentrification - a more human, slower paced and responsible method of regeneration and change, while adding significant density to the areas people want to live.” The Chrisp Street Market project is just one example of how innovative design is challenging the perception of what is possible in urban construction. It is now becoming more widely acknowledged that timber products have a major role to play in building cities of the future using fast, light and green materials.



Mediation and Privilege

Mediation is simply a negotiation assisted by a neutral person (a mediator). Communications in the context of a mediation are the subject of 'without prejudice' privilege. This means that they may not be quoted or cited in subsequent proceedings - for example, in an adjudication or court case - if the mediation does not result successfully in a negotiated settlement. The rule is designed to encourage parties to express themselves freely and without inhibition during the negotiation, knowing that what they say cannot be used against them later. Walker LJ in the Court of Appeal identified a number of discrete exceptions to the without prejudice rule in *Unilever v The Proctor & Gamble Co* (2000). One was that a party may be allowed to give evidence of what the other said or wrote in without prejudice negotiations if the exclusion of the evidence would act as a cloak for perjury, blackmail or other unambiguous impropriety. The Court of Appeal had warned in *Forster v Friedland* (1993) that this exception

should be applied only in the clearest cases of abuse of a privileged occasion.

The Court of Appeal recently revisited the "unambiguous impropriety" exception in *Ferster v Ferster* (2016). An email recorded that one party withdrew an earlier offer to sell shares in a limited company and made a further offer to sell the shares at a higher price, accompanied by threats as to what would happen if the offer were not accepted. This involved alleged wrongdoing by the recipient of the offer that would lead to charges of perjury, perverting the course of justice and contempt of court proceedings, including a committal to prison. The alleged wrongdoing was withholding information about assets when complying or purporting to comply with a court order requiring disclosure of assets.

The question arose whether this email could be referred to in proceedings concerned with whether the affairs of the company were being conducted in a manner which was unfairly

prejudicial to the interests of the members or some of them - a matter regulated by section 994 of the Companies Act 2006. The recipient of the revised offer and the threats, and a member of the company wanted to refer to the email in this context.

There was no ambiguity in the purpose of the threat: it was to pressure the other party to pay more for the shares, not because of any increased value of the shares but because it was thought the threat of committal proceedings would induce the other party to pay more for the shares.

The Court of Appeal found it unnecessary to decide whether the threats fell within the formal definition of blackmail and decided on the basis that this was a case where the "unambiguous impropriety" exception applied. Therefore, reference could be made to the email.

By Peter Sheridan, Partner, Sheridan Gold LLP

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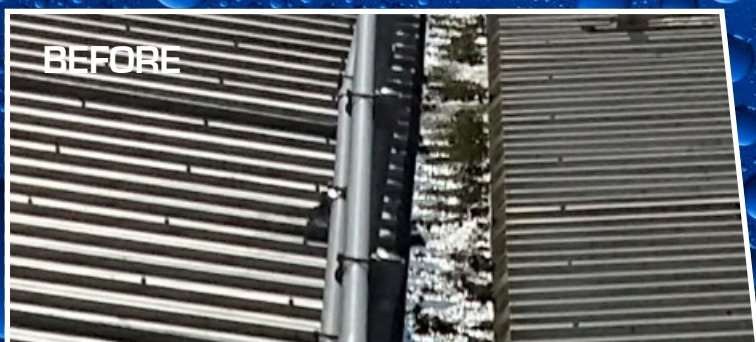


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CONSTRUCTION SAFETY - IT'S AS PLAIN AS THIS: 'IF YOU SPEND TIME, YOU PREVENT THE CRIME'

So says Lesley McLeod, Chief Executive Officer of the Association for Project Safety.

It's always been the case that 'white van man' is a bit of a red rag to a bull with parts of the red top press. The fall guy symbolic for many of the ills of the modern, urban world and synonymous with a bit of a Jack the Lad disregard for rules and regulations. Tragically, since the recent horrendous terror attack on London Bridge even the white van itself is seen as part of the criminal conspiracy and a weapon to be used against the innocent and law-abiding.

And it's not just vans. It wasn't so long ago that there was a spate of ram-raiding robberies involving small diggers, dumper trucks and fork-lifts. There was always a bit of a situation comedy element to the idea that thieves would demolish a building in a shopping centre or high street so they could make off with the cash machine in the wall. I remember from when I worked at the Home Office that there

was a whole series of robberies like these in the North East of England. And it was only a couple of months ago that the idea saw a revival in Northern Ireland.

There's a joke about a workman who, at his leaving do, is asked how he had managed to get away with robbing his employer blind for years and years without getting caught. The story goes that he'd been searched on his way home each and every night but the powers that be couldn't find what he was sneaking out in his wheelbarrow. "Simple," came his reply, "it wasn't the contents I was swiping. I was stealing the barrows."

OK! It's a corny old joke. And, in no way am I suggesting that small builders or delivery men are in any way complicit with criminals and murderers, but it illustrates a serious point - good security is a vital part of running a well-managed building site.

The stand-up stereotypes - and the actual use of vehicles, commonly seen on building sites around the country - made me think how the construction industry ought to ensure that everyday materials and equipment cannot be repurposed to criminal ends.

Most of it is common sense. Make sure the big-ticket items are properly locked up and keys are not left in the ignition or in an open key-box with nice, neat little labels making it easy for crooks to match the keys to the kit. Don't get lazy just because there are plenty of people about - it's amazing what you can get away with if you have the brass neck to do it in full view. Then, when the working day is done, make sure everything is properly put away and locked up. That perimeters are secure and there are adequate alarms or lights or other security measures.

Keep the site tidy as a tidy site means it is far simpler to keep track of the



Security cannot be secondary. Trying to retro-fit it, like safety, is doomed to failure as it leaves gaping holes and room for error.

equipment and materials. Have adequate and regular stock controls and checks. Ensure the site is secure with the fencing or hoardings intact and that gates are not left wide open to the winds so anyone can just walk in. It will always be easier on smaller sites to know who should, and should not, be there. But on all projects, large and small, it is not just a vital part of security - its good health and safety practice too so everyone can be accounted for if needs be. There is more than just advertising your brand when people wear jackets and hard hats with the company logo. But a worker in a branded high-vis vest shouldn't be grounds for complacency, particularly if he was able to pick the jacket off the peg and walk around unchallenged. So, control who comes and goes: know your staff, demand ID, and challenge strangers. It pays to check people on and off

site, not least as it is a simple means of reducing theft - another key reason for emphasising good site security. Materials and machinery cost money. While ladders, vehicles and machinery can all be used in the commission of any number of crimes - there are serious financial implications too. The building trade can often operate on small margins and delicately balanced cash flows so it makes sense to ensure money is not wasted on materials that walk offsite or machinery, taken without the owner's consent, never to be seen again. And it helps with the insurance too as it's then possible to demonstrate to a broker or loss adjuster that everything that could be done was done to reduce the risks of loss or theft. Good security and good management run hand-in-hand. And, just as with the sensible and proportionate regard for health and safety risk management

championed by the members of the Association for Project Safety, a bit of forward thinking can work wonders. Dedicated security staff with well-developed plans can contribute to cutting costs as well as reducing crime. Good security can also improve site safety as a secure site is much more likely to be tidier and so have fewer hazards for workers and visitors. Security cannot be secondary. Trying to retro-fit it, like safety, is doomed to failure as it leaves gaping holes and room for error. We can all be wise after the event but it pays to try to get ahead of the game. To adapt another well-known saying, if you spend the time - you can prevent the crime.

Lesley McLeod is of The Association for Project Safety. Further details can be found at www.aps.org.uk



Is video surveillance technology fit for purpose for the modern construction site?

With theft, vandalism, and even terrorism a serious problem on construction sites today, the need for technology to help prevent these crimes has never been more important. Construction surveillance using video cameras is not new, but the way the technology is developing is making it more relevant, more reliable and more valuable than ever.

Old technology, based on CCTV analogue systems, is still used on some construction sites today, but this is now recognised as out-dated and unfit for purpose in the modern digital era. To tackle the unique challenges of the industry, video surveillance is evolving quickly to provide more sophisticated, feature-rich IP-based systems, offering greater functionality, reliability and analysis.

But what is the role of this technology today and how can the construction sector maximise its potential?

Theft is still one of the biggest challenges in the UK construction industry, ranging from plant and equipment to tools and clothing. Plant and equipment on construction sites is highly prized and valuable to thieves who have become more sophisticated in the way they commit crimes, such as posing as plant manufacturer maintenance workers who can confidently walk on-site and remove equipment in broad daylight.

A report by insurer Allianz Cornhill reveals that over £70M of construction plant, from excavators and compressors to cranes, has been stolen from construction sites in the last year. This is despite efforts from the Government to encourage plant manufacturers and

construction sites to improve their security systems. The insurer estimates that the industry is losing more than £800M a year when you take into account hire of replacement equipment, increased insurance premiums and, of course, the potential loss of business. The issue of unauthorised personnel on-site is a major challenge and presents the risk of theft or vandalism, as well as compromising site safety. The UK construction industry has done much in recent years to improve site safety, but it still remains a serious challenge in a sector that saw 35 workers fatally injured and 1.7 million working days lost through work-related ill health or workplace injury in 2014/15, according to the Health & Safety Executive.

The fact remains that construction is statistically the most dangerous



The fact remains that construction is statistically the most dangerous workplace in the UK, but developments in technology are starting to play a major role in improving health and safety standards for workers.



workplace in the UK, but developments in technology are starting to play a major role in improving health and safety standards for workers. Health and safety clothing, like headgear and eyewear, are commonplace on sites, but we are now starting to see examples of smart clothing appear, fitted with sensors to monitor heat, hydration and even toxicity levels, for example, in hazardous environments. Wireless communications, and other mobile technologies are wide ranging for lone worker situations and we are now seeing drones deployed to help eliminate hazards and dangers on-site, and also for site security and monitoring. Video surveillance technology will also play a more important role in health and safety and security scenarios on construction sites, as it continues to evolve. And not just for historical purposes, i.e. reviewing video recordings to check situations like a theft overnight or an accident. Video is becoming much smarter, incorporating new machine learning and

artificial intelligence (AI) models, which allows the technology to effectively 'learn' as it monitors situations in real-time. Rather than humans spending hours monitoring videos, which is costly, time-consuming and hugely inefficient, they can train the systems' algorithms to learn what is required for a particular site's requirements and achieve greater levels of accuracy at a fraction of the cost. This could be for site safety purposes, for example, where the system can help monitor and pick out those workers not wearing the correct hi-visibility clothing on-site, or not using equipment or tools in the safest way? It could help identify a worker operating at height, but unsupervised, or working alone and unseen on a busy, noisy construction site. I talked earlier about theft of plant and equipment and vandalism as a major issue on sites, costing the sector millions every year. Using AI and deep learning technology, video surveillance can

help detect unauthorised personnel or vehicles on-site and vehicles being driven too fast, as well as suspicious behaviour outside of a site entrance, helping alert site managers (in real-time) to potential criminal behaviour like theft or even fly tipping, before it happens. Sadly out-dated and often forgotten CCTV and video surveillance technology is no longer fit-for-purpose in today's modern construction sites that aspire to high levels of site safety and security, but often fall foul due to rising levels of crime and vandalism - and sadly, increasing threats of terrorism. We are seeing a UK construction sector under constant pressure to be more responsible for safety and security, but with developments in new advanced technologies like machine learning, artificial intelligence and analytics, we are set to see a new era in the industry driven by digital technology.


By Anthony Fulgoni, Chief Revenue Officer at Calipsa



Good Posture is Cost Effective

by Anthony Hill, Managing Director, Aalborg DK



A photograph of a library or study area. In the foreground, three students are seated at a table, looking down at books or papers. The background shows rows of bookshelves filled with books. A white speech bubble is overlaid on the image, containing text.

“ Students frequently miss lectures when seating is uncomfortable. They also need comfortable accommodation with good and versatile seating. ”

Have YOU heard such comments?

Are they representative views, and if so what should be done to raise attendance and study?

Does the furniture you provide fit all sizes of both male and female students? For example: 1.5m – 2.1m tall, and both thin and of varying width and weight.

The UK is apparently surprised that many UK students prefer Dutch and other EU universities, which cost less and are more innovative. Scandinavian universities such as Aarhus and Copenhagen have both understood and spent hugely on good and comfortable equipment to assist concentration and enjoyment.

Students ENJOY the company of like minded colleagues to learn and enjoy. Many look for a companion to share love, life and enjoyment. The better the environment and the background pleasures it brings, the more likely that university is to be recommended.

Active students from Loughborough University pound past my door each day. Young, sweaty, energetic and wanting to be a Paula Radcliffe or a male equivalent. Some overdo it and spend time at Loughborough Clinics after injury. Some spend time in the same clinic after too much time not studying and trying to cram three years into three months at a badly designed desk.

Many of us have become used to poor seating, much related to school desks and chairs. Children as young as five years old are now complaining of back ache. Slouching on soggy chairs at home using laptops or

watching TV and too little exercise doesn't help. Badly designed school desks and chairs make matters worse and only recently have school and college bursars begun to understand that well made postural furniture reduces discomfort and shuffling, aiding students achieve better grades. It's now medically accepted that students should both stand and sit. Ergonomically correct furniture must relate to both the person and the task.

Many have not a notion of how good furniture should work to suit the wide range of shapes and sizes we cover. If a college lecture lasts an hour or more it's essential that pain doesn't prevent learning. We all need inspiring with good habits and it's a disgrace that over 40% of later workplace absenteeism is the consequence of back pain. No matter how expensive the adjustable chair, if the desk height is the bog standard 720mm then discomfort is guaranteed! Sit/stand desks have been the norm in Scandinavia for over thirty years. Here some are even claiming it's a new idea!

Alongside is some idea of how we should be sitting, much higher than at present, with electric lift desks and the ability to also stand. Architects mostly use high stools. Churchill did much of his writing at a high desk. My company produces a large range of desks and chairs, available in many shapes and finishes, together with saddle stools which allow high seated comfort, especially useful for IT work in a busy environment.

Sitting should be a pleasure not a pain. Learning ditto!

FOR MORE INFORMATION VISIT: WWW.AALBORGDK.COM



FEATURE

Putting Safety First: An exclusive interview with LGH UK's Colin Naylor

UK Construction Online's Matt Brown speaks with Colin Naylor, Managing Director of LGH (Lifting Gear Hire) UK, about the advantages of hiring lifting gear and the consequences of failing to employ the proper equipment. LGH is the single largest organisation devoted exclusively to the hire and sale of lifting and moving equipment. Last year saw the relaunch of the company's UK operations



As a starting point for our readers, what does lifting equipment consist of?

In a hire context, anything that hangs off a hook. It's an old term but it's true! Traditionally that would be lifting tackle, shackles, slings and the various denominations of them.

Also, lifting machines and handling equipment. Things like chain hoists - whether manual or powered - and lever hoists, traditional products such as Tirfor machines, and the means of suspension for these - slings, clamps and trolleys.

You then have a whole magnitude of products that we loosely class as material handling equipment - pallet trucks, Genie Superlifts and bogie trolleys.

What are the dangers associated with lifting equipment and lifting operation?

By its very nature, lifting equipment is dangerous if used incorrectly. To assist, users must be trained in the safe use of the equipment and draw up lift plans, backed by risk assessments and method statements, to ensure a safe lift. Failing to plan accordingly will result in the wrong equipment being used and the potential for an accident to be high. Generally, in such applications a lift needs to be conducted with certainty. This means knowing the weight of the product, the centre of gravity where appropriate and the distance/height it is being moved.

If you don't know the criteria, it's going to be a difficult and ill-informed lifting operation because there will be a large degree of guesswork involved, promoting the chance of an issue or accident.

How important is it that companies receive guidance when selecting their lifting gear equipment?

It's critical. Many hire companies would look to their clients to provide the certainty. Hire companies will always look to hire competent people who know what they are doing. If you took the example of a car hire company,

they wouldn't hire a car to a person who hadn't passed their driving test. You would expect that they know what they are looking for. However, if a client asks for guidance and is uncomfortable with how to conduct the lift, then absolutely we can help.

Our experience and knowledge of a broad range of applications, coupled with the technical capabilities of the equipment, will ensure the hiring customer receives the correct equipment.

What regulations cover the use of lifting gear on-site?

Principally, the 'Lifting Operations and Lifting Equipment Regulations 1998' (LOLER) and the 'Provision and Use of Work Equipment Regulations' (PUWER).

With the option to hire products, presumably a lot of the costs associated with ownership are reduced?

The hire company should have a wide range of products and variables to meet the specific requirements of the customer. If you're a regular user of lifting equipment, you might choose to buy a product for use on loads up to three tonnes but next week you might undertake a job that requires a ten tonne lift.

Knowing that you can tap into the resources and broad range offering of a hire company means a business doesn't need to invest heavily in something they may only need occasionally. A proficient and/or specialist lifting equipment hire company can provide a much wider range and a more modern fleet. Hiring is invariably a cost effective solution to the user given the easy in, easy out process - if you only need it for two or three days, that's all you should pay for.

Presumably, it is very important that lifting gear equipment and accessories are regularly checked to make sure they conform to the required standards?

Owning lifting equipment is an onerous task in terms of compliance, especially with LOLER.

This requires the provision of an extensive lifting equipment register and the coordination of inspections at 6 or 12 monthly intervals depending on what the equipment is - either a machine or an accessory. Again, by hiring equipment you negate the need to take on these responsibilities.

A recent survey revealed that working at height is still the biggest cause of fatalities in the UK construction industry. Is it frustrating as a provider of safety wear to hear those statistics?

It's frustrating and extremely disappointing. I've been involved in the industry for the best part of 25 years and year in, year out we hear stories of people falling from height.

The market is diverse with fantastic solutions to reduce and in most instances negate that risk. However, we often see chances being taken or corners being cut. We can only assume it's to save on cost but you can't put a price on a life or serious injury.

We've seen recently a company found guilty of manslaughter after the death of two workers while attempting to hoist a sofa over a balcony in London. Do you think there is enough education in industry, particularly among smaller firms, about the dangers involved?

The statistics tell us there is simply not enough awareness around these issues. The Health and Safety Executive has done a wonderful job in bringing about such court cases. However, these events are always after the horse has bolted.

Some of the larger hire companies have historically carried out local and regional safety talks delivered in a client's workplace to demonstrate the latest range of equipment and advise on the correct methods and know-how. But, of course, it's the old adage; you can take a horse to water but can't make it drink.

You can provide all of these awareness events but still read an article the following week about some horrible,



preventable workplace accident. This is certainly an area that LGH would like to explore but our scale is relatively small at the moment - we've been in operation for less than a year and can only do so much.

We have, however, produced the Lifting Gear Hire Technical User Guide. It's around 150 pages in length, providing comprehensive product details and specifications, coupled with at least a dozen or so pages on such issues as equipment use, making the right selection and why one product is more suitable than another.

We try our best to present the information to the audience in an easily understandable format but like the car hire analogy, you can hire to somebody but you can't prevent them from driving erratically or pushing it beyond its limits.

Is it the smaller companies who tend to take the bigger risks when it comes to breaching health and safety?

A look across the media tells us that the big companies are certainly not immune to this issue. We have seen some major players hauled over the

coals and fined heavily for bad practice in recent times.

Unfortunately, it's an industry-wide problem and certainly much bigger than a number of small firms cutting corners.

I've been aware of instances in the past where a small company, working as a sub-contractor on behalf of one of the majors, has carried out an application with correctly skilled employees, the correct equipment, method statement, rigging plans and risk assessments but an individual has chosen to do something out of character or out of sync with the application and has ultimately paid the penalty.

In this instance, all the necessary precautions have been taken and you now have to look at the individual and wonder why they acted in such a way. You hear stories of workers failing to attach their safety harness to anything that could arrest their fall because they felt the height they were operating at posed no significant danger, only to suffer the consequences.

Eradicating human error is a difficult obstacle to overcome.

Is the lifting gear industry one that continues to see innovation in the service and products on offer?

Certain products are of course free of innovation due to the simplicity of their design but the envelope is constantly being pushed in lifting and handling equipment, with higher grade materials utilised to improve performance and/or reduce weight.

For example, many years ago the method of installing a piece of glass in a shop fitting application was a crane or hook hanging from a hoist with the glass held by soft slings. These days we have much more innovative solutions such as remote control mini cranes with robotic elements and equipped with complex swivelling and rotating suction pad lifters. You can pick up glass in the horizontal plane, traverse it 90° and then offer it up precisely to the position where the glass is to be fitted. As companies develop their ranges and more capital is spent, products need to offer something different and we are required to innovate to ultimately make things easier and safer for the user.

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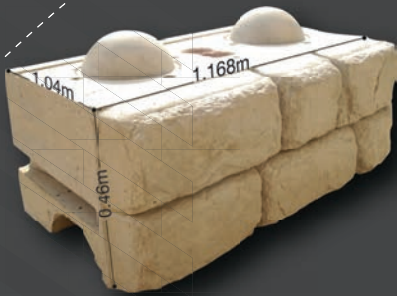
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Safe Communications On-site: An exclusive interview with Smye-Rumsby's Mike Syrett

UK Construction Online's Matt Brown speaks with Mike Syrett, Account Manager at Smye-Rumsby, to discuss the advantages of radio communication on construction sites and the dangers associated with mobile phone use and licence free radios. Smye-Rumsby are specialists in the supply of two-way radios from analogue to digital to every type of business across the UK, Europe and worldwide.

Could you give a brief overview of why good communication is essential for lifting operations on-site?

It is imperative, certainly when it comes to tower cranes, that the banksman has complete communication with all of his cranes because the dangers resulting from not doing so could have severe consequences.

There was an incident recently on a construction site in Southampton, where the use of licence free radios led to communications being compromised by an unauthorized person situated adjacent to the site. This person was also using a licence free radio and managed to talk with one of the crane operators without the banksman's knowledge, resulting in a person nearly ending up with a severed arm. It's vital that the crane driver is using the

correct hands free equipment in the cab to ensure he is in control of the crane at all times, and also that he doesn't receive interference from an outside source.

What are the dangers involved in using mobile phones as opposed to radio communication?

Some construction sites may be situated in areas where there is poor mobile phone signal coverage. A mobile phone may offer a full duplex system but can prove to be a huge distraction, certainly in the case of smart phones. This isn't an issue with radios. Radio communication also provides a vital safety feature in the event of an emergency situation where, at the touch of one button, you can speak to all radio users on-site at the same time. Relying on mobile phones might require

the user to make ten separate calls to achieve the same end result.

What are the advantages of using radio over other forms of communication?

A radio signal is a standalone system; it's either working back-to-back from radio to radio or in some cases, when you need to reach subterranean floors, you can run a repeater, antenna or leaky feed system.

Using radios allows communication from ground level to as many subfloors as required with the right equipment.

This is something that can't be achieved using mobile phones.

We also have what is called a 'man down' function. If a person is incapacitated, the radio would fall into a horizontal position. This indicates that the user has fallen over and would see a



The HSE should make their voices heard and say this isn't just a recommendation, it is a legal requirement - you have to use licenced radios.



bleep warning issued.

However, the warning is only truly useful if you know where the downed person is situated. That sort of technology, as and when it becomes more affordable, will be used more frequently on construction sites. 'Lone worker' is another feature. Tracker beacons can be placed on a building and if a radio user enters an intrinsically unsafe area, you can kill the radio instantly. It may be a gas volatile area, for instance. The radio is null and void until they leave the area, passing the beacons and allowing the radio to be switched back on.

It is also possible to have a control system that allows a supervisor to look at a computer screen and see where all the radio users are. If you were a site manager with six forklift trucks and needed to pick up some bricks, you would be able to see which vehicle was free or closer and dispatch it to collect the pallet. It's about working smarter.

How reliable are modern day digital radios in terms of loss of signal?

It's its own medium - the signal is generated from the handset or a fixed mobile from radio to radio or via a repeater.

I have been working on the Northern Line extension so again it's an underground communication system where it is imperative that people can talk from the ground to the underground to the people boring the tunnel. The guys on this project can use radios with full confidence that communications will be uninterrupted and uncompromised.

Is there a possibility of somebody else using the same frequency on a nearby site giving confusing signals?

There are various Ofcom licences available and also technically assigned licences to prevent these issues.

A technically assigned licence means you own a particular frequency for that geographic area. Anybody found using that frequency within that given area would be doing so illegally and would face the consequences.

That scenario is, however, extremely unlikely to happen.

Can you tell me about foot switches in tower cranes and how they relate to good health and safety practices?

Recently, the design of the Terex crane has changed slightly. The footwell has been replaced by safety bars to the range of vision of the crane driver around his feet.

We have just developed aluminium plates to go over the bars and it acts just like a sewing machine switch, where the crane driver pushes his foot on the pedal to operate the radio.

We run a minute cable from the radio set located above him to a visor microphone, which will pick up the driver's voice without the need for them to speak directly into a microphone. The driver pushes his foot on the button when the sound from the receiving signal comes in via the fixed mobile speaker.

This is actually the preferred set up that the Health and Safety Executive would like to see in operation.

Does the use of radio provide an opportunity to reduce the risk of accidents on-site?

Digital radio communication has a feature called background noise cancellation. In a noisy environment, a worker would be wearing ear defenders but they can be equipped with an earpiece running through the ear protection. It even comes with a small PTT (Push to Talk) microphone that can be clipped onto their clothing.

The background noise cancellation means that the instructions can be relayed clearly without being drowned out by noise from the site.

This can prevent any miscommunications and distractions that could potentially lead to a serious accident.

Can you tell me about group calling?

If you need to relay an urgent message across a construction site, a simple touch of a button means you can speak to everyone issued with a radio.

With certain radios that I am trying to

introduce to construction sites, each has an ID so there is also a facility to private call somebody on-site. For example, if the gateman receives a visitor and needs to speak only with the site agent, he can scroll down the names list and converse with him without everyone else being privy to it.

Do you anticipate any technical advancements for radio in the near future?

Radio technology is changing almost at a daily rate at the moment. On the horizon, there are radios that would use the 4G network, giving less need for repeaters by using the mobile phone network.

These are fully duplex radios that would allow two-way conversations just like you would on a mobile phone. On a radio, you push a button to talk and the other person receives. This technology will actually allow people to speak at the same time.

Could the Government do more to raise awareness in the construction industry of the advantages of using radio communication?

I have just had a conversation with a client telling him he should not use licence free radios on a construction site. There is no law to say you can't but the consequences in doing so could be catastrophic.

Anybody can go to their local retailers, purchase a radio, use them and interfere with critical communication on-site.

Highlighting what equipment to use is important but that doesn't necessarily need to come from the Government. The HSE should make their voices heard and say this isn't just a recommendation, it is a legal requirement - you have to use licenced radios.

Unfortunately, there are some people out there who would take pleasure in passing false communication to a crane driver and observing the consequences. Sadly, it feels to me like the HSE are dragging their feet on this issue and until it is addressed, the risks will remain in play.



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IS TECHNOLOGY THE ANSWER TO THE CONSTRUCTION SKILLS GAP?

THE “perfect storm” of problems contributing to the construction industry’s skills gap has a solution; one which could also be interpreted as one of the culprits: technology.

On the one side, new digital-led processes means more time and money spent training the existing workforce. On the flip side, they also offer greater career longevity by lessening physical demands - a benefit which will help experienced workers stay with their work for longer.

Technology also brings with it great job diversity, appealing to the next generation who may have not previously been attracted to what they perceive as a physically demanding line of work, and have grown up in a digital age.

With major projects High Speed 2 and Hinkley Point C on the horizon, there’s no time to waste, especially when taking into consideration the amount of skilled workers needed just to fulfil the UK’s home-building quota.

Graham Edgell, Director of Sustainability and Procurement at Morgan Sindall Group, estimates that in order to meet these home-building demands only, we need to create opportunities in the form of apprenticeships and vacancies for 5,000 people a year “just to get things underway.”

Anything which can improve the image of a sector, which faced a huge employment drop in conjunction with the 2008 financial crisis, is to be explored, including highlighting the creative ways in which technology can be incorporated into the construction process, from planning right through to completion.

But the sector has some way to go to recruit and train over 180,000 workers by 2018, to try and regain lost ground caused by the recession which saw the construction industry employ 324,000 fewer workers.

Progress to build interest among those yet to enter the workforce is steady, but it is happening. Teentech is an organisation set up to show children from a young age what opportunities are open to them through STEM subjects (science, technology, engineering and mathematics), while courses such as computer programming are beginning to find their way onto the national curriculum. This line of study is already showing its worth in the world of construction and engineering. The contractor ISG developed its own in-house app to highlight potential issues with projects, offer design alternatives and streamline project management.

At the app’s core is the Unreal game engine and 3DS Max modelling software, giving visuals gaming-like qualities which, in some instances, surpass

that offered by other 3D tools available.

“It may seem like a space-age vision for another century, but with manufacturing and logistics sectors already using robotics and VR maturing in the gaming sector, this approach is accessible now”, says Jack Dearlove, BIM Strategy Manager at ISG and a member of the CN Next Gen Club.

Apps, 3D modelling and gaming programming all help to challenge the “old school” view of construction, which has suffered not just due to its image, but to the uncertainty following the economic problems which first unbalanced the UK almost ten years ago.

Not only do the modern methods of construction help to attract a new generation of skilled workers, but they also broaden the scope of roles available, offering more opportunity to those with different interests, such as IT and technology.

“A lot of young people are genuinely excited about using technology and tools like 3D drawing technologies and even things like drone technology, which more and more contractors are starting to use,” says David Light, BIM Consultant at Autodesk. “There are absolutely massive opportunities out there.”

**By Steve Whetham,
Director of MCM Insurance**



Keeping Your Fleet Secure: Should CCTV come as standard for commercial vehicles?

UK Construction Online's Matt Brown speaks with Jonathon Backhouse, Director and Solicitor at Backhouse Jones, about the advantages of installing CCTV on commercial vehicles.

With a history dating back to 1819, Backhouse Jones Solicitors are specialists in logistics and transport, providing a bespoke service completely tailored for logistics.

How big a problem are false insurance claims for the transport industry?

All false claims are an issue, but the problem is exacerbated by the fact that many claims are highly suspect and may be thought false, yet in order to accuse someone of a false claim you need the highest quality of evidence possible. Sadly, it is the rarest of cases where all the evidence comes together in such strength that you can rely on it to prove the fraud.

What can companies do to minimise their exposure to these claims?

Obtain as much evidence as possible as early as possible and from the most reliable of sources. Cross check it and challenge it to identify its strength before you plead fraud as you need to be certain.

In terms of safety cameras being installed on vehicles, is there an opportunity to improve driver performance in addition to combating fraud?

Of course, any system which identifies driver related issues is good for the safety of the driver as well as others. For example, a driver suffering from

microsleeps due to an undiagnosed condition may be identified due to analysis of the film. Also, driver behaviour towards road users and/or passengers may be identified by such analysis. For example, angry, road rage type responses to other road users might be shown and the driver can be dealt with accordingly.

There is also a chance thieves could be deterred by cameras.

I would suggest it is common sense that a thief might be discouraged if he or she thought they might be on camera. Historical evidence suggests that the likelihood of being caught is a major factor in deterring a criminal, as opposed to the sentence. If a criminal thinks there is a good chance he or she will be identified, and therefore caught, they are surely less likely to commit the crime.

Many of the advantages associated with CCTV seem to come from cameras outside the vehicle but what of inward-facing cameras?

Certainly post-accident analysis of incidents involving injury or even fatality greatly benefit from inward facing camera. You can see why someone might have come off badly whilst others appear unhurt. Also, you can demonstrate that a claimant was not injured who claims to have been.

Could inward-facing cameras also find

use in protecting drivers?

I have dealt with many cases where a camera in the vehicle has helped the driver. Looking at the footage, it can be shown what he was doing in the moments leading up to an incident. It is true that it will also condemn the driver as well, if it is shown that he was doing wrong.

What is the general reaction from drivers to the introduction of such methods?

Drivers are wary of anything that means they are constantly on film. I think this is a natural human response. Would any of us like to be filmed doing our job every day? No one is perfect. However, that having been said, they are aware they are doing a job which could be dangerous to both themselves and others and, as such, most drivers understand it is a safety item which - providing they do their job properly - should help, not hinder.

Does having CCTV systems installed on vehicles reduce insurance premiums?

I couldn't comment on that. However, I think it must be something that the insurance company would take in to account when quoting for the policy. Less claims mean reduced premiums and, as such, if CCTV reduces claims it should ultimately reduce premiums.



New research highlights that driver and vehicle safety needs to top the agenda

We've written in the past about the continuing concerns over driver and vehicle safety in the UK construction sector. Demand for vans and specialist commercial vehicles is on the increase and that could lead to more people on the road and thus more risk for employers to manage.

A number of companies are investing heavily to reduce that risk, but others aren't doing as much as they should – and therefore could end up facing consequences in terms of heavy fines, reputational damage and even, in the worst cases, criminal charges.

To underline just how important this issue is for those businesses, and the potential impact when it isn't taken seriously, we also recently carried out a significant piece of research among them.

The study spoke with fleet and transport managers at 50 UK construction businesses of all sizes, ranging from SMEs to national and international giants.

Highlighting the scale of the issue, half of the businesses we surveyed (50%) say that driver compliance is the single biggest transport safety issue they have to manage.

Yet it also found that, despite the increasing focus in this area, a lot of businesses in the industry could still risk falling foul of health and safety legislation when it comes to their drivers and vehicles. Specifically, more than a quarter (28%) admit that they don't invest in driver training and around one in six (17%) fail to carry out driver risk management and risk assessments.

Among the companies that do carry out driver risk assessments, around two in five (37%) are carried out only once a year. Similarly, of those companies that do invest in driver training, nearly half (44%) only carry out training after an incident has been reported to them, and 28% only do so when they've received a complaint about one or more of their drivers.

The research further revealed that technology is one of the biggest strategies for ensuring driver safety, as eight out of ten (83%) respondents said they plan to invest in vehicle safety technology in 2017. Among those companies, the most popular safety options are reverse warning alarms (being adopted by 59% of respondents), dash-cams (46%) and driver telematics, Bluetooth comms systems and blind spot cameras (all with 39%).

More than half (53%) of the companies investing in safety technology are doing so mainly to reduce accidents, although 15% say they're doing it primarily because it helps them to win new business.

This research highlights that while the construction sector is aware of the importance of driver safety and many are using a range of measures to promote health and safety, some companies could be doing more when it comes to the safety of their drivers and vehicles. On-site health and safety is always taken very seriously, but the duty of care applies equally to employees driving to and from those sites.

In fact, driving for work can be one of the most significant risks for any business to manage – even companies whose people regularly work with heavy equipment on construction sites.

That's why focusing more attention on vehicle safety – and especially on the drivers behind the wheel – can help the construction industry lead the way in this as well. Enterprise Flex-E-Rent has worked with a number of businesses in the sector on both the safety equipment on their vehicles and their approach to driver safety, and that expertise is just a phone call away.



Why choose electric vehicles for your fleet?

The increasing number of electric vehicles on offer to consumers and the financial advantages associated with making the switch to ultra-low emission vehicles (ULEVs) has seen the number of new vehicle registrations skyrocket in recent years.

Figures from the Society of Motor Manufacturers & Traders (SMMT) reveal that over 63,000 new electric or hybrid electric vehicles have been registered in 2017 - an astonishing increase on 2013's figure of around 3,500.

What though are the advantages to the commercial user considering making the leap to embrace this new technology? Currently, there are close to 40 models of electric vehicle available to consumers in the UK. These latest models produce no CO2 exhaust emissions, with the Government expecting their uptake to play a significant role in meeting emission targets and the UK legally obligated to reduce emissions by 80% of 1990s levels before 2050.

The Government is clearly taking the impact of the technology seriously, having pledged to invest over £600M by 2020 to support the uptake of ULEVs.

The advantages of people adopting this technology are not, however, restricted to creating a greener environment. The financial benefits to businesses adopting

electric vehicles into their fleet are numerous. They are cheaper to run than petrol or diesel vehicles, benefit from tax breaks and have generous government grants available.

It is also worth remembering London's Ultra Low Emission Zone (ULEZ) that will come into force from April 2019. The capital's ULEZ will cover the same area as the existing congestion zone and will be in addition to the current congestion charge. This charge will hit petrol cars that fail to meet Euro 4 standards and diesel vehicles that do not meet Euro 6 standards.

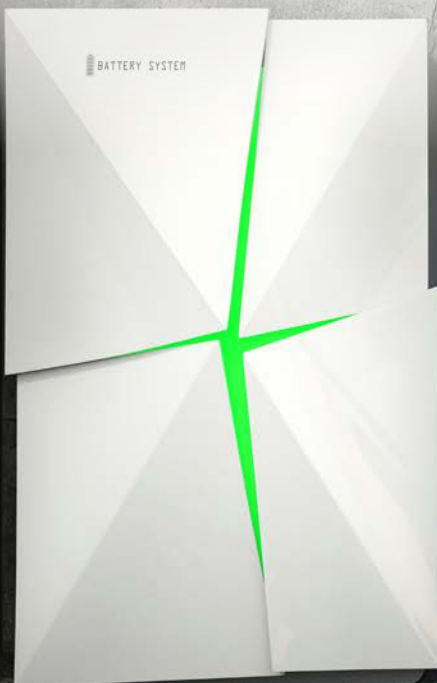
Many companies incorporating ULEVs into their business are keen to promote their commitment to reducing their carbon footprint as more clients make environmentally conscious decisions when choosing where to spend their money. Schemes such as the joint-funded government and auto industry-backed campaign 'Go Ultra Low Companies' provide an opportunity to display this commitment. It also seeks to increase awareness and showcase the numerous

benefits of electric vehicles to corporate and private buyers in the UK.

The decision for businesses on whether to take the plunge and introduce electric vehicles into their fleet may feel like a leap into the unknown but there are companies out there that can provide guidance and support.

Farnborough-based firm Alphabet offers such services through their AlphaElectric consultancy package. Initially, an analysis of a company is undertaken to assess the potential to incorporate electric vehicles into their fleet, including cost and sustainability.

Should a company show the prerequisite potential to make the switch to electric vehicles, guidance would then be offered on the most suitable plug-in vehicles and charging solutions to support them. Given the push from vehicle manufacturers and the Government, not to mention the financial benefits to businesses, it seems only a matter of time before electric vehicles are the norm, rather than just the latest emerging technology.



BREXIT NEGOTIATIONS ARE STARTING TO IMPACT ON CONSTRUCTION



FOLLOWING the vote to leave the EU last year, there has been near endless predictions and projections of what the impact will be when we eventually part ways. Until recently, official negotiations had not even begun but they are underway now as the clock ticks down to 'Brexit Day'; March 29th 2019, when the two-year window from triggering Article 50 elapses. Experts are forecasting uncertainty for the construction industry as deals are done and discussions are had between the UK and the EU. Depending on the end result, the more long-term future is also somewhat unknown.

One of the main worries throughout the industry will be in regards to the free movement of labour. With the current arrangement, companies from the UK can source workers from any EU country, offering them a vast pool of appropriately skilled people from which to choose. Moving forwards, however, will present different routes the country can take; either doing away with the free movement principles of the EU (the outcome championed by many prominent Brexiteers) or maintaining the agreement we currently have. With the Chancellor's recent remarks, suggesting that the health of the economy should be prioritised above all else, the latter of

the outcomes may be favoured. Current estimates reveal that non-UK EU workers make up 8% of the entire workforce of the construction sector, with the figure jumping to 25% within London. The reasons given by construction companies behind their hiring of EU nationals isn't, as many would assume, down to cheaper wages. Instead the reason given by one third of them is down to the lack of skilled UK applicants. This is mirrored in research by The Royal Institute of Chartered Surveyors. It found that 30% of construction professionals say that hiring EU nationals is important to the success of their business.

With vast new infrastructure projects like HS2, Crossrail, Hinkley Point and a possible new runway at Heathrow, not to mention the Government's pledge for 1,000,000 new houses by the end of 2020, there is certainly no lack of things to build. But 400,000 workers will be needed per year in order to meet that demand, and with great uncertainty over the future rights of movement, levels of EU migration to the UK have fallen sharply, with a worrying lack of skilled UK workers ready to fill the void. It's not just the movement of workers that would be of concern to the industry. At the moment, a whopping

64% of building materials used in the UK are from the EU, while 63% of construction materials exported from the UK go to the EU. This represents a huge amount of trade that is currently not subjected to tariffs and lengthy customs checks; two things that could quite easily change in a few years. In the event that the UK chooses to relinquish membership of the Single Market (thereby curbing migration, as many voters had hoped), a new trade deal will need to be negotiated. This could result in trade between the UK and the rest of the EU being subject to tariffs. This will increase costs and could easily result in falling levels of UK exports going to the EU.

As the negotiations begin in earnest, the UK will need to secure a deal that will cause minimum disruption while protecting the industries that are so important to the nation. Given the recent remarks from both Phillip Hammond and Mark Carney (Governor of the Bank of England) about the importance of the economy when it comes to a final Brexit deal, it is hoped that the construction industry, among others, will be protected from potentially devastating and far reaching consequences.

Parking



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BVRLA: Fleet sector to lead the way on air quality

In recent weeks, the observant amongst you will have noticed an emerging trend. The thorny issue of air quality - often discussed, with little in the way of real progress - has returned to the fore.

It was the Mayor of London, Sadiq Khan, who kicked things off, unveiling his Ultra Low Emission Zone last April. From 2019 onwards, those vehicles that do not comply with the required Euro 6 standards will be compelled to pay a daily fee - £12.50 for their conventional vehicles; £100 for their heavy duty counterparts - to travel through the city centre proper. It's a bold move, with many motorists and fleet managers now playing catch-up. Elsewhere, Environment Secretary Andrea Leadsom has overseen a six week consultation for a revised Air Quality Plan, which ended last month. Her intention? To dramatically reduce the amount of nitrogen dioxide clogging up our atmosphere through the introduction of so-called Clean Air Zones. Reaction has been mixed however, with many feeling that the revised measures don't go far enough. Now, the British Vehicle Rental and Leasing Association (BVRLA) has outlined its own vision for air quality countrywide, and it is urging policymakers to take decisive action as quickly as possible. According to the BVRLA, the Government would be wise to adopt a delicate balance of incentives and restrictions. Measures that encourage sustainability without unduly punishing those whose decisions

have been informed by previous government policy. "BVRLA members fully appreciate the urgent need to address air pollution in the UK, which requires a change in the way we travel and the vehicles we use," said Chief Executive Gerry Keaney. "Our sector has enormous buying power and provides advice to thousands and thousands of drivers and fleet operators. If the Government can deliver the right tax regime, incentives and guidance, we can have a huge impact in improving air quality across the country." In broad strokes, the BVRLA has called upon the Government to:

- Provide a comprehensive set of Clean Air Zone guidance to guarantee a clear and consistent approach to standards, enforcement, timescales, and charges.
- Partner with the BVRLA to develop an "engagement campaign" promoting vehicle rental and leasing, car clubs and other travel alternatives to curb emissions.
- Boost confidence in the Euro 6 standards with robust legislation to ensure compliant vehicles don't come with additional costs or restrictions.
- Guarantee that excessive taxes, which punish individuals or businesses for purchasing decisions made based

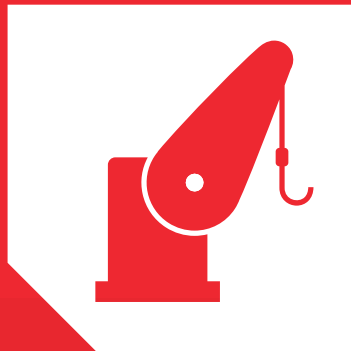
on previous Government policy, are not brought to bear.

- Ensure that any diesel scrappage scheme is flexible and targeted. According to the BVRLA, this means supporting those companies that are looking to replace or retrofit older, more polluting vehicles. In addition, owners of less efficient vehicles should be encouraged to give them up through the use of 'mobility vouchers' for vehicle rental, car clubs and other modes of transport.
- Continue to fund and support Plug-in-Car and Plug-in-Van Grants, adjusting the CO2 and zero-emission range requirements to ensure incentives keep pace with advances in technology.
- Provide a consistent tax policy to support the uptake of ultra-low emission vehicles.

Furthermore, the BVRLA has published a Fleet Air Quality Factsheet along with two video guides on air quality and emissions regulations. Their publication coincided with National Clean Air Day. As for the Air Quality Plan revisions, the Government has yet to issue a response. Feedback is being considered however. Now, the industry holds its collective breath in anticipation of the final draft, expected 31st July 2017.



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The CDM Regulations, Two Years On

The Construction (Design and Management) Regulations or CDM are the main set of regulations for managing the health, safety and welfare of construction projects.

Although the CDM 2015 Regulations may be two years old, it is clear that the construction industry is still getting used to the new role of 'Principal Designer' and the greater client responsibilities that the regulations bring. This article gives a brief overview of:

- Why there was a need for change.
- What were the key objectives and proposals?
- A brief summary of the main changes.

Why Change?

Although it was generally agreed that the intent, purpose and general structure of the previous CDM framework was fit-for-purpose, problems manifested themselves due to legal interpretation, levels of bureaucracy and burdensome competency assessments. Most significantly there appeared to be lack of coordination at the pre-construction phase when hazards can be designed out of the construction, use and maintenance phases of the project life.

The consensus within the construction industry was that the role of CDM Coordinator in its CDM 2007 form did not add the value intended by the legislation. In many cases this was attributed to late appointment and the fact that the CDM Coordinators were not fully embedded in the design team.

Key Changes under CDM 2015

- The client is responsible for notifying the Health and Safety Executive (HSE), not the CDM



The consensus within the construction industry was that the role of CDM Coordinator in its CDM 2007 form did not add the value intended by the legislation.



Coordinator as was previously the case with CDM 2007. The client can ask another party to carry out the notification on its behalf but this does not prevent the client from being responsible by law.

- The client must appoint a Principal Contractor in writing before any construction work begins.
- Under CDM 2015, the onus is on the client to be much more hands-on and proactive in managing the consultants and contractors.

Another key change was the circumstances under which a Principal Designer needs to be appointed. Under CDM 2007 the CDM Coordinator was only required on 'notifiable' projects and even in these instances the appointment was often only made at the last minute. Under CDM 2015 a Principal Designer must be appointed in writing in much wider circumstances i.e. whenever it is anticipated that more than one contractor would be involved. And ideally, this should be at the project outset.

How are these changes affecting the

way projects are run?

Concerns were raised as to whether the new regulations were in fact necessary; whether architects and other likely candidates for the Principal Designer role have been given enough time to reorganise their business structures and re-train their personnel; whether the regulations and the guidance available was sufficient to allow all parties to identify their roles and the practical measures they should take to perform these roles and; whether costs (such as professional indemnity insurance premiums) would rise and the bureaucratic requirements (such as appointments by clients of bespoke CDM advisors in order to help clients to discharge their more burdensome responsibilities) would increase. The most obvious method for procuring a Principal Designer is by the Architect taking on the role. However, in reality most architectural practices and other key members of the design team have been reluctant to take on these additional responsibilities.

A common method that has evolved is to appoint the former CDM

Coordinator as a Principal Designer. However, notwithstanding the new scope of services, the client must consider whether the consultant satisfies the requirement that the Principal Designer be "a designer with control over the pre-construction phase".

Other popular approaches include the client taking on the Principal Designer role (in which case the client must be confident it has the organisational capacity, skills and experience to deal with the role and is willing to take on the risks of non-compliance) or the Principal Contractor taking on the role as Principal Designer (although if the appointment is made upon execution of the building contract, there may well be a gap in coverage prior to that date during which period the client would be deemed to have been the Principal Designer).

It is probably still too early to draw firm conclusions as to the efficacy of CDM 2015. However, it is clear that the central aim of CDM 2015 is worthwhile and given time to allow the industry to come to terms with these changes, the practical benefits will come to fruition.

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“It’s all about the data”

Dennis O’Keeffe, Infrastructure Programme Director at the Velindre NHS Trust in Wales, is looking to build a £200M+ specialist cancer treatment centre. He explains why he’ll be writing the transfer of BIM data into the contract, using Velindre’s ‘Enterprise BIM’ initiative that is being developed with Mott MacDonald.

Acres of words have been written about the efficiencies and advantages Building Information Modelling (BIM) brings to design and construction. But, as a public service client, we feel there’s a certain amount of asymmetry in the industry. We haven’t seen the full benefit of BIM, especially in the operational phases of a project.

Public Private Partnership (PPP) has become a normal way of procuring new health facilities. A substantial part of a PPP service contract is taken up by the 25-year concessional period. During that stretch, the client – usually the NHS in the UK – doesn’t have the full apparatus of data to really monitor the

performance of the building. The construction industry is at the point where it can create and capture data during design and construction. The capability exists to monitor operational performance, analyse data, and make decisions based on that. I want access to it all. To get it, we need to lay out the PPP contract with operation and ultimate handover back to the public sector in mind. Access to data will enable us, as client, to truly participate and collaborate in the operational phase, from a position of knowledge.

Enterprise BIM

At the moment it feels like data is owned exclusively by the PPP

contractors working for us. As an analogy, we’re like the kid with their nose pressed against the sweet shop window. We, the public sector clients, are looking in, but we can’t touch the sweets. We want in on it. We need to write it into the contract, because experience shows that if it’s not in the contract it may not get done! Why does this matter so much? In today’s increasingly digital age, I’m told supermarkets can now tell from shopping habits when couples are going to get divorced. And there’s almost no part of our lives that isn’t touched by the internet. That’s the power of data! The challenge to designers, builders



St. Thomas' Hospital

The construction industry is at the point where it can create and capture data during design and construction. The capability exists to monitor operational performance, analyse data, and make decisions based on that. I want access to it all.

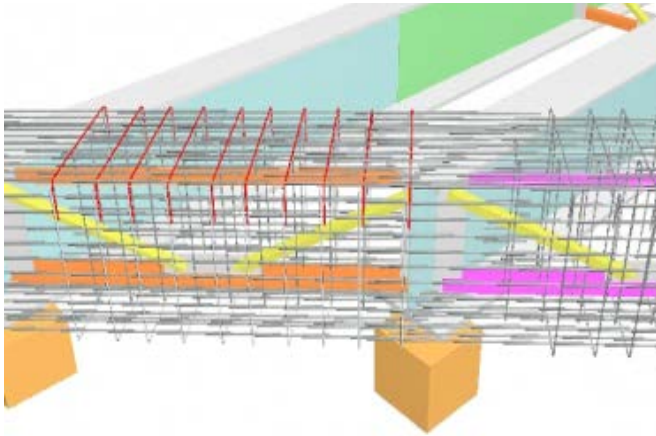
and asset managers is to become digital natives and data scientists – far beyond ‘bricks, mortar and concrete’. We want, in our own modest way, with our new cancer centre project in Cardiff, to make BIM and data work for us. It’s only when a building goes live that you know if you’re actually achieving the aims you had at the outset and put into the design and construction specifications. As clients we not only want to be able to use data to drive operational efficiencies; we want to learn from our experience as procurers, so that we can make each subsequent project better than the one before. Without performance data, we’re blind. Let’s be blunt: without ‘Enterprise BIM’, we will continue to operate at a relative disadvantage in the operational phase of the PPP concession, compared to

suppliers who do use BIM effectively. It’s to our advantage – or at least less to theirs – if we know what the energy performance is, when repair and maintenance are required and what the response time to call-outs is. Enterprise BIM also has the potential to make the evaluation of the bidder’s designs and the procurement process more efficient and effective. Live data would also help us influence better behaviours. One of the big problems in hospitals is energy wastage. From a facilities management perspective, getting people to change their culture and habits is the golden goose. Real-time data would help build consciousness of what’s going on. Above all other interests, data transparency and transfer is in the interests of those for whom health

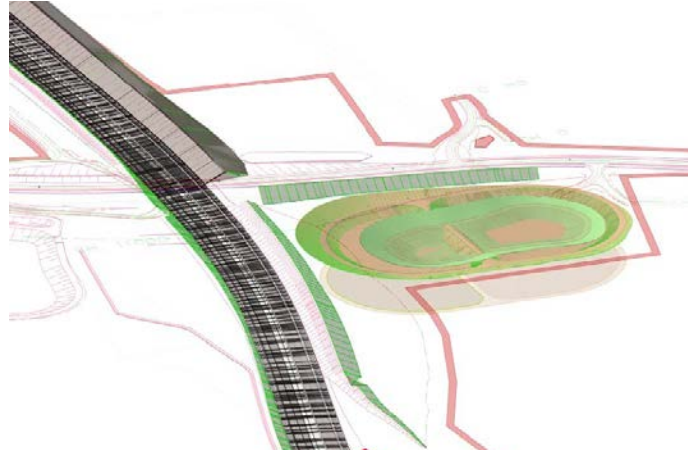
facilities exist: clinics and hospitals that are designed, built and operated better ultimately benefit people suffering from illness, by enabling better care and the redirection of precious capital from heating bills to treatment.

Operational Gains

Hospitals are complicated buildings. I want the best design, and information and control during operation. There’s no point having a sports car if you’re going to drive it like a delivery van. That’s why I’m putting data sharing into the contract for the PPP that will deliver my new facility. If the industry responds as I hope, by 2022 we will have a fabulous new building, bringing world-class cancer treatment, an exemplar not just for healthcare, but the whole public sector. We’ll have a sports car and the ability to drive it.



Reinforcement clash detection



Carriageway and earthworks modelling

Highway design and BIM modelling solutions

Cassidy Forsythe are experts in the 3d modelling of highway schemes to the BIM protocols.

We can provide a 3d model of your design or we can design your scheme for you to DMRB standards or your adopted standards.

We have extensive experience in the design of highway schemes, including feasibility studies, preliminary and detailed design, contract preparation and construction supervision.

We can create 3d models for you which comply with the BIM principles.

These models will show all 3d elements, such as pavement layers and street furniture, allowing quantities to be extracted directly from the model and 4d schedule simulation to be carried out. The models created will capture the design intent and will facilitate clash detection.

The models will also feature elements which are capable of being attributed with information for asset management purposes, which is a key requirement of BIM level 3.

Are you still designing the same way as you did in the eighties ?



Are you still using a computer like this to do your highway design ?

No – of course not – it's antiquated and not up to the job.

So why do your highway designers still want to design using software which was created around the same time ?

Why do your designers want to write input files which were designed to run on computers like the one shown ?

In the early eighties, the industry standard software programme for highway design was called MOSS.

MOSS was written using Fortran and BIM wasn't even a dream.

To use MOSS you had to write an input file, run it and then come back tomorrow to see if it had worked.

Unfortunately, many highway designers have held on to this way of working and won't move on.

One of the problems with 3d models created using this way of working is that it isn't suitable for BIM and isn't BIM compliant in any way.

One of the basic ideas of BIM is that you can attribute data to the elements you design, so that the information can be harvested at a later date.

This is impossible with a 3d model created using MX (formerly MOSS).

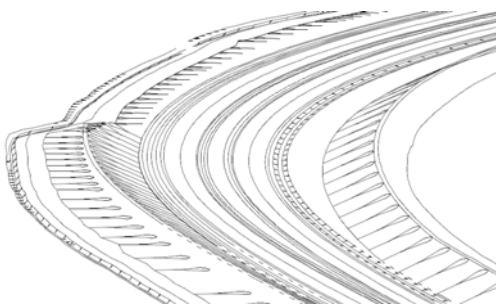
Bentley Systems, who are the current owners of MX, realised this and have completely rewritten the software using modern computer language and called the new package Openroads.

Models created using the Openroads technology allows elements to be attributed with data which can be harvested at a later date.

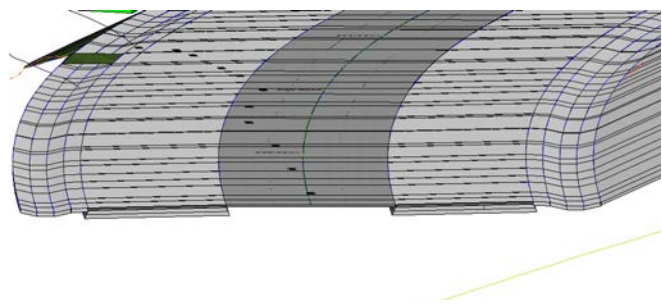
Openroads also remembers your design information and retains on the drawing for design checking purposes.

The latest version of the software is called the Openroads Designer Connect Edition and does not include the ability to create input files.

Bentley have eventually removed the link to the past and produced a modern software package which is fit for purpose.



A 3d string model created using input files



A 3d model created using Openroads

So, you may have designers who are very proficient in creating highway designs to DMRB standards however they need to be retrained to use the latest software and this is where we come in.

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Building with Numbers: How the construction industry is reducing cost, risk and waste - with maths

Because industry players perceive it as increasing risk, the construction industry is notoriously resistant to change through technology adoption. The idea of following tried and tested solutions is almost universal because 'if it worked before it will work again'. This attitude has restricted industry progress producing waste of up to 50% on many projects. And, negative environmental impacts, caused by easily correctable inefficiencies persist as long as the building stands.

Riskier Business?

Industry players and stakeholders are mistaken in the belief that new

methods and technologies present increased risk. In fact, the opposite is true because by using technology it is possible to reduce risk while creating more imaginatively conceived buildings at lower cost that use less energy, are more durable, look better and are interesting to inhabit. They also take less time to make and on completion appear effortless. This seemingly impossible list of advantages has been proven across the world where, in partnerships with developers, architects and engineers, collaboration over data reveals absolute truths about buildings.

Much of this technology was developed to facilitate the highly complex structures of Zaha Hadid Architects and others who bravely defy convention. Such audacious geometry comprising curves and sweeping planes cannot be built using traditional methods. And by engineering these structures, new technology and practices have been devised that have revolutionised the construction of many buildings.

In practice, architects and developers use their local knowledge to imagine culturally appropriate buildings. The universal truth of mathematics is then



In a building, the forces of compression, tension, sheer and buckling must be understood and controlled. And it is by solving these interrelated energies that unexpectedly elegant solutions arise.



applied to minutely examine myriad details because, in buildings a lack of understanding of those details adds cost and complexity at every stage of construction and operation.

Joist Division

Traditionally rigid steel joists (RSJs) are used to support structures. They often dominate the building even though they are inevitably concealed behind panels. They make their presence felt at the design stage because the design must be worked around them. This restricts designers to using straight lines when curves could deliver a better realisation of the original intention. In finished buildings joists take up space, adding bulk, weight and as their name implies, inflexibility. This becomes problematic when other elements of the structure are more flexible.

At a technical level the junctions between components must be understood to ensure predictable building performance. The physical properties and capabilities of structural components is well documented but often building designers over specify "to reduce risk". Technology and methods now exist to precisely simulate not just the performance of these components themselves but also the interfaces between them and

other components. This spells the end of considerable waste of materials, resources, and space design options when components are over specified. Arcs in curved buildings are inherently strong. Their flexibility can, when properly understood, bring many advantages to structures and the commercial ecosystem that produces them. Arcs can be made from thin, light material that enhances structural integrity and sparks creativity from the endless possibilities that their profiles offer. That means completely new shapes can be developed and their behaviours precisely known before they have been physically made. The whole building can then be optimised to accord with any other functional parameters.

When design is freed from traditional industry practices, shapes and components can be based on the interpretation of physics and mathematics and they can be 'generatively' created. In other words, rather than being designed by a person geometry is created automatically based purely on its function. In many cases the shapes have never been seen before yet they are perfectly suited to purpose. Generative designs are often the starting point for human designers to adapt these shapes and

to be inspired to develop new types of façade and detailing.

Safety in Numbers

Many landmark commercial and cultural buildings represent the aspirations and dreams of developers, architects, governments and owners. They want to build ideal structures with the confidence that projects will deliver in terms of design, performance and cost. They also want to fully understand risk. It is therefore crucial to find, explore and solve potential problems at the earliest stage. This is achieved when newly-developed algorithms and methods are deployed. Based on sound engineering principles these examine the physics of components and junctions allowing a realistic examination of potential problems, their resolutions and outcomes. One example of this is the analysis of the relationship between concrete and steel building components. Because these behave differently under load and stress, and it is often at the junctions of these two materials that problems such as leaking or fractures arise, mathematical methods have been devised to understand the real-

CONTINUED ON PAGE 54 >>>



FEATURE

The big BIM MEP buy-in

Building Information Modelling (BIM) is about much more than software and hardware. It is a revolution that's shaping the way the AEC industry works.

More than just a 3D model, BIM is founded on consultation and shared information. BIM is essentially a philosophy that defines different ways of thinking and working at all stages in a building's lifecycle.

As BIM adoption becomes increasingly widespread globally, it's increasingly more important to understand how BIM transforms the way buildings are designed and managed. BIM is beginning to change the way buildings look, the way they function and the way in which different stakeholders engage in their design and build. It is also determining how the MEP wins contracts, completes projects and quality checks its work.

For businesses still struggling to get to grips with BIM terminology

or worried about having to make a substantial investment in technology and staff training, BIM adoption can feel like a leap into the unknown. MEP companies often find themselves asking how they can differentiate between hard, fast, factual and relevant information and more convoluted, academic discussion that doesn't translate directly into the building process.

One of the quickest, most reliable and fail-safe ways for businesses to break this particular BIM barrier is to buy-in BIM expertise and services.

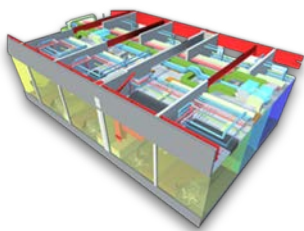
As Christopher Slinn, EMEA Sales Director for **Trimble MEP** explains, taking this route means firms will be fully equipped at each and every stage of the BIM journey and acquiring third party services means no contract is ever unwinnable.

"Whether your operation is small, medium or large, outsourcing is exceptionally cost effective. In

allowing companies to bid for bigger and more profitable contracts ROI is exceptionally rapid" he elaborates. "For businesses with no existing BIM capability, buying-in means they're not among the 55% of NBS survey respondents who recently expressed concerns about being left behind in the evolving construction market. For those with an existing but modest team of BIM practitioners in-house, purchasing add-ons as needed means winning larger and more lucrative projects is no problem," Said Slinn. "Whether you're looking for a 3D model evaluation service, 3D modelling services, 3D laser scanning services or 3D modelling from Point Cloud service, by opting to buy-in our **Virtual Construction Services (VDC)** you will benefit from the trust and expertise to be expected of a leading firm in the global MEP Services market," he concludes.

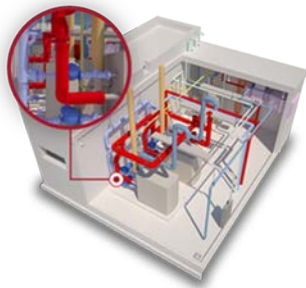
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**“
Some truly innovative
buildings have been
constructed in recent
years and cities are
clamouring for more.
”**

life consequences of different design options. Using algorithms removes guess work from the construction of complex buildings. These risk reducing solutions have a parallel with financial analysis models which find the 'gaps' inside data to solve problems and create new solutions to problems that have not yet been fully defined. In a building, the forces of compression, tension, sheer and buckling must be understood and controlled. And it is by solving these interrelated energies that unexpectedly elegant solutions arise. When these aspects of the building are explained to architects, developers, clients and city partners, creative possibilities expand and risks reduce because there will be no surprises. Also, because these revelations are made available to all stakeholders - including building component manufactures - they more fully understand their role and the levels of risk that they are undertaking. This increases confidence throughout the supply chain by removing the uncertainty that so often leads to disputes between stakeholders. It also has the positive advantage of showing regulators, planners and the public exactly how the building will perform far in to the future. This is possible by simulating wind load, weather events and energy consumption for decades ahead.

Seeing the Light

Around 40% of the world's energy is

consumed by buildings. It is therefore important to understand how to reduce consumption. This can be done by modelling climate in relation to the building and analysing the structure's thermal conductivity, weather tightness and airflow. Glazing is also a significant factor in controlling the inside temperature. By taking these considerations into account a balance can be achieved that reduces energy consumption and makes the building a better place to be. While it may be thought that more glass equals more light, it is possible to reduce the amount of glazing without affecting interior light levels to create interesting illumination, shadow and consequent cooling effects as a result. In the hot climate construction projects that we work on, airflow and cooling are key priorities. In many cities, urban pollution levels mean that windows cannot be opened so the 'standard solution' is often to install air-conditioning with all its inherent commissioning, maintenance and long term operating costs. However, buildings can and do successfully operate as their own cooling systems by allowing filtered air to naturally circulate throughout the interior. This possibility stems from designing the building and its façade to maximize airflow. When algorithms automatically generate designs based on air-flow, the outcomes are genuinely unique and often very beautiful as well as being literally cool.

An Appealing Future

It might be imagined that this way of conceiving, designing, making and operating buildings is exotic and therefore more expensive. It has been proven on many of our partnerships that the opposite is the case. A significant contributing factor to cost reduction is that quality assured and validated building components can be made in factories for onsite assembly. It has been said that the worst place to make a building is on a building site because the human, financial and waste costs of this way of working - often in hazardous conditions - is high. Quality suffers and previously unseen problems are revealed during, or worse, after the construction phase. Re-thinking the construction process along industrial lines so that as much of the building as possible is fabricated under controlled conditions is the surest way to guarantee a successful outcome. The global construction industry is growing fast and we are proud to be contributing to Britain's export success in this sector. Some truly innovative buildings have been constructed in recent years and cities are clamouring for more. In this time of huge opportunity, it is the responsibility of the construction industry to consider how today's buildings, developers and owners may be judged a century from now.

By Andrew Watts, CEO of international building engineers, Newtecnic.

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Cyber Security at the Heart of the Fourth Industrial Revolution

A technical evolution has taken place, which has made cyber threats more potent than at any other time in our history. As businesses seek to embrace Industry 4.0, cyber security protection must be a top priority for Industrial Control Systems (ICS). These attacks are financially crippling, reduce production and business innovation, and cost lives. In years gone by, legacy ICS were developed with proprietary technology and were isolated from the outside world, so physical perimeter security was deemed adequate and cyber security was not relevant. However, today the rise of digital manufacturing means many control systems use open or standardised technologies to both reduce costs and improve performance, employing direct communications between control and business systems. Companies must now be proactive to secure their systems online as well as offline.

This exposes vulnerabilities previously thought to affect only office and business computers. Cyber attacks now come from both inside and outside of the industrial control system network. The problem here is that a successful cyber-attack on the ICS domain can have a fundamentally more severe impact than a similar incident in the IT domain.

The proliferation of cyber threats has prompted asset owners in industrial environments to search for security solutions that can protect their assets and prevent potentially significant monetary loss and brand erosion. While some industries, such as financial services, have made progress in minimising the risk of cyber attacks, the barriers to improving cyber security remain high. More open and collaborative networks have made systems more vulnerable to attack. Furthermore, end user awareness and appreciation of the level of risk is inadequate across most industries

outside critical infrastructure environments.

Uncertainty in the regulatory landscape also remains a significant restraint. With the increased use of commercial off-the-shelf IT solutions in industrial environments, control system availability is vulnerable to malware targeted at commercial systems. Inadequate expertise in industrial IT networks is a sector-wide challenge. Against this backdrop, organisations need to partner with a solutions provider who understands the unique characteristics and challenges of the industrial environment and is committed to security.

Assess the Risks

A Defence-in-Depth approach is recommended. This starts with risk assessment – the process of analysing and documenting the environment and related systems to identify, and prioritise potential threats. The assessment examines the possible threats from internal sources, such as disgruntled employees and contractors, and external sources such as hackers and vandals. It also examines the potential threats to continuity of operation and assesses the value and vulnerability of assets such as proprietary recipes and other intellectual properties, processes, and financial data. Organisations can use the outcome of this assessment to prioritise cyber security resource investments.

Develop a Security Plan

Existing security products and technologies can only go part way to securing an automation solution. They must be deployed in conjunction with a security plan. A well designed security plan coupled with diligent maintenance and oversight is essential to securing modern automation systems and networks. As the cyber security landscape evolves, users should continuously reassess their security policies and revisit the defence-in-

depth approach to mitigate against any future attacks. Cyber attacks on critical manufacturers in the US alone have increased by 20%, so it's imperative that security plans are up-to-date.

Upskilling the Workforce

There are increasingly fewer skilled operators in today's plants, as the older, expert workforce moves into retirement. So the Fourth Industrial Revolution presents a golden opportunity for manufacturing to bridge the gap and bolster the workforce, putting real-time status and diagnostic information at their disposal. At the same time, however, this workforce needs to be raised with the cyber security know-how to cope with modern threats.

In this regard, training is crucial to any defence-in-depth campaign and the development of a security conscious culture. There are two phases to such a programme: raising general awareness of policy and procedure, and job-specific classes. Both should be ongoing with update sessions given regularly, only then will employees and organisations see the benefit.

Global industry is well on the road to a game-changing Fourth Industrial Revolution. It is not some hyped up notion years away from reality. It's already here and has its origins in technologies and functionalities developed by visionary automation suppliers more than 15 years ago. Improvements in efficiency and profitability, increased innovation, and better management of safety, performance and environmental impact are just some of the benefits of an Internet of Things-enabled industrial environment. However, without an effective cyber security programme at its heart, ICS professionals will not be able to take advantage of the new technologies at their disposal for fear of the next breach.

**By Ray Dooley, Product Manager
Industrial Control at Schneider Electric**

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House Builders

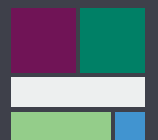
No matter the size of your housebuilding business, managing processes and information from one phase to the next can be complex and lead to inaccuracies. Gain a competitive advantage with Eque2 house building software to increase speed, efficiency and accuracy; from land-purchase through build and sales to customer care.



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Smarter Together: Stuart James talks Lovell's supply chain approach

What is your professional history and how did you come to work at Lovell?

I joined the construction industry at the age of 17 after leaving school. My first job was as a trainee quantity surveyor working for a regional contractor in Cardiff. The training was subsidised by the CITB under the old YTS training scheme and I was paid just £35 per week.

I attended Pontypridd Technical College one day a week for over four years, studying for a BTEC Construction qualification, then completed a further four years part time at the University of Glamorgan, obtaining a BSc in Quantity Surveying. I joined Lovell Partnerships' Cardiff office in 1996. Over the next 16 years, I progressed my career and was promoted to regional buyer as the business grew and took on more diverse work streams such as planned

maintenance.

Over the past few years, I've continued to develop my career with procurement roles at a variety of national house builders and regional contractors. I was delighted when this year the opportunity arose to return to Lovell and become part of the newly-formed central procurement team based at head office in Tamworth.

As Area Procurement Manager for Wales and South West England, what does your new role entail?

My role as Area Procurement Manager is to manage our approved supply chain effectively, identifying the best opportunities for our regional contracts throughout South Wales and the South West.

I also work closely with the region to achieve our 'service first' delivery aims through initiatives such as zero defects and zero waste. I am also on the lookout for any suitable off-site

manufacturing opportunities.

In South Wales, we've secured some exciting large-scale brownfield regeneration projects, in particular The Mill (former Ely paper mill site) in Cardiff - a mixed tenure scheme of some 800 units. This venture is a partnership with Tirion Group and Cadwyn Housing Association.

You've worked at Lovell previously. How has the housing provider changed in the intervening years?

I was really pleased to have re-joined Lovell as I share their values, ambitions and vision for the future. I think Lovell's core business ethic and culture remains strong and is highlighted by the favourable staff retention figures and company attitudes.

I recognise the strength of the Lovell brand in the sector and also the way we successfully work with our employees and partners. With the backing of Morgan Sindall Group,



Stuart James, Lovell's newly-appointed Area Procurement Manager for Wales and South West England, speaks exclusively to UK Construction Excellence about his new role, Lovell's supply chain approach and the practicalities of housebuilding during the most pronounced skills shortage in recent memory.

we also have a parent company that wants to invest in future growth and recognises its people and partners as an essential ingredient to achieve this. **A healthy supply chain is absolutely essential for any successful housing provider. How does Lovell cultivate good working relationships with its industry partners?**

We have established a core supply chain who benefit from a continuity of new projects and clear objectives from Lovell in terms of expectations for quality, service, sustainability and cost certainty. We pride ourselves on being a good customer and a partner of choice.

We develop relationships to the mutual benefit of all parties through our partnering agreements. This helps us to share in the business objectives, based on the fundamentals of forecast growth, repeat business and long-term commitments. This allows us to effectively and efficiently manage and control any fluctuations in cost and demand.

How would you describe current housing levels in Wales and South West England? In your opinion, is the shortage as pronounced here?

The lack of supply of new homes is as acute in the South West of England and South Wales as it is in the rest of the UK - in particular, the need for more affordable homes which is at critical levels in some areas. In South Wales, the Welsh Government has announced specific targets of 20,000 affordable homes over the next five years.

We are certainly well-placed as a partnership housing provider to work with our public sector partners to create much-needed new homes and, on our planned maintenance projects, improve the quality of existing housing stock.

Do you feel enough is being done to deliver the one million homes required by 2020? What do you see as being the core challenges associated?

We are seeing good levels of support through funding arrangements and a willingness to work together in partnership. Also, government support schemes, such as Help to Buy, have been hugely important for those people wishing to own their own home and struggling to get onto the housing ladder.

The challenges we see ahead lie in land availability, planning and skills shortage. The best way to overcome these challenges is through close partnership working.

To address the skills shortage, we invest in recruiting, training and retaining local apprentices, which not only benefits the communities where we work but also attracts new talent to the Lovell team. We also work with local schools and colleges, offering advice about careers in construction, mentoring opportunities and work placements to encourage the younger generation to consider the industry.

Going forward, what do you hope to accomplish in your new role?

I hope to build on the already great working relationship I have with my colleagues and our supply chain partners going forward, so we can continue to deliver much-needed quality affordable housing. There are many challenges facing us today, such as material and skilled labour shortages, sustainability targets and inflationary pressure, but all these issues can be overcome by continuing to work closer and smarter together in partnership.



Spire London: Tallest residential tower in Western Europe gathers pace

Chinese property developer Greenland Group has confirmed AECOM's appointment as preferred construction partner for the much-anticipated £800M Spire London development. Make no mistake; this is a considerable undertaking. Standing 235m (771ft) tall, Spire London is set to become the highest residential building in Western Europe. Already, the first phase is underway with work on the basement and building proper due to begin by 2017's end.

AECOM Tishman - the high-rise construction arm of AECOM - is well placed however, having previously delivered the Lofty One World Trade Centre development in Lower Manhattan. Greenland Group Vice President, Xinyu Lu, has since met with AECOM Construction Services Group President, Dan McQuade, to make official the announcement. "We are very excited to work with Greenland on this iconic project in

the heart of London's Docklands," said Mr McQuade. "It will be our fifth project working together across the globe, and we look forward to further strengthening our relationship and helping Greenland to bring their vision to life."

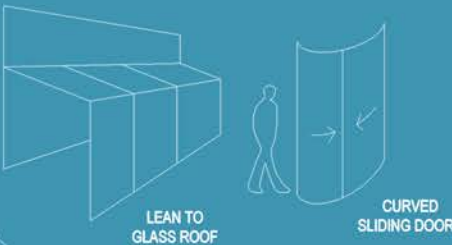
Wenhao Qian, Managing Director of Greenland (UK) Investments Ltd, added: "Spire London is set to become one of London's iconic, landmark buildings, and it is vital that we have the right team in place that can deliver a project of this scale. AECOM has been a trusted partner for Greenland on our extensive portfolio, and we are delighted to have awarded them the Pre-Construction Services Agreement for the main construction works. We look forward to building our relationship with them as we work together to bring Spire London to life." Spanning 67 storeys, Spire London will provide 861 one, two and three bedroom apartments, of which 765

will be made available for private sale. Its striking design comes courtesy of Larry Malcic and Christopher Colosimo from the multi-award winning architectural practice HOK, with renowned interior designer Nicola Fontanella of Argent also lending her expertise.

To date, construction remains on schedule. The chosen piling contractor, Bachy Soletanche, is expected to end its portion of the works by November 2017. And Greenland Group has now signed a Pre-Construction Services Agreement with Permasteelisa Group to deliver the all-important cladding contract. Construction continues apace then, though Londoners have a wait ahead of them. It will be Q4 2020 before the finished article is unveiled. One thing is for certain however; amid a crowded skyline, Spire London is set to be the capital's latest landmark building.

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