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ARCHITECTURAL TECHNOLOGY



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Rising in the east

The energy challenge of the world's second tallest tower

Rock of ages

Ancient stone meets modern structure in Northern Ireland

Connected construction

The 'smart homes' of the future

AT magazine

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Editor's foreword

CIAT's reach continues to be global, regardless of national politics

At the time of going to press, the United Kingdom has voted to leave the European Union. President Gary Mees has written to all members to reassure them of the Institute's ongoing objective to protect and promote the discipline and members. Whatever the developments to come, one thing which is certain is that the international dimension of CIAT and the discipline of Architectural Technology will continue to progress.

As an Institute, our scope and growth is worldwide, with recent visits to India and the Middle East showing our commitment to developing stronger links abroad and promoting the discipline and the Institute membership. On page 24, you can read an extended case study by Architectural

Technologist, Fergal Walsh of Gensler, who worked on the construction of the world's second biggest tower in Shanghai. The reach of CIAT is global and members are working across the world to bring their expertise to the industry wherever it is required.

Continuing the theme of progress, the feature on the 'connected home' on page 12 shows that technology, unlike referendums and elections, is not usually subject to radical change overnight. The move towards unified computerisation of the home is something that has been happening slowly over the years but which is now gathering pace as system compatibility improves. Designers cannot afford to be left out of these developments and technological

considerations need to start at the initial client briefing. On the subject of client briefings, this issue contains an in-depth assessment on page 8 of how practices are adapting to the use of Building Information Modelling (BIM) since it became mandatory for UK Government projects in April this year.

This issue also contains an important supplement on professional indemnity insurance from CIAT Insurance Services which all members should read. If you have not received it, please visit www.ciat.org.uk to download a copy.

Hugh Morrison
Editor

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Mind the gap

The Building Performance Evaluation review from Innovate UK reveals how low-carbon buildings are still falling dramatically short on their energy-efficiency promises.

Elaine Knutt, Editor of *Health and Safety at Work*, asks how the industry can address the problem.

Anyone tackling the 110-page report of the £8m Building Performance Evaluation review is likely to experience a worrying sense of *deja vu*. It's a summary of independently assessed post-occupancy evaluations and reports on more than 100 low-carbon buildings completed in 2008-11, comprising 59 residential projects and 48 in the non-domestic sector. It forms a compendium of all the cumulative failures in design, construction, commissioning and hand-over that together add up to a yawning 'performance gap' between design intent and operational energy. But for most readers the narrative of the BPE reports will prove all too familiar. Heard the one about the rooftop ventilation systems not commissioned properly? Or the biomass boilers installed to get a better EPC or BREEAM rating, but then never switched on? Unfortunately, you probably have – from a major study by Leeds Beckett University in 2012, from an earlier series of studies by the Carbon Trust, or even from CIBSE's Probe studies from 1995.

The conclusions of the BPE study, in the words of one monitor, are 'eyebrow raising'. It revealed performance gaps of two, three or five times the amount of energy foreseen at design stage, with almost all buildings failing to deliver what they were designed to. Two-thirds of the buildings included onsite renewable energy generation to reduce their energy requirements – but two-thirds of this group experienced problems that reduced their energy savings.

The performance of low-carbon housing seemed particularly concerning. Measured energy use in the 'low energy' homes – that is, for electricity and heating fuel alone, excluding 'unregulated' energy for appliances – differed by a factor

of nearly 10 between the lowest and highest. In the social housing sector, the air-tightness of 46% of the homes in the study was below the design intent, and nine of 28 of the assessed schemes in fact failed to meet Part L.

So how should the industry react to the BPE catalogue of culpability? For some commentators, the scale and consistency of the findings should be a wake-up call for an industry happy to 'sell' clients the promise of an energy-efficient product, then failing to deliver.

'As an industry, we can't continue to churn out substandard products that don't do what they say they do — it's not

good enough. In 2015, we're not learning from the past, we're marrying 1980s procurement routes to 21st century technology,' says Rod Bunn, a principal consultant at BSRIA and an independent monitor for some of the project teams undertaking the BPE research.

Then there's the underlying driver behind creating 'low-carbon' buildings in the first place - the commitment to cut carbon emissions by 80% by 2050. 'We have too many cases where either the fabric or the Building Management System isn't functioning properly, so buildings aren't playing their part in delivering carbon reductions,' says Chris Gorse, professor of construction and project management

BPE: the basics

From schools to apartments, supermarkets to offices, health centres to houses, Innovate UK's Building Performance Evaluation (BPE) programme spent four years analysing how well real buildings perform and the results are surprising, it says:

The BPE programme was designed to measure the 'Performance Gap' – the difference between the designed and actual energy usage of a building. The programme had four original aims:

1. to gain real world performance data from recently completed buildings;
2. to enable the industry to learn more about the factors and variables that influence performance;
3. to embed a culture of building performance evaluation in the construction industry; and

4. to generate a knowledge base of building performance case studies.

To measure the Performance Gap, a portfolio of over 100 projects undertook the largest data gathering exercise of building information. This programme collected one of the most detailed unexplored datasets of its kind as well as developing tools and methodologies.

The end results were stark: on average buildings were using 3.6 times as much energy as they were designed to use.

Innovate UK is an executive non-departmental public body, sponsored by the Department for Business, Innovation and Skills.

To find out more visit www.gov.uk/government/organisations/innovate-uk



at Leeds Beckett University, which monitored 25% of the BPE sample. He adds: 'It doesn't look like we're going to achieve the 2020 target (of near-zero energy buildings) — with less than five years to go, I'm not feeling very hopeful.' But for Mat Colmer, lead Architectural / Technology professional at Innovate UK, the report shouldn't be a pretext for hand-wringing, but an acknowledgement of the difficulty of delivering projects with an ever-changing cast. 'Timescales for learning and development are very long. From inception to doing a post-occupancy evaluation is likely to be six to seven years, so it's seven years before you really see the outcome of your work,' he says. 'The key learning for the industry, is to make sure you've got someone with experience of doing it before.'

Post-occupancy omissions

Previous debate over 'closing the gap' has led to calls for more post-occupancy evaluation, so that design

and operation can better inform each other. It's a call, however, that's largely gone unnoticed. 'There's a lack of will to go back and re-measure a building and also a lack of will among clients — it's human nature to move on to the next thing, and no one wants to be told bad news,' acknowledges architect Rab Bennetts of Bennetts Associates, a practitioner of low-carbon design. 'POE can open up a whole can of worms, where there's already a blame culture.' The BPE study both acknowledges this in-built reluctance to revisit projects, and attempted to address it.

Recognising that POE was a cost that clients, contractors and consultants alike were reluctant to bear, the project was funded with an £8m government grant from Innovate UK: project teams nominated themselves and applied for grants of up to £200,000. The programme also aimed to spread and embed POE skills across the industry. The BPE's scale makes it possible to draw overarching conclusions. According

to Mat Colmer, one underlying finding is that design changes — for instance, swapping a heat pump for a solar thermal system — often had knock-on effects that teams failed to grasp. 'From the initial design, where it's optimised on paper, other things come in and start to influence the design, such as a planning requirement for 10% renewables, or a renewables system installed to get points on a certification methodology and might not be thought through.'

Gaps in accountability

The analysis from BSRIA's Bunn is a little starker — in his view, the culture of design changes in design and build contracting and 'shrink-wrapped' specialist packages open up gaps in the chain of accountability. 'A lot of the complexity in buildings lies in packaged subcontracts, which are way down the line from the designer and often managed by the contractors. For instance, a motorised natural ventilation system might end up under the cladding subcontractor. When

building performance-related technology is all installed and procured downstream of the original design intention, is it any wonder you end up with performance penalties?’

Sustainability consultant Charlie Law also points to structural issues inherent in a low-margin industry: ‘Designers get into a groove – they haven’t got the time and money and budget to do something different, so the only way to make the jobs pay is to recycle all the old details. It’s so competitive out there, so you use the details you’ve done before and reuse it where you can.’ Unfortunately, that often means carrying over mistakes from one project to the next.

Another problem evident in the BPE study is buildings’ greater reliance on ‘smart technology’. The report features the school with the ‘digital adaptable lighting installation’ (DALI), where the lights are on all day in the atrium and no one can work out how to turn them off. Or the community centre fitted with a ‘smart’ window system with maintenance costs of £1,925 a year and poor air quality. Or CO₂ monitors in classrooms that alert teachers to the need to open the window — but they’re not in the teacher’s line of sight and with controls too complex to operate with confidence.

The lights are on all day in the atrium and no-one can work out how to turn them off

For BSRIA’s Bunn, it’s a worrying trend, and one that undermines the argument that greater use of technology will help close the performance gap. ‘Complexity comes as standard, and introduces risks we can’t handle. Smart technology isn’t fit and forget, it needs ongoing management. The kit will work if it’s installed and commissioned right – and that’s vital for the energy use – but there are no penalties for not doing so.

‘Buildings are becoming more complex – the more moving parts you’ve got, the more room for things to go unnoticed,’

agrees Federico Seguro, who studied the social housing schemes in the BPE for the National Energy Foundation charity. So there’s agreement that the problems are deeply ingrained in the way the industry works, and disagreement over whether technology-driven solutions will help. When it comes to tackling the issue however, many commentators agree that one of the first targets should be the regulatory system. This currently consists of achieving compliance with Part L at planning stage, getting a Building Control completion certificate following an air-tightness test, and an Energy Performance Certificate (for non-domestic buildings) that is itself based on the design intent.

There’s no penalty if the EPC, based on a statement from the contractor that the building has been constructed as designed, doesn’t match the Part L design intent. Also, the entire weight of regulation stops at practical completion: 12-month defect periods on contracts do not cover energy performance, and in the domestic sector NHBC and Zurich warranties ignore energy performance. ‘There needs to be a complete rethink of how the regulations deal with building compliance, and we need to start from scratch,’ says Bunn.

At Leeds Beckett, Gorse would first like to see better enforcement of existing regulations: serving a notice on a building owner for non-compliance with part L (at completion certification stage) is technically possible. ‘If that was real, if one actually saw that happening, clients and owners would start to pay far more attention to the quality of the property. But this is one area where we’ve not seen a great deal of action,’ says Gorse.

Barry Turner, director of technical policy at Local Authority Building Control, agrees that serving notices on non-compliance with Part L almost never happens. ‘For legal enforcement, it has to be in the public interest, and there has to be clear evidence that it’s in breach.’ But Turner is the first to acknowledge that the completion certificate can conceal hidden defects. ‘When a thermal transmittance value is calculated [for the EPC], it assumes it was constructed as the detailed drawings with 400mm of insulation. But that doesn’t happen.

‘Or prior to the air-tightness test, the man with the mastic gun is going round site, and then over two or three years the mastic dries out. I think the process

Complexity comes as standard, and introduces risks we can’t handle

leading up to completion and handover needs to be more robust,’ he concludes.

Incentivising energy performance for others, the BPE shows it’s time to abandon what could be called the design, build and walk-away model, and adopt contractual and commercial terms that drive better energy performance.

Such options are being considered by Jesse Putzel, head of sustainability at BAM. ‘A few people in the industry are looking promoting ‘stretching practical completion’ as an idea, or some kind of incentivisation that drives designers, contractors and clients to really focus in on performance,’ he says. ‘We’re talking to clients about it. It might be around targeting a DEC rating, but we’re not ready to deliver to market.’

Others believe that contractors could go further to explore performance-based contracting. Pedro Guertler, head of research at the Association for the Conservation of Energy, says: ‘There are models for contractors to achieve certain levels of energy performance – for instance, Energiesprong (see News, p5) is piloting this with respect to a portfolio of social housing. Contracts could have flexibility clauses, based on flexible outcomes defined by Building Regulations.’

Bunn would welcome any drive to modernise contracts along these lines. ‘Forms of contract are not keeping pace – does anyone at JCT or NEC know about BPE? Are they really up to speed? But contractual clauses would have to go hand in hand with a measurement mechanism on operational outcomes that allows it to be achieved.’ But Innovate UK’s Colmer is sceptical that a contractually driven approach – or at least one based around fines and penalties – will be effective.

Getting to grips with the BPE review

What is its significance and what happens next?

What is the Building Performance Evaluation review?

A comprehensive exercise to examine 49 non-domestic buildings and 52 residential projects completed in 2008-11, all with low-carbon and low-energy aspirations. The projects were put forward by their client and construction teams, and individuals from those teams carried out the energy assessments.

At the same time, independent assessors for universities and consultancies were appointed to review the teams' work, and to make sure the buildings were studied and measured in a consistent way. The study periods on the buildings ranged from nine to 30 months. The idea was that the methodologies and skills that were used in the BPE study would become embedded in a wide range of firms across the industry. In fact, there is likely to be growing demand for such skills: post-occupancy evaluation for three years after handover is due to become a critical part of the Government Soft Landings.

Was the sample representative?

The non-domestic sample included some well-known buildings, such as Marks and Spencer's Cheshire Oaks retail store, the Woodland Trust headquarters building, and the iCon building in Daventry, as well as an Asda store and a Premier Inn. There were many schools in the study, including several low-carbon pin-ups and representatives of the Building Schools for the Future programme.

BSRIA's Rod Bunn, one of the independent monitors, believes that the BPE buildings are more representative of buildings handed over in 2008-2011 than previous 'performance gap' studies, which tended to focus on low-energy exemplars. 'Particularly on the domestic, side they are relatively run of the mill and so it's a representative sample – and on that basis it's more scary.'

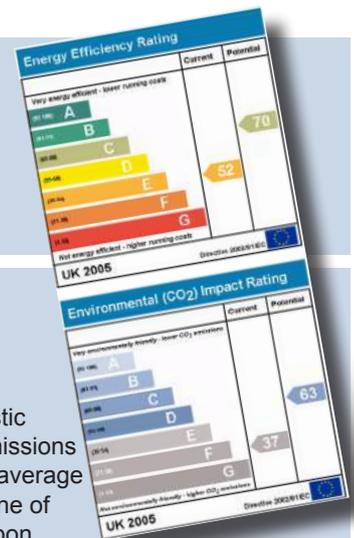
So just how scary is scary?

Almost all were found to be underperforming against expectations. In the non-domestic sector, average total carbon emissions were 3.8 times higher than the average design estimate – in fact only one of the 49 buildings had actual carbon emissions that matched the design estimate. The study also found very little correlation between Energy Performance Certificates – based on design intent – and Display Energy Certificates which record actual energy use.

In the domestic sector, average total carbon emissions were 2.6 times higher than the average design estimate. None of the 'zero-carbon' design estimates were achieved in practice. And nine out of 28 projects in the social housing sector were found to be non-compliant with Part L on thermal transmission and/or air-tightness. Jesse Putzel of BAM points out that another worrying factor is how historic the study is. 'We're looking back at buildings that are quite old, so in that time buildings have been delivered with similar issues.'

Is there some good news?

There were several creditable performances: a number of Passivhaus schemes performed well, and a few buildings proved to be have better air-tightness in real life than had been predicted. 'Good' performers included the Mayville Community Centre and Angmering Community Centre. But even some of the projects that have performed at the top end of the scale recorded carbon emissions around twice what was expected in the Part L design submission – ie the Building Emissions Rate (BER).



'To say we'll start withholding stuff if it doesn't work isn't a positive message, and is not being helpful to an industry that is really trying. But we can start to look at selling enhanced services — where you get paid more for hitting targets. Or, if I continue to work on your building, I will be able to optimise it over 10-15 years, and when new technologies come in, I can bring the energy demand down,' he says.

Throughout, Colmer has sought to accentuate the positive in the BPE study:

the dataset it's built, the evaluation culture it's promoted, the industry's commitment to improve over time. And although that perspective might be partial, it's certainly true that the BPE has built the most comprehensive database available to date, giving the industry a platform of data to build a new strategy on.

Colmer concludes: 'Obviously it's a challenge that the buildings aren't performing as intended, but all of the

organisations in the project have been incredibly open — including Asda, M&S, Crest Nicholson, Gentoo,' he says. 'So it's not just a group of specialists but its industry people who're grappling with it. If people like Crest Nicholson and Whitbread are on board and addressing it, then people will start to listen.'

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Two's company

BIM Level 2: a mandate for better performance

Following the notable milestone on the road towards BIM adoption on 4 April, technology reporter **John Adams** summarises the government's Level 2 BIM mandate.



In May 2011, the UK Cabinet Office announced a long-term government construction strategy aimed at improving the efficiency, cost-effectiveness and sustainability of UK government construction projects. The strategy's short-term goal is to reduce construction costs by 15 to 20%, and it is part of a broader set of goals for the industry, which are to reduce construction costs, project delivery time and long-term operating costs, and to help the UK meet carbon reduction targets for buildings.

A key part of the strategy is the requirement to use collaborative 3D BIM processes on all centrally funded public projects (both buildings and infrastructure) by April 2016. Since the

strategy's launch, a number of public-private steering groups and organisations have been helping to implement and strengthen the BIM capabilities of both government organisations and industry supply chains. Several standards and specifications have been created. Policies, protocols and tools have been devised, and others revised, and government projects have been used to test methods and obtain feedback.

Based on this development effort, the UK BIM mandate now includes a number of main components that enable project teams (government owners, supply chain designers, contractors, and fabricators) to understand, specify and adhere to BIM processes and procedures for working

together on BIM projects. These 'pillars' – PAS 1192-2, PAS 1192-3, BS 1192-4, PAS 1192-5, the CIC BIM Protocol, Government Soft Landings, the Digital Plan of Works (DPoW) and Uniclass classification system – are summarised in the pull out box (*see opposite page*).

For each centrally procured UK government project, the government client will evaluate the proposed approach, BIM capability and capacity of a supplier and its supply chain to deliver the required information. As such, a potential 'Tier 1' government supplier (such as a lead designer, main contractor or joint venture partner) must convince its government client that it is BIM ready by detailing the processes that it will use

to fulfil the client's requirement. Likewise, a supplier further down the supply chain must demonstrate its BIM readiness to its higher-tier client.

Working with COBie

As a project moves from design to construction to commissioning and handover, the project information grows and eventually represents what has been built and delivered to the government

client. This information is then used to support the operations and maintenance of the built asset. COBie (Construction Operations Building Information Exchange) is the UK government's chosen Level 2 BIM exchange schema for this information. Facility owners and operators require a wide range of information, from as-built drawings of the facility to serial numbers and installation dates of warranted equipment. Traditionally, this was provided during

handover via boxes full of paper drawings, operations and maintenance manuals, or by CDs containing electronic versions of the same information, possibly taking thousands of hours to process and enter the data into systems used for FM, operations and maintenance. In 2007, the US Army Corps of Engineers (USACE) developed the COBie exchange format as a pilot standard for its own building projects.

The Pillars of BIM Seven things you should know



1. How BIM should be used

PAS 1192-2:2013 is at the heart of the UK BIM mandate, identifying how BIM should be used for a project's design and construction. It is underpinned by BS 1192:2007, which defines the collaborative production of architectural, engineering and construction information and establishes project team roles and responsibilities, as well as rules for naming, classifying, layering and exchanging project data.

2. The Asset Information Model

PAS 1192-3:2014 deals with the operational phase of a project. It describes how an Asset Information Model (AIM) should be created from the Project Information Model (PIM) that was developed during design and construction, including the establishment of data requirements from the beginning of a project. It also describes how the AIM should be used and maintained through the life of the asset.

Image credit: Andyvi

3. Exchanging information

BS 1192-4:2014 defines expectations for the exchange of non-graphical project information using the COBie standard, which enables the exchange of structured information for the commissioning, operation, and maintenance of a project in a neutral spreadsheet format. The facility owner can then use this in decision-making tools, and FM and asset management systems.

4. Sharing information safely

PAS 1192-5: 2015 provides technical security considerations for UK government owners and project stakeholders regarding vulnerability issues, and the controls that are required to help ensure that information is being shared in a security-minded fashion.

5. Legal aspects of data-sharing

The Construction Industry Council (CIC) BIM Protocol is a legal addendum to design and construction contracts that allows parties to share data within a contract when working to BIM Level 2. It establishes specific obligations, liabilities and limitations on the use of project models.

6. Handing over the asset

The Government Soft Landings (GSL) is a policy of graduated handover for government projects. It requires project teams to stay in touch with government clients for several years to assist them in learning how to operate their asset effectively.

7. A common language for BIM

The UK government commissioned a unified classification system (Uniclass) for team members. A single classification system enables electronic project data to be indexed and structured to be accessible and searchable.

Since then, it has been used by private and public organisations around the world. COBie enables the capture of facility information throughout the phases of a project, and the exchange of that information in a structured format using neutral spreadsheets. Two types of assets are included: 'visitable' spaces and managed or maintained components and equipment. COBie enables the supply chain to provide electronic information directly as that information is created.

The COBie spreadsheet will contain data from design consultants, the contractor and subcontractors, suppliers and the client. In a collaborative BIM project, the COBie spreadsheets from all these participants are merged together. In general, COBie files are not intended to be 'read' by end-users. Instead, they are a vehicle that can be used to exchange space and equipment information between systems.

BS 1192-4 provides guidance for using COBie to exchange facility information between the employer and the supply chain. The timing and number of exchange points (or COBie data drops) are aligned to project stages and will vary depending upon the requirements of individual government clients to suit their internal processes and approvals. There are likely to be at least four data exchanges: at the end of preparation and brief; at the end of conceptual design; at the end of design development; and at handover.

The Common Data Environment

A successful implementation of the UK government strategy and Level 2 BIM mandate relies on a Common Data Environment (CDE) to support a project's information delivery process, as specified in both PAS 1192-2 and BS 1192. A CDE is defined as a single source of information for any given project, used to collect, manage and disseminate all relevant approved project information for multidisciplinary teams in a managed process.

PAS 1192-2 Section 9.2 describes how a CDE should accommodate information from government BIM projects and enable multidisciplinary project teams to collaborate in a managed environment. A CDE may use a project server, extranet, file-based retrieval system or other

toolset, but should allow information to be shared efficiently and accurately between an extended project team that may work across companies and geographic locations. A CDE helps to ensure that information is only generated once and is then reused as necessary by all members of the supply chain, and that information is constantly updated and enriched. To accommodate collaborative BIM processes, it should include four fundamental capabilities:

1. A shared project workspace for project team members from different disciplines, companies and locations
2. Controlled access to the information stored in the CDE
3. A structured, configurable approval process to control the flow of project information
4. A process to track and manage activity related to the CDE's information and controls

One possible platform is Autodesk BIM 360 Docs, a cloud-based platform that provides general document management as well as specialised functionality for 2D drawings, 3D models, and other project information. BIM 360 Docs helps to support the collaborative workflows described in BS 1192 and PAS 1192-2, and has been designed to fulfil the UK government's technical requirements for a CDE.

In addition, the security controls and features in BIM 360 Docs assist UK government clients, suppliers and asset operators who use the CDE to comply with PAS 1192-5. Specifically, it supports the 'need-to-know' approach to the sharing and publication of information about built assets.

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To find out more about Building Information Modelling please visit CIAT's dedicated BIM pages in the members-only section of the website at: www.ciat.org.uk/en/members_only/bim/



Visualising a more efficient future

Simulating scenarios saves housebuilder Hill £20,000

With the advent of BIM, London and south-east housebuilder Hill was eager to embrace a more efficient way of working, as well as drive the productivity of its workforce, tackle the inefficiency of procurement and improve quantification.

The company adopted a range of Autodesk tools to help in the process, including BIM 360, Navisworks and Revit. Autodesk cloud-based technology on synchronised iPads and other devices allows Hill employees to spend more time on site and be more productive, as they are empowered to carry out more admin tasks while in the field.

In addition, Navisworks enabled greater project visibility for head office. Projects that have benefited include the redevelopment of the South London YMCA at Upper Norwood, where the site had a steep topography and the building was difficult to visualise. By using the BIM modelling tools, Hill was able to simulate different scenarios and make better-educated decisions regarding the design and construction of the building. Access to this information saved Hill around £20,000.

Mike Beckett MCIQB, director at Hill, says: 'Using Revit and Navisworks means our site managers can in time expect to increase productivity by between 30 and 40%, which allows them to get more done.' He adds: 'As a result of working with Autodesk, we're now looking to roll out more projects with BIM as a standard.'



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The connecte

In 1923 Le Corbusier proclaimed that a house should be a 'machine for living in'. Almost a century later, his prediction is coming true as technology plays an ever-increasing role in domestic life. This article by the **National House Building Council** explains what designers need to know to create a 'connected home'.

A connected home, sometimes referred to as a 'smart' home, is loosely defined as one in which electrical devices are potentially connected to each other and are often connected to the internet too. This provides maximum convenience to the residents in operating the home, and enables both the home and the residents to access a wide variety of external digital services.

As lifestyles become increasingly demanding, people expect more from their living environment and its associated technology. Technology has come a long way since the start of this century, and the rate of progress is not slowing down. In 2000, having one television in the living room, a telephone socket in the hall and no internet access was perfectly normal and acceptable.

Sixteen years later the use of fixed (landline) home phones for making voice calls is becoming less important than access to mobile phone networks, and the provision of superfast broadband to the home is increasingly essential to support Internet-connected TVs in multiple rooms, music streaming, game playing, security and remote control of heating and lighting. According to marketing agency Raconteur, the penetration of 'smart home' technology is set to rise from 11% to 27% by 2020.

The so-called 'Internet of Things' (IoT) is also evolving rapidly. At its

most esoteric and future-looking, the Internet of Things is about connecting previously mundane appliances such as fridges to the internet so that they can, for example, automatically order more milk. However there are more immediately useful IoT applications that are closer to market, such as boilers which automatically inform a servicing company when they develop a fault.

The homes that are built today should enable their residents to enjoy these present and future benefits, whether they are as simple as catching up on a missed TV programme or as important as helping an elderly relative to live independently for longer. There is evidence that home purchasers are starting to prioritise better access to connected services (for example, favouring areas with superfast fibre broadband).

This provides an opportunity for designers to maximise the value of new homes by ensuring that they are ready for today's technologies as well as what is on the horizon. Even simple measures at construction stage such as the installation of a couple of wired data outlets can reap rewards for residents now and in the future.

This article describes the spectrum of types of connected home, and discusses the benefits of the different technologies. It identifies some of the challenges faced

A connected home is one in which technology enhances lives

by those involved in the design, specification and construction of connected homes, and provides practical advice in support.

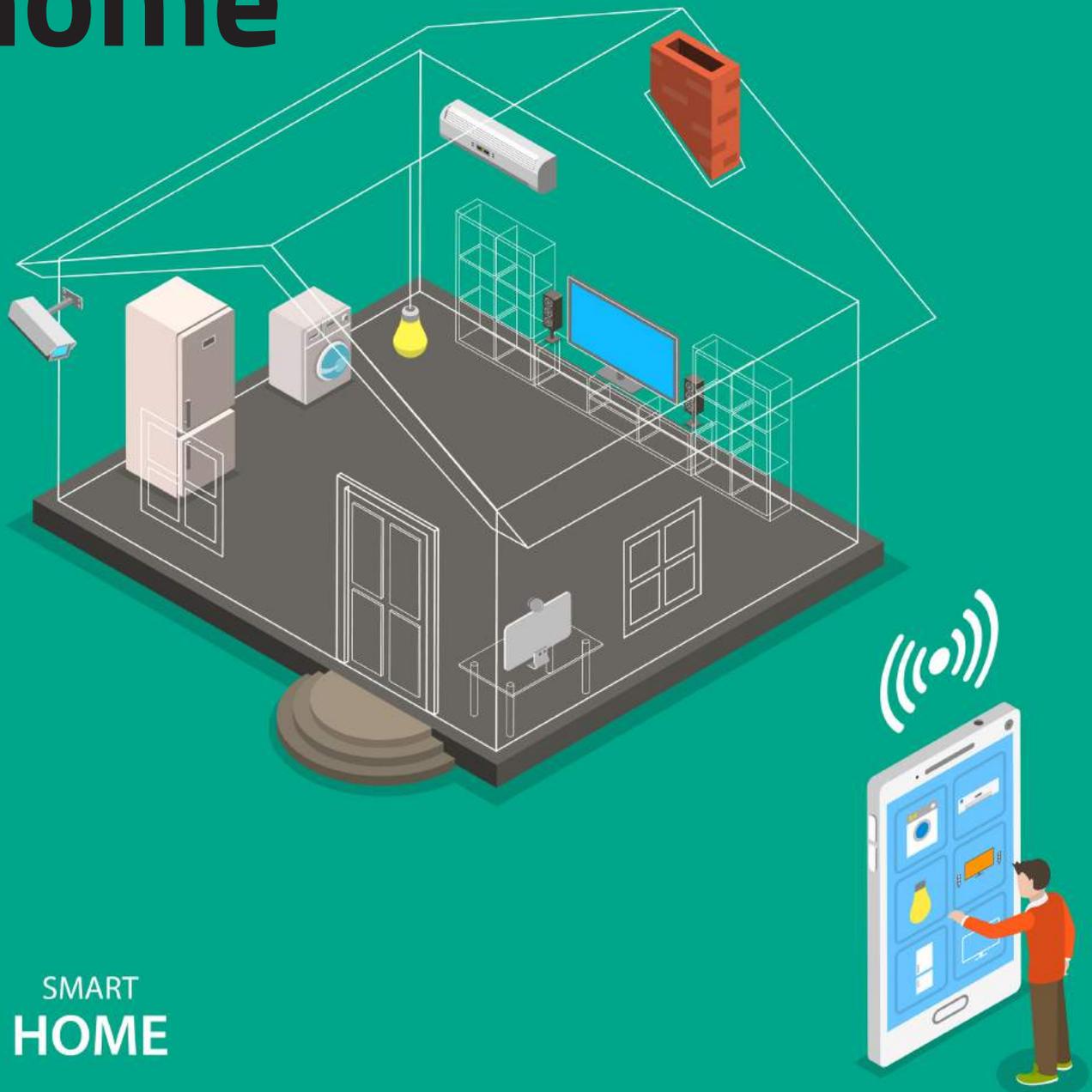
A connected home is one in which technology enhances the lives of those who live in it. There is no single definition of a connected home; it is better thought of as a spectrum of electrical and digital applications, at one end of which is the here-and-now and at the other end a number of futuristic scenarios. Key components of the whole spectrum are a home network, a good quality broadband connection and devices that communicate across that network to support the needs of the users.

At its simplest, today's connected home is one in which the occupiers enjoy reliable, fast access to online IT applications (apps) throughout the home. Further along the spectrum might be conveniences such as remote lighting control or a smart thermostat that is programmed to turn the heating down when the last occupant leaves home in the morning. Only at the far extremes of the spectrum lie 'intelligent' appliances and advanced applications such as door entry controlled by face recognition and real-time medical monitoring for the elderly.

By definition, all connected technology requires a network of some sort to enable it to communicate. Modern computers

ed home

Nanuvision



SMART HOME

and connected devices communicate with each other using a set of conventions known as Internet Protocol, or IP3.

A home IP network⁴, is formed by connecting individual devices such as smartphones, tablets and Internet-enabled TVs to a central hub. The hub typically consists of:

- A number of network ports (for direct connection using wires).
- A wireless (wi-fi) controller (for multiple wireless connections to the network).

- A router (which directs the data traffic on the network).
- A modem (effectively the gateway through which the home network is connected to the external Internet).

Some of the benefits of connected living have been available for many years, although the take-up has generally been limited to wealthier early adopters. A number of developments have recently unlocked the benefits for a much wider section of society:

The availability of cheaper broadband services has made access to the Internet fast and 'always-on' (unlike the preceding 'dial-up' technology)

- Wireless networking means that connected technologies can often be used without having to retrofit wiring within the home.
- The rapid growth of smartphones has made using online apps an everyday activity for many people.

Because this technology works simply and reliably, lifestyles have changed. Many people who wouldn't have considered using internet banking a short time ago now use it every day. A whole generation is accustomed to accessing TV and other entertainment 'on-demand' via the Internet from services such as BBC iPlayer, Netflix and Spotify.

For devices to work well they need a connection which is both robust and has the appropriate speed. Activities such as surfing the internet only require a low speed, whereas streaming media services (music and video) need much higher speeds. At peak times, however, if more people use these services simultaneously then a download speed greater than 10Mbit/s could be required.

The speed with which devices can communicate is governed by the physical and electrical characteristics of their wired or wireless network connections, termed the bandwidth. The bandwidth depends upon two things: the speed of the signal from the external Internet into the home, and the speed available in the network around the home. The former is essentially under the control of the external telecommunications provider.

The speed available within the home network, however, can make a significant difference, and is largely within the control of the house builder and residents. While wireless connections are generally the most convenient for home networks (especially for mobile devices), wired connections are much faster and are significantly more secure.

Wifi was originally designed for the US market, where homes are more likely to be of timber frame construction and are often of single-storey design. As a result, residents of UK homes, which are typically of masonry construction and with multiple storeys, can suffer from a poor wireless signal in parts of the home. In these cases wifi may not have the necessary speed for emerging services such as ultra-high definition video. Wireless should therefore be considered as a key part of a home network, but not the whole solution.

There is a broad range of types of connected home. The spectrum of electrical and digital applications making up current and future connected homes falls into three broad categories:

- Today's basic features.
- At-market and near-market 'smarter' features.
- The emerging 'Internet of Things'

Today's basic features

At the simplest end of the spectrum, today's connected homes contain technology which is mature in market terms and which presents little in the way of challenges to the designers and house builders who may choose to adopt it. This technology includes the following:

- Home working
- Voice and video telecommunications
- Home entertainment
- Smart meters and energy display devices
- Basic lighting controls
- Heating system controls
- Automatic storage of locally generated energy
- Assisted living
- Fire and security systems
- Low-voltage DC outlets.

Home working

As more employers encourage flexible working and employees adjust to using laptops and accessing files from 'the cloud' (remote file servers on the internet), homes are increasingly becoming places to work as well as to live. The Office for National Statistics reported in 2014 that 'of the 30.2 million people in work in January to March 2014, 4.2 million were home workers, giving a home worker rate of 13.9% of those in work.'

With space at a premium, in many cases the home working environment consists of the kitchen or dining room table rather than a dedicated study. This is even more often the case for families who use home computers for personal tasks (emails, letters, school homework, etc). A robust Internet connection therefore needs to be available throughout the home.

Voice and video telecommunications

Traditional home telecommunications consisted of a single hard-wired telephone in the hallway. Using IP technology, however, a much wider range of services becomes possible. internet telephone calls (VoIP calls) can provide voice and video communication using applications such as Skype and FaceTime.

Home entertainment

Television. Television is no longer restricted to a single TV set in the corner of the living room with a limited range of channels. Now residents expect to have televisions in multiple rooms to which they can stream their choice of programme whenever they wish. The living room often doubles up as full-function media room with widescreen TV and surround sound. At the top end of the market there is a growing demand for dedicated home cinemas, sometimes with a projector and screen where, at the press of a button, the lights dim, the screen drops down from the ceiling and the cinema system starts. Conversely, many people now use hand-held smartphones, tablets or computers to catch up with the news, episodes of their favourite programmes and even whole films.

Critically, within the home there may be many people viewing different channels, programmes and video clips simultaneously, which means that a wireless network can become congested and slow. The advent of UHD (ultra-high definition, or '4K') TV is exacerbating this effect, but even a small amount of wired networking can significantly improve performance.

It is worth noting that while catch-up television and streamed video require a network connection, conventional television (both terrestrial digital and satellite) will continue to be broadcast over the air for many years to come. Homes will therefore continue to need aerials, coaxial wiring and TV sockets for the foreseeable future.

Gaming: The annual consumer-spend in the UK on electronic gaming rose 13% in 2014 to £3.9 billion¹¹, outselling both music and video. Gaming now forms a large part of how homes are used for entertainment. Interactive games, where multiple players from around the globe can be playing simultaneously, require a fast connection and put a high demand on a home's network infrastructure. Gaming also impacts on where televisions are positioned in the home.

Music: The option to listen to CDs, MP3 players, radio stations and streamed music in multiple rooms is already common. Many devices can provide multi-room audio wirelessly, but again a robust internal network and a reliable

Internet connection are key. Dedicated sound can be managed through in-wall or in-ceiling speakers, including 'invisible' speakers which are finished over with the relevant surface finish or even disguised as artwork.

Smart meters and energy display devices

Smart gas and electricity meters are intended to revolutionise the way energy is used in the home. Smart meters can provide information to the resident, and also enable two-way communication between the meter and the energy supplier. Residents can view their instantaneous or historical energy consumption, and can make informed choices about how they use energy within their home. Energy suppliers can interrogate the meters remotely and rapidly produce accurate bills.

A central database of customer and consumption information is being built with the aspiration to enable 'next-working-day' supplier switching for consumers. Today's smart meters exchange information with the energy suppliers using traditional radio communication technology, and transmit data to the home display using low-power radio signals. Future smart meters may use IP networks and have much more functionality, as discussed later in this section.

Basic lighting controls

Remote-controlled lighting dimmer switches are not new technology, but can legitimately claim to be part of the connected home. Devices commonly use encoded FM radio signals, but basic smartphone applications are starting to appear. The emergence of advanced lighting control systems is discussed later in this section.

Heating system controls

'Smart thermostats' typically enable residents to set up a temperature profile for each heating zone independently of the central programmer. Some smart thermostats also learn the response characteristics of the heating zone, and delay or advance the boiler firing accordingly. Residents are more likely to engage with such devices if they are provided with a simple, intuitive interface (eg a tablet app). If the user interface is also provided on a smartphone, the home

heating can be controlled remotely via the Internet just as easily as from within the home. In addition, the heating system can potentially detect the geographical location of the resident's phone and send them a reminder to boost the heating or hot water as they get closer to home.

Automatic storage of locally generated energy

The installation of solar photovoltaic (PV) panels on homes will increasingly lead to a distributed model of UK electricity generation. Electricity supply and demand do not necessarily match in terms of either geography or time of day, and the National Grid serves to move the electricity from where it is generated to where it is needed as well as to store it centrally at times of excess generation. It is more efficient, however, to use and store local generation in the immediate vicinity.

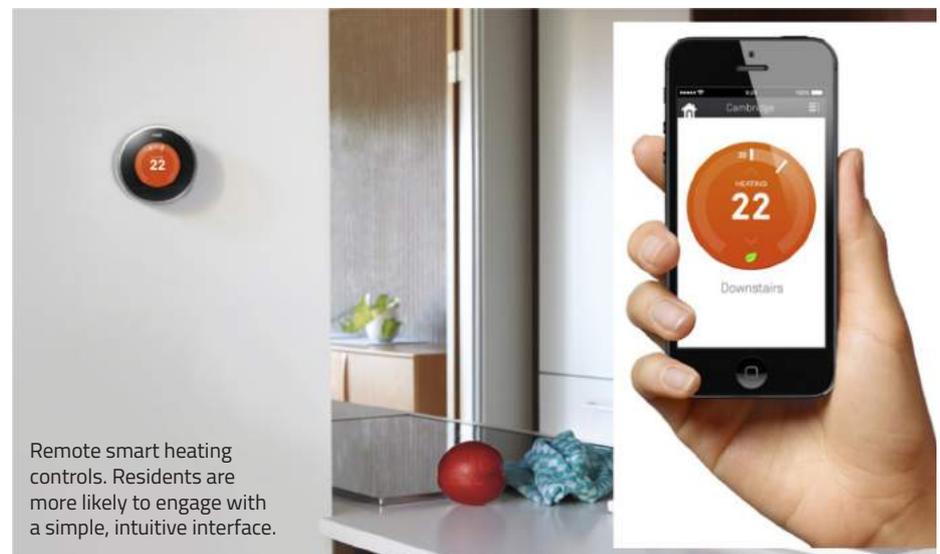
It is a standard function of PV system controllers to ensure local usage of available generation, but storage of excess generation at times of low demand is not yet the norm. One simple, low-cost method of effectively storing electricity locally is to turn on an

immersion heater in the home when there is an excess of PV generation, so that the resulting hot water can be used later without the need for any additional energy. Such systems do not generally need to be internet-connected, but the PV panels, immersion heater and controller can nevertheless be regarded as connected devices.

Assisted living

The UK has an ageing population. At the time of writing there were some 15 million people in the UK aged 60 or above, predicted to exceed 20 million by 2030 according to the charity Age UK. Research shows that many people live longer (and more happily) when they are in their own home which is familiar to them. Various technologies are available which can provide flexibility and freedom for those living independently, allowing them to summon assistance from informal caregivers such as family members and formal services such as community health workers.

Simple remote sensors and unobtrusive alarm activation buttons (including wearable versions) can be integrated easily into the home to provide



discreet signalling when needed. Many stakeholders (eg local authorities, housing associations, healthcare providers, insurers and relatives) are using this 'telecare' technology today. Good telecare combines effective local support with minimal intrusion.

Fire and security systems

Fire and security systems range from simple door entryphones to sophisticated detection and monitoring systems. One of the longest-established remote monitoring systems, BT's Redcare Classic, typically uses hard-wiring within the home and analogue phone lines to alert the monitoring centre, but technology is rapidly advancing. Sensors and alarms linked digitally within the home using wireless signals are now cheaply available. The standards which regulate police response to security alarms assume that implementation is via the Internet for grade 2 systems and above.

Low-voltage DC outlets

The growth of ownership of personal digital devices – smartphones, tablets, watches, cameras – means that there is a constant demand for low voltage direct current (DC) charging points in the home. Many portable plug-in chargers inherently waste energy in the voltage conversion process, and their proliferation in the home can be unsightly. Chargers are beginning to standardise on the USB specification, which presents an opportunity to install mains AC sockets which incorporate USB outlets in the same faceplate. These combined sockets consume a negligible amount of energy when not in use, are more visually appealing and use fewer resources to manufacture.

At-market and near-market smarter features

In the middle of the spectrum of connected homes are 'smarter' features which would not yet be considered mature in market terms but which are starting to become available. Designers and house builders are unlikely to routinely incorporate these yet, and indeed may decide only ever to incorporate them in premium homes, but the technologies are rapidly becoming cheaper and will one day be a normal expectation of many residents. A smarter technology may be defined as anything with a degree of intelligence which offers the consumer enhanced control over how they use their home and/or broadens their lifestyle choices. Smarter devices vary greatly in cost and complexity, but once again the common theme is the need for a home IP network and internet connectivity. Smarter features include the following:

- Low-occupancy setback of heating, ventilation and lighting
- Occupant-sensing security
- Advanced telecare
- Appliance control based on smart meter data

Low-occupancy setback of heating, ventilation and lighting. Using conventional passive infra-red (PIR) movement sensors or technology such as smartwatches, a home automation system can deduce from the occupants' activity patterns whether they are up and about, have gone to bed or have left the home. The system can also 'intelligently' distinguish between a normal day out at the office and a longer holiday absence. The heating, ventilating and lighting can then be instructed accordingly to continue

running, turn down to a lower setting or switch off altogether.

Occupant-sensing security. Security systems which use connected technology can provide reassurance through simple monitoring. They can enable residents to check remotely on the interior and exterior of their property using discreet Internet-connected cameras (webcams), via a smartphone app, free of charge.

Advanced telecare. The connected home provides endless possibilities for advanced telecare, or 'telehealth'. Companies that specialise in this area are extending their offerings into wearable devices that monitor heart rate, blood pressure, breathing, etc., and mats which can monitor sleep patterns. Data from these devices is fed back wirelessly to a centralised server where the information is logged and used by relevant parties to assess the resident's health. Alerts can be automatically flagged, and a real time monitoring service can action the appropriate response.

Appliance control based on smart meter data. The ability of a smart meter to receive messages from the energy supplier can enable better control of household appliances. For example, 'cost-reflective messages' can be sent to the meter's display device for customers on flexible time-of-day tariffs, informing them that there is a forthcoming cheap period during which they may wish to turn on higher-powered appliances such as tumble driers.

Below: advanced telecare sensors can be used on the person and on items of furniture such as a bed.



Essential smart home requirements

Planning ahead is key for smart home design

The focus on providing services in residential construction has been increasing for many years. Central heating, once considered a luxury, is now a standard feature in almost all new homes. The emergence of the connected home is evolutionary rather than revolutionary, but even the present-day demand for smart devices is turning what were recently considered luxuries into fundamental expectations for many families.

Retrofitting good, reliable smart home technology to an existing home is significantly more costly than including the correct infrastructure in a new home, due to the complications of routing wires and placing sensors in appropriate places. The visual aspects of retrofitted cabling can also detract from the perceived value of the home.

There is a tangible opportunity for house builders to address these problems with today's new homes. At the simplest level house builders can enhance the value of their product by incorporating sufficient wiring to provide a basic infrastructure.

Ensuring good wireless coverage

Even though wired connections are normally faster and more secure, wireless connections form a key part of a home network. Many older homes can struggle to provide a good wireless signal throughout, but certain modern construction materials, notably steel framing and foil-backed plasterboard, can also limit the transmission of wifi. With reduced signal strength comes lower bandwidth. Wireless speed can be affected by the number of devices simultaneously using the home network, and by wifi from neighbouring properties which can cause broadcast congestion. Also, the size and geometry of a home can mean that good wireless coverage may not extend to all of the rooms. For these reasons, data-intensive services such as ultra-high definition video can fail to deliver consistently.

Providing wired connections

Some basic wiring can eliminate many of the wifi issues described above. Simple

network cables can transmit data around the home at up to 1 Gigabit per second (ie 1000 Mbit/s). At the time of writing, this is an order of magnitude faster than either a typical incoming broadband line or an internal wireless connection, and far in excess of what even high-definition video needs. Wired home data and TV networks can be certified to a specific standard upon completion, and will continue to operate at this standard after the customer moves in; the same cannot be guaranteed with wireless networks. A wired connected home will include three elements:

- Cables for incoming services (broadband, telephone, digital terrestrial TV, satellite or cable TV)
- A wiring hub where the incoming services meet
- Cables from the wiring hub to distribute the services around the home.

For a good standard, the cables from the wiring hub should include the following to each principal room:

- Two coaxial cables for TV/radio, and
- Two data cables (to 'Cat5e' or 'Cat6/6a'19) for digital network services

It is important that mains outlets are positioned adjacent to the coaxial and data outlets in each room. This simple wiring arrangement is sufficient for most of today's homes, and will provide future-ready cabling for years to come.

For a minimum standard, the wiring from the hub could consist of a single data cable to a central position in the home to ease expansion of the wiring network at a future date. Consider the inclusion of some wired connections to be business-as-usual. Nothing described above is particularly complicated or expensive. There will be some additional costs for wiring and accessories, but it is straightforward to install.

Standard details should be adopted for TV points, the central hub location and incoming services, ideally across all house types. Wiring guidelines published by professional organisations such as CEDIA and the IET provide useful



When providing a wiring hub, its location needs to be determined early in the design process.

technology (for example a home automation or smart security system) is to be incorporated from day one, a specialist design consultant is recommended.

Additional considerations

In addition to the essential requirements above, designers and house builders should also consider the following:

- Where a dedicated home office space is provided, ensure that it contains two double power sockets, a telephone point and a wired network point
- Consider installing combined 230V/USB electrical faceplates in a couple of key locations in the home
- Consider using specialist installers such as 'home technology integrators' who are registered under the Electrotechnical Certification Scheme

If installing IoT technology from day one, provide power and a wired network point where each connected device is likely to be situated (for example, adjacent to every external door with a smart lock security system)

Ensure that the Home User Guide includes information on the hub and wiring arrangement, with evidence that the installation has been tested and certified;

- Avoid jargon
- Recognise that residents are increasingly focused on broadband speed but may not necessarily be motivated by leading-edge hi-tech or smart features

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INDUSTRY CALLS FOR CHANGE OF MINDSET

The construction industry needs to adopt a factory mentality to overcome many of the challenges it now faces - and the government itself has a responsibility to help the sector attract more talent. So was the consensus, at a recent cross-industry advisory panel hosted by UK Construction Week.

Attended by leading figures across architecture, engineering, contracting and housebuilding, the lively debate sought to address the key issues facing the industry today – the skills shortage, diversity, the housing crisis and the reputation of the sector itself.

The event was chaired by property developer and **Built by Her** campaigner, **Marta de Sousa**, who began discussions by asking the panel how the industry was going to attract the reported 36,000 new workers the industry needs per year, to meet current demands.

Shortermism, a result of the industry being so exposed to economic pressures is a major barrier, said **David Cowans**, **Group Chief Executive of Places for People**. A boom-bust cycle sees construction workers the first to be sacked in a recession and somehow we need to stabilise this volatility. The industry's sensitivity to uncertainty is undoubtedly an issue, agreed **Allan Wilén**, **Economics Director of Glenigan**, citing the number of projects that have been put on hold, most likely awaiting the outcome of the referendum.

Dr David Hancock, **Head of Construction at the Cabinet Office**, identified a need to build differently. The panel agreed; the industry needs to move away from its traditional mindset and skillset; and for the housebuilding sector in particular, off-site manufacturing of pre-fabricated buildings is most certainly the answer – if we could only overcome some deep-seated negative perceptions.

It was a belief passionately held by **L&G Homes CEO, Tom Ground**, who saw computer-controlled factory environments as a means of also improving diversity in the workplace: Eliminating the need for heavy-lifting is key – moving away from a way of working that requires above average strength opens up opportunities for all.

Dr Diana Montgomery, **CEO of the Construction Products Association**, agreed. With an organisation that spans manufacturing and construction, she sees quite clearly the divide – there is no skills shortage in manufacturing and the industry benefits from a much more diverse workforce, due to the different working conditions.

Additionally, Diana felt that 'brand' made a difference – with a call for individual companies within construction to work harder to build theirs. Manufacturers, she felt, were better at creating an aspiration to work for them – and rather than the construction industry as a whole looking to improve its reputation, wouldn't it be more effective for individual companies – large and small – to work on their own brands and attract people based on their intricacies?



Bola Abisogun, **Founder and Executive Director of Urbanis Limited**, certainly agreed that the smaller companies have a vital role to play in encouraging the next generation into the industry – and felt that there needed to be better dissemination of work. To him it is actually an 'alleged' skills shortage, brought about by the larger companies winning the majority of the work then needing to recruit to deliver – whereas at grass roots level there is still a lot of capacity.

Peter Murray, **Chairman of New London Architecture**, said much more had to be done by the industry as a whole to generate understanding of its contribution. Role models are key, thought **David Hodder**, **RIBA Immediate Past President & Client Ambassador**, with **Mike Petter** **Chairman of the Considerate Constructors Scheme** concurring, particularly in a climate where he felt youngsters were actually actively discouraged to enter the industry.

Isn't it crazy, mused **Nathan Baker**, **Director of Engineering Knowledge at the Institution of Civil Engineers**, that accountancy is more appealing a career to youngsters than working in construction?

Richard Poulter, **Deputy Managing Director at Wilmott Dixon Construction Ltd**, said it was about joining the dots – bringing role models and brand stories together to create a compelling narrative.

Chris Wilkinson, **founder of WilkinsonEyre**, felt the government had a role to play. The built environment is everything we know – it's about quality of life and therefore the government needs to take more responsibility for ensuring we have the necessary skills.

Although all agreed with **Pauline Traetto**, **Director of BRE Academy**, that there has never been a better climate in which to promote the industry, **Christine Townley**, **Executive Director of Construction Youth**, pointed to fragmentation as a problem. We have many disparate groups and some fantastic examples of projects aimed at improving the reputation of the industry and attracting talent but they are working in silos – we're not currently benefiting from any culminative mass.

Alex Naraian **MCIAT, Associate Director, Adam Architecture & CIAT South East Region Councillor**, suggested that every trade association should appoint a key individual whose role it is to liaise with all other trade associations to form a collaborative voice.

Aileen Woolhead, **non-executive director of Whitley Homes**, concluded that fragmentation of the industry as a whole, was a bigger issue – with compartmentalisation a real barrier to the effective delivery of projects and the complexities sometimes baffling to end clients. Agreed, said **David Cowans** – we need to start selling based on outcome, and how we get there should be our problem, not our clients'.

Nathan Garnett, **Event Director for UK Construction Week**, was enthused by the discussions. "Against a backdrop of some seemingly major issues, the feeling was one of optimism, with a general consensus that the time has never been better to drive innovation and change mindsets across the industry.

"And I very much feel that UK Construction Week has a role to play in this. By bringing together leading thinkers and innovators under one roof, we are creating the ideal opportunity to promote all that is great about the industry, showcase the UK as leaders in the construction industry, drive change and to attract new talent. UK Construction Week can be a unifying voice. Today's discussions will feed into our plans, enabling us to create a platform that can be leveraged by the industry as a whole to promote itself and its wider societal contribution."

Taking place at the Birmingham NEC from 18 – 20 October, UK Construction Week combines nine shows in one location. With over 24,000 trade visitors last year – a figure expected to double at this year's event – the show boasts over 1,000 exhibitors. Visitors are able to attend Timber Expo, the Build Show, Civils Expo, the Surface and Materials Show, Energy 2016, Plant & Machinery Live, HVAC 2016, Smart Buildings 2016 and Grand Designs Live.

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Stand up for STEM

Would you like to inspire young people to choose Architectural Technology as a career? If so, now is your chance to become a STEM Ambassador and join a nationwide volunteer programme.



Boris Bulychiev

The STEM Ambassadors Programme is a 33,000-strong, UK-wide network of volunteers, all with a passion for Science, Technology, Engineering and/or Maths (the STEM subjects). STEM Ambassadors inspire young people to continue studying STEM subjects, and help them to explore the applications of their studies in the wider world. They broaden career horizons, raise aspirations, and build understanding of the role that these subjects play in everyone's lives.

As part of its commitment to educational engagement – recently formalised in our pledge to the UK government's Your Life campaign – STEMNET is encouraging CIAT members to join the STEM Ambassadors Programme. As a STEM Ambassador, you must take part in a minimum of one activity each year, which could be a half-hour Skype chat, a classroom visit, or even a professional development session for teachers.

You are asked to make an initial commitment of three years – so at least three activities – though you are welcome to renew that commitment when the time comes. STEM Ambassadors carry out over 25,000 activities each year, working with more than 90% of state-funded secondary schools (and large numbers of primaries as well). Activities could be classroom workshops or talks, supporting

an out-of-hours club (regularly or as a one-off), helping out at large events and careers fairs, or even work with a non-schools audience such as Guides or Scouts.

As long as it benefits young people between 5 and 19, is STEM-related, and the STEM Ambassador isn't acting *in loco parentis*, it could count! You can watch some STEM Ambassadors in action at <http://training.stemnet.org.uk/support/videos>.

As well as the benefits for students and teachers, being a STEM Ambassador can also benefit you. As well as being an enjoyable thing to do, volunteering with young people can build your presentation skills and help you see your work from a different perspective. Depending on the way you engage with schools, it can also strengthen project management, strategic thinking and leadership skills.

To become a STEM Ambassador, register online at the link below and select the area of the UK where you will do most of your volunteering. Your local STEMNET contact will then email you about the next steps: a two-hour induction session, and an enhanced DBS disclosure. The registration process usually takes around one month, depending on your availability for induction.

<https://db.stemnet.org.uk>



CIAT and STEM

How members can be of benefit to those thinking of a career in Architectural Technology

Assistant Education Director Dr Noora Kokkarinen (pictured) says of the STEM Ambassadors Programme:

'Members have a lot of experience which could benefit those who might be thinking of a career in Architectural Technology. STEM subjects are complex and advice can be conflicting, so direct contact from Architectural Technology professionals will be of great help to young people at key stages in their education.'

'CIAT is promoting the STEM Ambassador initiative as part of its ongoing commitment to promoting the discipline of Architectural Technology.'

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Park life

Joe Fallon MCIAT, Chartered Architectural Technologist, surveyor and building engineer was keen to try out skills gained from a BSc in Landscape Design. The resulting project received Ireland's Best Park Award 2016.



The idea came about in 2012 when my wife Deirdre came up with the suggestion 'why don't you design a park for the local community?' I had recently completed BSc Landscape Design stage 2 from Blanchardstown Institute of Technology, Dublin, and was keen to take on a project. We have two young children so I thought it would be a great for them growing up to have a place where they could play safely with other children of the community while under the watchful eye of their parents who could go for a walk, get some exercise and get to know the other parents as we had only recently moved from Dublin to the village of Templeudigan, County Wexford.

It was hoped it would be a central meeting point for both young and old and bring the whole community closer

together. In order to get the wheels in motion, I outlined my thoughts and ideas, put a conceptual design into a PowerPoint presentation and presented it to the parish council who later had a vote on it. At this stage the park almost didn't go ahead, with the vote being decided by the narrowest of margins, five votes to four in favour of the park with the parish priest having the deciding vote!

The next stage was to develop a 'wish list' in conjunction with the local community that could accommodate everyone in the village, be it the young, elderly or middle aged. So a second meeting took place, at which everyone was invited to express a view as to what was needed. Ideas for walking/running paths, an outdoor gym and playground equipment were all taken on board. A land swap with a

local farmer was proposed in order to get a location in the centre of the village next to Templeudigan parish hall. The local professionals got on board with the idea and offered their services *pro bono* such as environmental services, building and site management, along with myself a qualified landscape designer and Chartered Architectural Technologist.

Functionality and design

The brief was to create a centralised park area that would be of benefit to not just the youth but every member of the community while at the same time being sympathetic to the existing Parish Hall which is still used for funerals and formal events. It was proposed that we also provide drainage facilities for the existing local handball alley. In order to

be sympathetic to the parish hall events I drew up and specified an undulating planting plan which would not only help camouflage the bold colours of playground equipment in times of grief, but also provide shelter to play areas from prevailing winds.

In order to make use of the elongated site, I proposed the walkway/running track would loop around connecting all zones, the play areas on one side divided between junior and senior areas to minimise accidents, while exercise zones were proposed at the far side to prevent children using the exercise equipment while playing. This would be a quieter, more relaxed area away from all the playground activities. The idea was to keep the middle area as open as possible for field activities such as kicking a ball or pucking a *sliotar* (hurling ball) about along with hosting community fund raising events such as sports days.

Planting

The planting plan had to be very carefully chosen due to the location of the sloped site on the verge of the Blackstairs Mountains. Very specific plants were chosen that would not only withstand prevailing winds from the foot of the mountain but also give colour from its

foliage during the winter and bright colours from blossoming flowers during the summer. A mixed variety of local indigenous trees, namely oak, ash and hawthorn were planted to provide shelter to play areas.

Sustainability

We tried to keep as much of the expenditure on our project within the local area where possible. While design and other professional construction services were offered voluntarily from ourselves and others, a total of 87% of the total cost was spent within a ten mile radius of Templeeudigan. We 'shopped locally' because we wanted to see our investment supporting and sustaining local employers and local jobs.

The main aim of the park was to create an outdoor space that would sustain the needs of the local community for years to come. In order to achieve this, we felt community involvement and input was necessary from as early as the design stage, this took place in the form of public meetings where community members could put forward their ideas. This was important in identifying the exact needs and wants of the local community. This sense of community was brought through to construction stage with local trades

being employed and over 30 locals volunteering to help landscape the park, further cementing a sense of involvement and achievement in the project within the community.

Inclusive design

The park itself is stepped down from the existing parish hall carpark to help ease the slope on the site. A ramp complying with Part M of the Building Regulations was neatly integrated to offer disabled access from car park to park without interrupting the circulation path and general flow of the park. Disabled toilets are provided for in the existing parish hall.

Awards

In 2013 Joe Fallon Design was awarded the Wexford Chamber of Commerce Social Contribution award for its *pro bono* work on for the park and in January 2016 it was awarded 'Best Park in Ireland 2016' at the LAMA Community and Council Awards – a great endorsement of the work and effort contributed by all the local community.

Have you worked on a project that you would like to tell readers about? If so please send details to the Editor, Hugh Morrison. Email hugh@ciat.org.uk



Opposite page: the completed park. This page: the park under construction and Joe Fallon MCIAT receiving Ireland's Best Park Award from Irish TV personality Miriam O'Callaghan.

Rising in the east

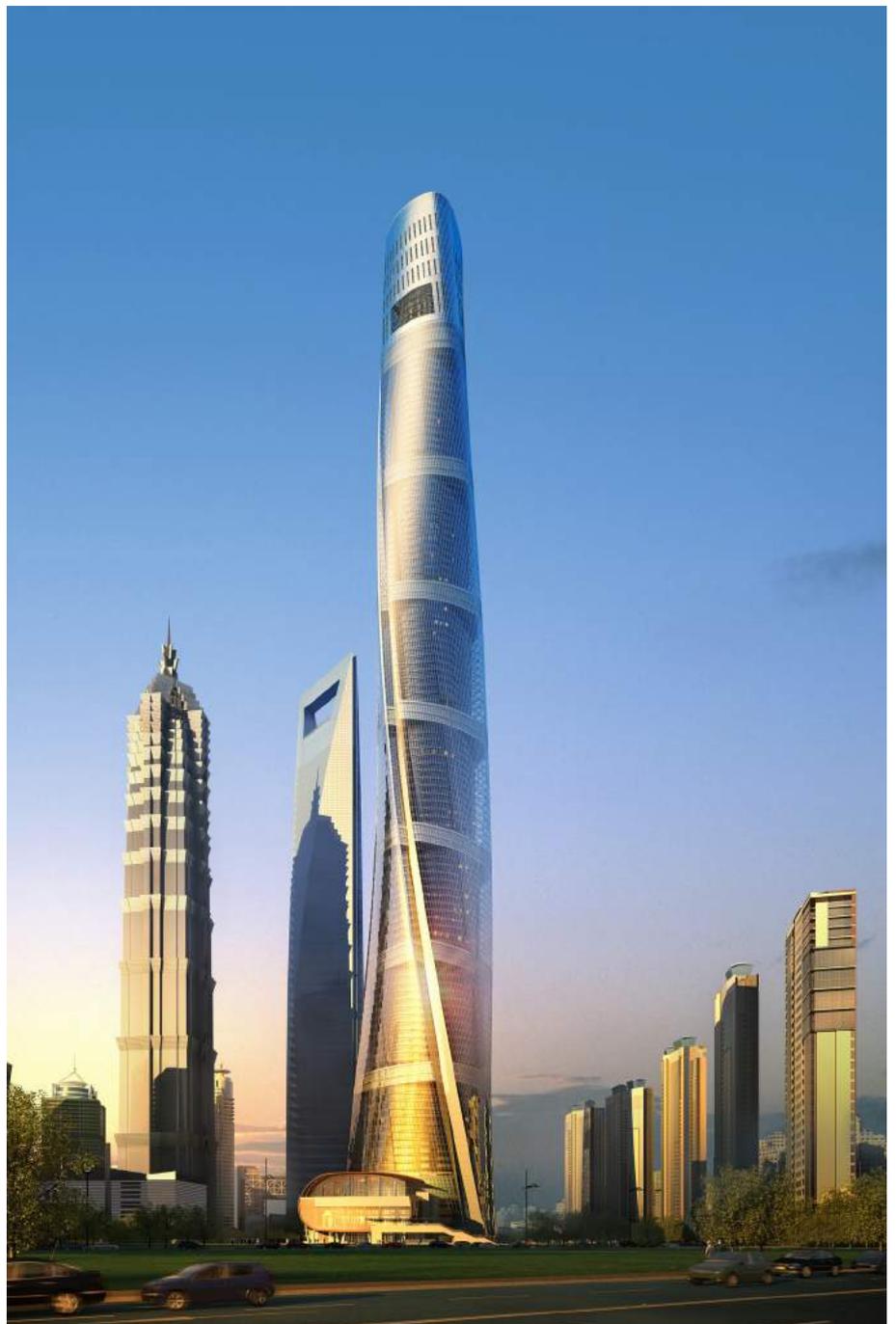
This extended case study looks at the energy challenges of building the Shanghai Tower, the world's second tallest building. By **Fergal Walsh**, Principal and Studio Director for Gensler, London. This presentation can be seen at www.youtube.com/watch?v=FHYc6vGNd8g

The last issue of AT (117) summarised the range of presentations from the Institute's Design Futures symposium, including a keynote speech by Gensler's Fergal Walsh, Principal and Financial Services Firms Practice Area Leader and an Architectural Technology graduate from Cork Institute of Technology, Ireland. Gensler is a global architecture, design, and planning firm with 46 locations and over 4,900 professionals in Asia, Europe, the Middle East and Americas. In this issue, we take a closer look at the challenges that the Gensler design team faced in relation to energy performance of the second tallest building in the world.

Building summary

Shanghai Tower is a 124-level, 632 metre tall tower with a gross floor area (GFA) of 380,000 sqm above grade. With a high-performance building envelope totalling 210,000 sqm of glazing, it is arranged in nine vertical zones and shaped as a combination of stacked circular floor plates enclosed with rounded apex triangles that form the primary building façade. These stacked cylinder zones are arranged in 12 to 15 story heights and then divided with MEP/refuge floor areas that effectively create zone divisions while simultaneously creating atrium floors at the bottom of each zone.

Stacked cylindrical shapes are then enclosed with a rounded-apex triangle profile as an outer skin that allows the inclusion of a Sky Garden/Atria concept that utilises a 'dual skin' façade approach. This passive bioclimatic concept allows moderation of overall energy consumption at typical office floors while utilising conventional laws of fluid dynamics to provide naturally-ventilated atrium spaces in each zone.



This case study traces the development and design of typical zone atria space and explains challenges analysed in creating a balanced, yet innovative, solution.

Climate and context

Shanghai's municipality is located at 120°51'~122°12' east and 30°40'~31°53' north in the eastern part of Asia on the west coast of the Pacific Ocean. The prevailing subtropical monsoon climate is very hot with high humidity levels during summer months. There are four distinct, mild seasons with plentiful sunshine but an abundance of rain.

The outside atmospheric temperature range varies from 27F (-2°C) to 95F (36°C) with an annual average temperature in the urban district of 64F (18°C). Humidity levels vary daily but are constant through the whole year. Annual precipitation is more than 1440mm. Fifty percent of the annual precipitation is in the flood season between May and September. There are much more north-western and south-eastern winds throughout the year, and the annual average amount of sunlight is 1,547 hours with insulation varying from 2.56 to 5.15 kWh/m²/day. On a municipality level, Shanghai is divided into 17 districts with one county totalling about 19 million people living within 6,218 km² (2,400 ft²) of land area, 75% of whom live in multi-dwelling high-rise buildings.

Tower programme facts

Shanghai Tower is the third and final planned super high-rise building in Shanghai's Pudong District that completes the development of the Lu Jia Zui Central Financial District. With a large programme totalling about 540,000 sqm of built enclosed area – 380,000 sqm above grade and 160,000 sqm below grade. To respond to major stresses from typhoon-level wind loads, the tower has been designed as asymmetrical in plan and with a soft vertical spiral rotating at about 120 degrees and scaling at a 55% rate exponentially. The tower functions as a self-sustaining vertical city and is a mixed-used building of unique, vertically interconnected neighbourhoods that evolve as the tower slowly rises towards the sky.

The building will include 120 floors plus four additional floors of equipment rooms and the largest Tuned Mass Damper (TMD) in the world. The top of

the structure is 632m high. The building is divided into nine zones with five main functions: 1) office; 2) boutique office; 3) luxury boutique hotel; 4) themed retail, entertainment and cultural venues at the podium; and the 5) observation experience at the tower's pinnacle. Within each zone there are three atrium spaces located on a single floor that operate as activity centres and a place of gathering. Additionally, each atrium is designed to accommodate access by the general public. The concept of the podium is to become activated by people, allowing uninterrupted public circulation between three adjacent 'super-high-rises,' and be open and interconnected with the neighbouring community.

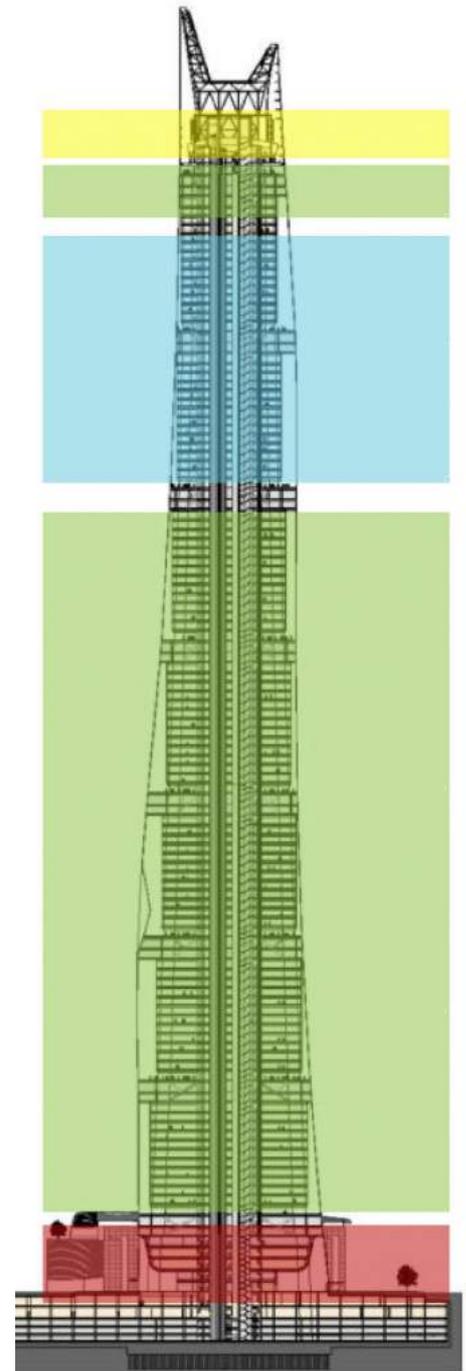
Tower design strategies

The tower's signature twisting expression is the result of its refined geometry. The tower geometry can be broken down into three key components that all function to fine-tune building efficiency response to the high wind load pressure.

The first key component of the geometry is its horizontal profile which is based on an equilateral triangle. Two tangential curves offset at 60 degrees were used to create a smooth shape. This shape is driven by two variables, the radius of the large circle and its location relative to the centre of the equilateral triangle. It should be noted that the actual shape of the profile is independent of the remaining two key geometric drivers. As a result, Gensler's design team had the ability to look at the effect of modifying the horizontal profile and the impact such changes had on the tower form at all stages of the design.

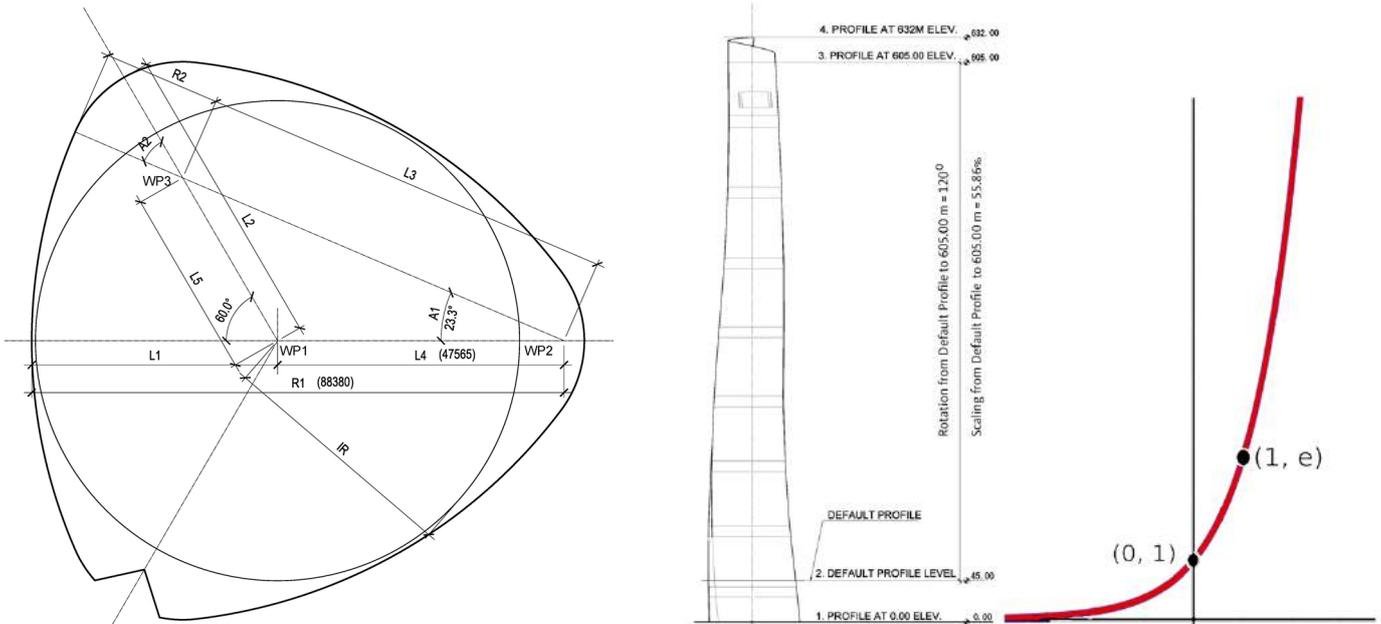
The second key component of the geometry is its vertical profile. The concept of the form is to take the horizontal profile and extrude it vertically and conform to the vertical profile. From a tower's functional point of view, it was important to maintain a wide footprint for the lower third of the tower with a slender footprint at the upper third with a reduction of about 55 percent overall. This proportional distribution allowed for large column-less lease spans within the office portion of the tower and smaller spans within the upper-level hotel/ boutique offices. Early in the design, it was found that a basic exponential curve provided the desired result.

The final key component is the rate of twist. This is a simple linear rotation from



base to top. The fact that this final value can be changed independently allowed for great flexibility in the design stage, especially in selecting the best combined overall building performance.

Gensler's design team had anticipated that significant reduction in both tower structural wind loading and wind cladding pressures could be established if the building further improved its proposed geometry following the aforementioned variables. It should be noted as significant that results acquired through this process have shown that a scaling factor of about 55 percent and rotation at 120°



Shanghai Tower horizontal and vertical zone geometry analysis (Image by Gensler)

can account for up to 24 % savings in structural wind loading and cladding pressure reduction as compared to base case of tapered box. This number equates to about \$55 million (USD) in savings in building structure alone.

Energy performance concepts

If we isolate and look at the overall building through typical single zone, the signature energy efficiency feature is represented through composite exterior wall performance. This is based on a bioclimatic concept of a passive atrium system where two building skins are located in such a way that creates a range of proximate distances from less than a metre to about 15 meters apart forming large, full-height atrium space, capitalising on all benefits that are captured and, by natural convection of air, can be provided. This non-traditional dabble-skin facade created a passive greenhouse effect that moderates energy use in office and hotel floors. While completely energy-free operation could not be utilised alone for conditioning of the atrium, there is minimal need for additional cooling and heating, and total thermal stresses and energy use in office spaces and the hotel are significantly reduced as confirmed with energy modelling.

Zones one to eight have three atria per floor that function together with an exterior and interior glazed skin to provide the level of thermal comfort desired for a built environment in Shanghai. With a great degree of efficiency only the first

15 feet in height of atrium were mildly conditioned with use of a perimeter Fan Coil Unit (FCU) that either heats or cools, primarily during weather extremes, leaving the majority of the atrium to be ventilated with a combination of natural updraft and regulated top exhausts, as well as with spill air on the first and last floor of each zone. The whole system (inclusive of other LEED strategies in the building) creates about 21% energy efficiency compared to ASHRAE 90.1-2004 in LEED Rating, and about 12.5% over China's nationally recognised 'Three Star Rating'. Seven percent of total efficiency is achieved as a result of selective features used for exterior skin design explained in following sections.

Prescriptive constraints – establishing building thermal envelope perimeter

Designing inner atrium spaces to be both vertically accessible gardens to the general public and an integral part of a super high-rise building, as a concept was a pragmatically new idea that Gensler proposed. Probably the best known conceptual precedent is Norman Foster's Commerzbank in Frankfurt (limited to building occupants as user group only). Shanghai's considerably different climate with constant and high relative humidity (up to 95%), combined with prescriptive city codes that are used to define required performance and make-up of exterior glazed walls components, provided a new challenge to the design team. Some of the requirements included: exterior wall glass ratio could not be more than 70%;

reflectance out could not be more than 15%; shading coefficient had to be less than 0.4; and if exterior glass created a conditioned enclosure, then makeup had to be with a K value of 1.5W/m²C. If the exterior curtain wall A was to be considered as an enclosure for conditioned space of the building, then make-up for it had to be an insulated glass unit. This created an additional challenge given the large size of glass panels varying from 2.2mx4.5m to 1.2 m x 4.3m.

The glazing unit would have to be not only insulated unit make-up, impacting with that desired visual transmittance ratio (targeted very high up to 0.8), but would also require individually thicker glass lights in order to respond to high wind load peaks (up to 6.5 KPa). In-plane glass deflection had to be less than 25mm and with the insulated unit there was a probability of two lights touching each other at high peak loads, thus creating the danger of possible peak incidental breakage. It has been calculated that if units were required to be insulated, then glass had to be of a 15mm+10mm air+15mm make-up. This was a significant increase from the 12mm+SGP+12mm laminated make-up that was targeted. At current weight between 800kg to 1000kg (2,200 pounds) per glass unit (the largest units at zone 2 and 3) this direction would result in an additional 25% increase in exterior glass weight.

Ultimately, this would impact the curtain wall structural supporting system in its

effective size and visual appearance in atrium spaces, as well as on individual member weight, which would also impact the total building weight expected to be approximately 850,000 metric tons, spiralling all the way to potential redesign of, at that time an already approved complex foundation system (including about 3500 piles at 1000mm in radius and 6000mm high matt foundation) on a limited site area. It is common that the total exterior wall weight is within the ratio of up to two percent of the total building weight; however, the design team's intent was to truly follow the principles of China's Three Star Rating based on implementing high efficiency standards with reduction and multiple usage of individual members where possible – 'Do more with less'.

After going through an extensive and complex review process with various city and government expert panels, it was determined that exterior curtain wall A is to be considered as a weather enclosure for ventilated and unconditioned atrium space, and that the true thermal enclosure is to be interior curtain wall B. This allowed for curtain wall A to employ a laminated glass assembly and maintain efficient exterior wall weight while maintaining desired visual transmittance to shading coefficient ratio for glazed area.

Solar radiation analysis and final glass selection

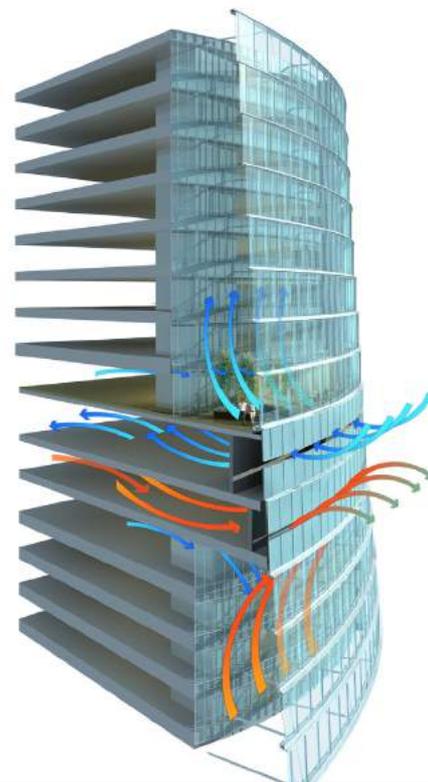
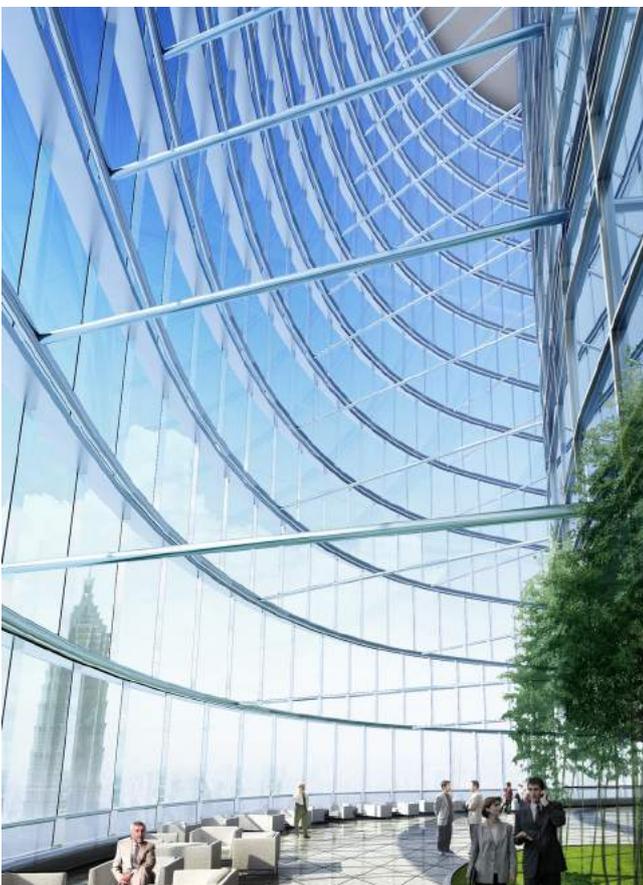
In order to address energy performance of the individual atrium spaces a set of studies focussed on building orientations and on impact of direct solar radiation onto the building form were conducted. In this process, several different software tools were used from Ecotect, Solar Tool, Radiance, Window 5, and energy modelling simulation tools based on DOE-2.1E and more comprehensive CFD studies.

Sustainable technologies and system integration

Shanghai Tower offered enormous opportunity to promote sustainable design strategies. From the outset, Gensler's design team targeted LEED Gold rating and China 3 Start (its local equivalent). Among major systems, project features systems such as water treatment plants to recycle gray water located within the tower, podium and basement to reduce pumping energy. Shanghai Tower can be most simply described as nine buildings stacked on top of each other. For a tower of this size the energy required for transporting energy/power vertically and distributing horizontally was quite high.

The design concept of nine 12-to-15 story buildings stacked on top of each other is served as an engineered system: nine separate buildings connected to a central utility infrastructure. This represents a true vertical city concept and allows for significant energy savings in energy transportation. A total of two chillier plants are housed to serve the building. A low zone chiller Plant is located on basement level 2 with 27,000 ton hours of ice storage, a natural gas-fired cogeneration system, dual duty ice making/chilled water chillers and standard duty chillers. It provides service up to the 65th floor. A high zone chiller plant operates from MEP floors at the 82nd/83rd floor and provides support for the mid-and top sections of the tower with six high-efficiency centrifugal water chillers. The 2,200 KW natural gas-fired cogeneration system provides electricity and heat energy. The system provides site generated power while producing 640 tons of refrigeration during cooling season and heat during brief but humid winter months.

On-site generated power has a great advantage in terms of reducing source energy consumption and optimization of the carbon footprint by utilising clean-burning natural gas in lieu of high sulphur coal. HVAC system for the tower utilises



Interior curtain wall B, exterior curtain wall A and typical atria (Gensler)

high pressure steam as a by-product generated in the low zone to deliver heating and domestic hot water without use of pumping systems thus reducing energy needed for its transportation.

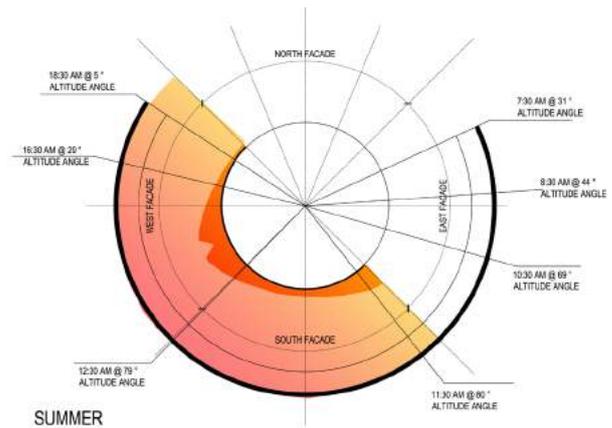
Each of the nine vertical zones is served from mechanical floors above and below the atrium stack. The mechanical floors house the dedicated ventilation systems, electrical transformers, and water systems. Outdoor air is preconditioned, filtered, and monitored prior to being supplied to the occupied zones. The ventilation system requires very low pressure to move air through the occupied zones, again reducing the energy needed for transportation. At the time of design, China and Shanghai Building Codes did not promote or permit the use of raised floor for air distribution in office and hotel floors, thus forcing design team to use ceiling plenum for all ducts and returns.

The Zone Sky Atria and their air voids are utilized as an integral contributor for overall energy savings. The main strategy was to use the atriums as designed 'buffer zones' between exterior wall A and interior wall B. Air that was already used in indoor spaces on either office or hotel floors spills out (from the zone top and second floors) into the atriums before being exhausted from the building.

Using natural air convection and spilled air from the floors resulted in moderating the temperature inside of the sky atriums that, in addition to facade treatment, provided for ventilated space having a consistent comfort level at atrium occupied floors. In the summer months, ambient temperature and humidity levels will be kept below the outdoor temperature, greatly reducing the cooling load requirements of the office and hotel.

A similar strategy will be employed in the winter months, reducing heat loads. Shanghai's climate features relatively mild but humid winters and that allowed the design team to propose for both exterior curtain wall A as well as interior curtain wall B to be non-thermally broken aluminium extrusion. Curtain wall A is 26 mm laminated low iron glass assembly with spectrally selective Low E coating encased in an aluminium mullion system reinforced with interior glass fin. Specific strategies had to be employed to address the solar load on glass. Fritting in the size of 25% of on exterior glass height

Ecotect solar radiation study (Gensler)



works along with up 600 mm stainless steel exterior ledges that are created as a result of building geometry. 350 mm clear vertical glass fins attached from the inside of the curtain wall A and outside of curtain wall B work to refract sunlight that penetrates and mitigates solar ray distribution. Curtain wall B is designed as 30 mm insulated unit with a spectrally selective Low E coating and partial frit.

The HVAC system features outdoor air delivery monitoring, CO₂ monitoring and control, and tobacco smoke control. While regulated exhausts from atriums to MEP floors were provided, operable windows as a natural ventilation strategy for the tower was not adopted due to the height of the tower, stack effect challenges, weather conditions in Shanghai, and air quality in the region. Particular features used on exterior wall to control and prevent condensation, specifically during cold winter nights were combination of fin tubs that are distributed in form of daisy-chain on horizontal mullion stacks and Fan Colin Unit located at each atrium floor level.

Conclusion

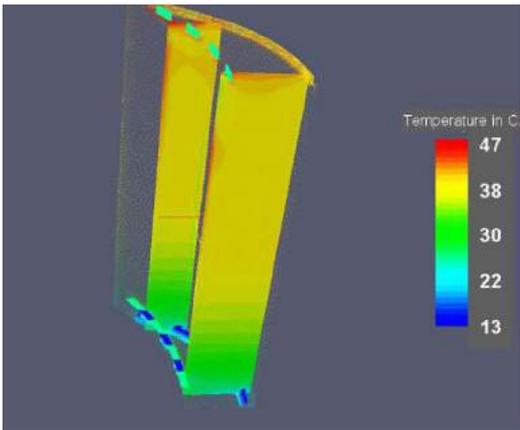
Design of supertall buildings is becoming more and more reality of construction practise around the world today. Driven with various reasons and justifications, symbolising economy growth and power. It also offers great opportunity as well as responsibility to act sustainably. On one hand it represents major strategy to address world densities in sustainable way. This is particularly true in the areas where urban density and 'going high' is the only possible mode of planning for living like we see in regions of south East Asia, for example Singapore, Malaysia etc. On the other hand, it is becoming a way of promoting future responsible

growth like we see for some time now happening in China and before that in Japan and Hong Kong. China has already surpassed United States in number of tall and supper tall buildings been built. Some of them are signature performance driven.

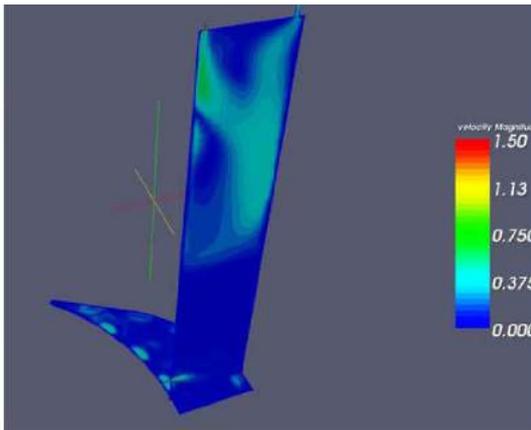
While there is more than a modest investment in understanding how to build this kinds of buildings in environmentally responsive way, China still risks potential to be another major consumer of energy through its buildings. In the USA for example, while energy consumption has tripled from 1949 to 2009 with commercial and residential buildings accounting for about 40% of total use, signature supertall buildings, such as the Willis (formerly Sears) Tower and John Hancock Tower in Chicago are already 40 years old, and the Empire State Building and Chrysler Building in New York are 80 years old. These buildings are recognising the importance of addressing energy efficiency and are planning for expensive retrofitting.

Understanding this long term impact economically, environmentally and staying competitive with such investment is key challenge for investors as return on investment is major driving force. With supertall buildings being planned and designed for a 100 year lifespan – and energy being more and more expensive – mixed use supertall buildings, perhaps more than other commercial or residential properties, offer more opportunity to research and implement advanced sustainable systems. Shanghai Tower is a remarkable showcase piece that testifies to that fact. Overcoming construction technology challenges for supertall buildings today and embodying high performance design, it is defining the role of buildings for decades to come.

Below: Sky Garden operation – summer/winter CFD studies (Image by Cosentini)



Temperature profile in C°



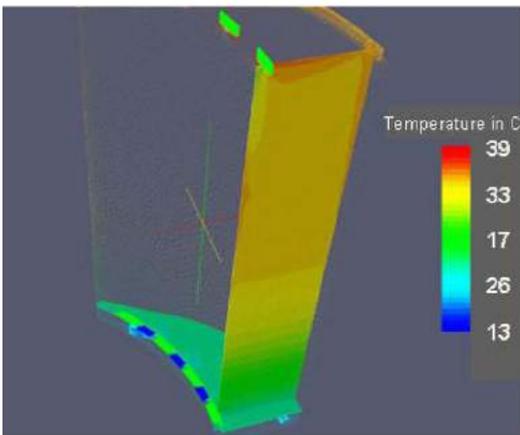
Velocity profile m/s

Summer
Weekday Afternoon

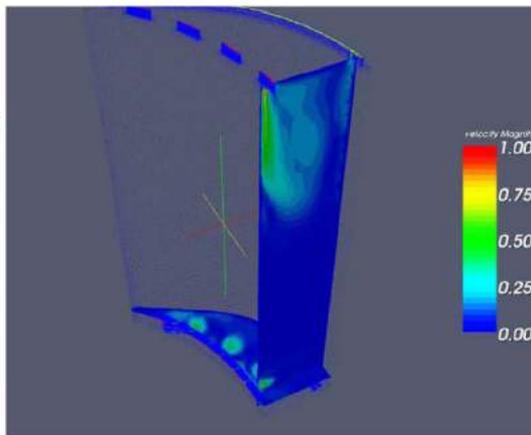
Sunny solar load
Spill Air On
Supply Cooling
Fan Coil Cooling
Top return open

Top exhaust air, C / F: 41 / 106
Average lobby (2m), C / F: 22 / 7
Ceiling surface, C / F: 43 / 109

Without Spill Air Average lobby temperature would be 26/79



Temperature profile in C°

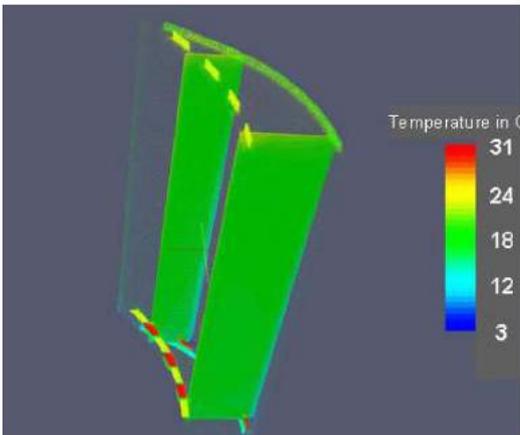


Velocity profile m/s

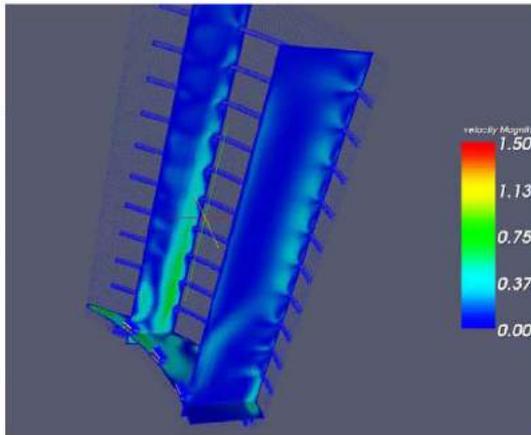
Summer
Weekday Afternoon

Cloudy solar load
Spill Air On
Supply Cooling
Fan Coil Cooling
Top return open

Top exhaust air, C / F: 32 / 89
Average lobby (2m), C / F: 19 / 6
Ceiling surface, C / F: 31 / 88



Temperature profile in C°

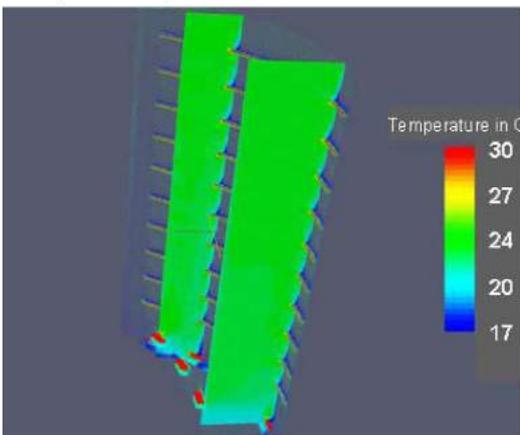


Velocity profile m/s

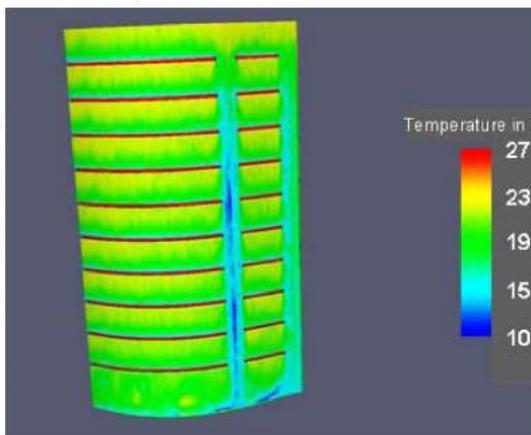
Winter
Weekday Morning

30% solar load
Spill Air On
Fan Coil Heating
Supply Air
No Fin tube heat
Top return open

Top exhaust air, C / F: 21 / 70
Average lobby (2m), C / F: 18 / 6
Ceiling surface, C / F: 22 / 72
Atrium Glass, C/F: 14/57



Temperature profile in C°



Exterior Glazing Temperature in C°

Winter
Weekday Night

No solar load
No spill air
Fan Coil Heating
Supply Air
Fin tube heat 600 Btu/ft Btu/ft
Top return closed

Top exhaust air, C / F: N/A
Average lobby (2m), C / F: 22 / 7
Ceiling surface, C / F: 23 / 73
Atrium Glass, C/F: 19/66

Rock of ages

Des Cairns MCIAT, Chartered Architectural Technologist and CIAT-Accredited Conservationist, used local stone to refurbish and enhance a church hall in the historic village of Glenavy, County Antrim.



The refurbished parish hall (inset shows original building) uses local stone to complement the nearby Georgian church and Sunday school.

The parish church of St Aidan, Glenavy, County Antrim (Church of Ireland) has a history dating back to the founder of the Irish church. From *Ecclesiastical Antiquities*, a valuable work by the late William Reeves, D.D., Lord Bishop of Down, Connor and Dromore, we learn that the Parish of Glenavy dates from the time of St Patrick, who began to build a church here, the spot being well known as *Lettir-Phadruic*, which means 'site of Patrick.' It was therefore clear that the restoration work required on the church hall should reflect this ancient and venerable history.

The current building of St. Aidan's Church (known locally as the Church of the Dwarf) was erected in 1812. In 1835 the Ordnance Survey described it as 'a handsome building.' The site of the church and graveyard occupies a large parcel of ground, has at the opposite corner an old Sunday School house built from similar stone.

In the centre of the site a timber frame parish hall (330sq/m) was built by the congregation in the early eighties, with a mixture of brown rustic brick and limestone dash.

The parish wanted to extend the facilities and provide a valuable resource as a central facility within to serve the group of three churches.

The brief included a new office, improved kitchen facilities, an additional meeting room (Minor Hall) and improved toilet facilities.

The remainder of the hall needed to be refurbished fully and this had to include upgrade of insulation, upgrade of the ceiling in the main hall and any necessary repair works. A select list of practices



The original building was hidden as much as possible by the new foyer and entrance, which opens the structure out to the village.

were asked to submit a design and a team fee quote. Des Cairns Architecture was appointed in 2012.

The design provided all of the requirements but also a large foyer which links all of the facilities and creates a new facade which adds visual link in matching stone work to the church, old Sunday school (now a community youth facility) and the village. The theory we

applied was to provide an openness and freshness to the building whilst also trying to hide as much of the original building as possible, to allow the village to have more of a connection with the parish and continuity between the village, hall and church.

The stone we chose for the stone wall matches both the listed buildings on the site and adds a contemporary edge which

sits comfortably with the in the site. The site itself had a number of challenges including a flood risk strategy due to the Glenavy river, a bat study and a few days of archaeological research.

The new works added 300 sq/m to the building at a cost of £470,000 including renovation of the existing premises. The works were officially opened by the Bishop of Connor in October 2015.

Front runner

Lawrence Coussell MCIAT, Chartered Architectural Technologist and CIAT-Accredited Conservationist, describes his refurbishment project at Front Street, Burnham Market, Norfolk, winner of a 2016 King's Lynn and West Norfolk Mayor's Design Award.

2 Front Street is a grade II listed village house dating to the early to mid eighteenth century. The front elevation (facing the road) is of red brick in Flemish bond with projection brick quoins. The house faces south and sits to the north of the public footpath of Front Street. The house extends northwards with a single room width two storey high main block. Single storey lean-to outbuildings sat on the east boundary for the full depth of the site.

There is an enclosed yard with 2m plus high masonry walls to the west, a passage way between the north gable of the house and the south gable of the neighbour leading to an enclosed courtyard. The proposals to

the Conservation Department included removal of the lean-to kitchen and widening of the single storey outbuildings to the east boundary. The proposal included the retention of a double height single room, converted from two storeys some fifty years ago. The lean-to outbuildings to the east boundary were non-habitable. Whilst some walls were in good order there were many areas of repair, adjustments and infill. The walls here are a mixture of flint, chalk and clunch.

My brief was not specific and asked only for the house layout to be adjusted to provide modern living accommodation for a young family. The timing for possible alterations was chosen due to the need

for some structural repair work and associated making good. Whilst there were sufficient bedrooms there were areas which were unused and did not lend themselves to the existing layout. Whilst my brief was open-ended, there was to be no change to the double height living area. This is a favoured and often used space.

The lean-to kitchen within the enclosed courtyard rendered the rooms facing the street redundant in use other than rooms of the same purpose as others. The removal of the lean-to kitchen opens up the original house wall allowing additional natural light into the road facing rooms. The repositioned kitchen now benefits from natural light from both south facing and north facing windows which feeds light into the centre of the room. The kitchen now has a street view whilst the small snug area takes advantage of mid-day sun.

There was an existing understair cupboard in the entrance hall – the removal of the cupboard back wall allows natural ingress to the new kitchen. Whilst I considered it important that the two-storey room be contained as a room and not be seen as an overflow from the first floor area, it was also important to retain views from the landing down into the room.

One of the more unusual aspects of the design was the incorporation of a skittle alley as part of the first floor link to the courtyard.

Images by Lawrence Coussell/Seahaze Photography.



The house has an enclosed yard with outbuildings (entrance shown above on left hand side).



Lean-to buildings in the yard (*above and right*) were uninhabitable, but have been brought back into use.



The double height living room was retained with minor alterations and cosmetic change.



A kitchen cupboard (*above, right*) was converted to a doorway to increase light in the hallway (*above*). A glazed link (*below left*) allows access to the inner courtyard. Below: the skittle alley.



Nominations

Elections will be held at Council on 10 September for those nominated for the positions of President Elect, Honorary Treasurer and Vice-President Technical.

Ahead of their manifestos being issued to members, here the candidates introduce themselves and present what they hope to achieve if elected. All members are encouraged to feed back to their Regional/Centre

Committee having read these articles and the manifestos (which will be issued by email) of the candidates standing for election. Each Regional/Centre Councillor will be voting at Council based on the collective decision of the Regional/

Centre Committee so it is important that you communicate your views to your Regional/Centre Secretary to ensure these are taken into account. The results of the election will be announced post the Council meeting.



Alex Naraian MCIAT
President Elect

I have always maintained that if you have a vision and are passionate about it, then it is important with the right team and leadership skill to aspire to fulfil it.

The vision I have for our Institute and profession still remains and my passion to see it fulfilled has not diminished since I last stood for this position previously. I was so touched by the support of the membership through my last campaign, and the many times since, that I have been asked if I would be willing to stand for this position again. You know who you are and I really do thank you for this.

I have always maintained that to stand for this position again, I must be passionate about the role, ensure that my motivation is to serve our Institute, profession and membership and that I have a vision that I passionately want to see fulfilled. Well, I can say that all of the above is true for me, hence why I have accepted the nominations put forward for me to stand for the position of President Elect.

To remind you all, my vision for our Institute and profession is to see:

- CIAT as an exemplar of institutes, leading and setting trends in the industry in the field of Architectural Technology;

- our membership continuing to expand and being represented at all levels;
- the discipline of Architectural Technology automatically considered a necessity for any new construction project;
- our profession having an 'equal place at the table', and;
- all members of the Institute to be empowered and to be proud of their profession.

I guess that reviewing my vision it was always too big to be fulfilled in any single Presidential term and do believe that it is still current and hope that the membership is as enthused by it as I still am. I shall be publishing a full manifesto on the CIAT website with greater detail of delivery prior to the elections in September for all membership to review, debate, and hopefully get excited about.

So for a little information about me. I started my career in the late 1980s. I studied at Southampton Institute of Higher Education (now Southampton Solent University). I am 47 years old, married with two sons, one of whom is in the middle of taking his A levels as I write this.

I am a Chartered Architectural Technologist and a proud ambassador of my profession. I joined ADAM Architecture in 1997 and progressed from a junior position to Associate Director in 2005 where I continue to fulfil this role. ADAM Architecture is a multi-disciplinary award winning practice with an international reputation for being a leader of progressive classical and traditional design. Employing around 80 staff, it is the largest practice of its kind in Europe.

ADAM Architecture is in full support of me standing for this position and has actively

encouraged me to do so. Time to fulfill the role would not be an issue as the practice has committed to grant time to fulfill the role as part of their endorsement and faith in my abilities, for which I feel very privileged and humbled.

My career has seen me deliver many projects for new build, refurbishment and conservation projects, ranging from high end residential, retail, institutional, leisure to commercial buildings, from less than £1 million to tens of millions of pounds in contract values.

I am currently the Councillor for the South East Region and sit on the Executive Board of the Institute. I have represented and continue to represent my profession and our Institute at varying levels, often public facing. I have sat on university Accreditation panels for CIAT and continue to write articles for various industry publications, seizing every opportunity to promote the profession of Architectural Technology. I was invited to be a part of an Institute delegation visit to India representing Architectural Technology in practice and industry in March of this year, which I attended.

Previously I held the position of South East Regional Chairman and have been a part of the team, representing CIAT as part of the 'Ask An Expert' feature at Grand Designs Live and the Homebuilding and Renovating Shows. I have also presented at The Homebuilding and Renovating Show, at careers fairs and other shows.

Outside Architectural Technology, I have served various charities and clubs, having held the position of Chair of the 5th New Forest East Scout Executive Committee and currently Vice Chairperson of Applemore and Waterside Swimming Club. I have also assisted in community projects and was responsible for

designing an amphitheatre for Marchwood Junior School and a new shared Guide and Scout building in Marchwood.

Most recently I was invited to sit on the advisory panel for UK Construction Week to be held in October 2016. (See page 19). The panel consists of leading figures across architecture, engineering, contracting and housebuilding. You can

find out more about me in issue 110 (Pages 33 and 34, available at www.ciat.org.uk/en/media_centre/) where you can find my family background and even a little about my breakdancing career of all things (I have now retired from that by the way!) I hope that you will take the time to read that article. My character, passion, desire to serve and deliver has not changed – it has actually increased!

Please keep on the lookout for when my manifesto is published and I do hope that you will take the time to read it. I hope that you will put your trust in me to fulfil the role of President Elect.

It would be a huge honour to serve our Institute and profession. I guarantee that I would carry out the role with integrity and to the very best of my ability.



Doug Fewkes MCIAT
Honorary Treasurer

As a team member within a very busy university estates development office, currently responsible for the delivery of a multi-million pound capital programme of works, I am well placed to understand the importance of managing projects and delivery of activity associated with both Strategic and Corporate Plans.

Being involved in strategic projects provides me a sound understanding of key business needs and allows me to provide impartial, focused advice and options in project development, a skill that I bring to the Finance Committee and CIAT.

Furthermore, having completed my first two year term in the post of Honorary Treasurer, I have gained a much deeper understanding of the business of CIAT and the important tasks that are needed to be continued in the next term.

Chief amongst these tasks is the continued management, spending, and control to ensure that all of the key objectives of our Corporate and Strategic Plans are followed and delivered. Providing sound guidance on the budget allocations and cost control has been established and will need continued development going forward to meet these plans.

In addition, the requirements to align our budget presentation with new financial regulations have still to take place. This needs to have been completed for the 2017 returns, and working with our new Finance and Operations Manager, David Cheddie and auditor Chris Pexton will be an essential task for the Finance team and Honorary Treasurer post alike. Ensuring that our internationalisation continues to grow, and supporting the

Membership Department in engaging with members to develop through the various progression routes is essential for the continued growth of CIAT. These, with the development of the aspirATion Group, can only thrive with the necessary sound financial management and controls being in place and continually monitored.

My first term has been challenging with a number of difficult and eye-opening events demonstrating the wider activities the role of Honorary Treasurer has to include, something that I was not aware of ahead of my previous election.

This has not put me off, but has strengthened my resolve to progress the key activities of the Finance Committee and role of Honorary Treasurer and to continue to serve the greater needs of CIAT.

I look for your support and vote for my continuation as your Honorary Treasurer and I trust that my activities in the past two years have clearly demonstrated how important this role is to me.



Harry Pangli MCIAT
Honorary Treasurer

In 2013 I was appointed as Regional Treasurer for the Greater London Committee. I have dedicated my time on implementing financial resource to improve the Committee for the benefit of its members. In particular, I have delivered a strong driving force behind the

design and build of a Regional website (www.ciat.london), the setting up of dedicated emails and assisting with the integration of One Drive. To ensure that the financial resources provided have been correctly utilised, I have drafted and put in place policy documents for guidance and usage and have ensured that whilst striving to better relationships between members, budgets have not been exceeded.

I was initially inspired to join the Committee three years ago following a speech given by the previous President Colin Orr, after a visit to the iconic Shard building in London. Until this point, my attendance at Committee events had been intermittent. During his speech, Mr Orr encouraged young professionals in the industry to become involved in paving

the Committee's direction in years to come and thereby contributing to creating its legacy. His primary concern was that without the motivation and support of the younger generation, CIAT would eventually become defunct.

As such, I applied for the role of Greater London Treasurer and was successfully appointed. My main aims during this time have been to cleverly utilise financial resource to the maximum benefit of members as well as promote competition for roles within the Committee. Following three successful years with the Committee, I feel that I am ready for the next challenge in my career and look to the post of Honorary Treasurer. I feel that my experience as Treasurer to date combined with nine years of industry experience which included managing

project costs in my previous role at Frost Architects will stand me in good stead for the role.

I am a Chartered Member of the Institute and currently work for bptw Partnership as a Chartered Architectural Technologist. I feel that my time in the Committee has provided me with a strong foundation which I can build upon to take on higher responsibility within CIAT. Whilst I may not have the in-depth experience of some of the other candidates, what I can bring to the role is fresh insight, drive and a passion to make CIAT a success that its members are proud to be a part of.

I feel that by continuing with the same ideals and philosophies, positive changes are limited. New concepts which are backed by age old traditions are what are required to thrive, grow and succeed.

If my application is successful and I am appointed Honorary Treasurer, my primary aims are:

- That the Executive Board is kept updated with financial reports.
- To learn and digest relevant legislation and regulations to uphold the Institute's reputation.

- To ensure the Institute applies its resourcing efficiently to achieve its objectives.
- To contribute to the Executive Board with guidance on strategic direction, informing policies, reviewing goals and evaluating its performance to previous years.
- To ensure the financial stability of the Institute with reviewing the past, present and future financial reports to best advice on the appropriate direction forward to keep the Institute efficient.



Aline Connor MCIAT Vice-President Technical

I have worked in the construction industry for over 40 years as an Architectural Technician and Chartered Architectural Technologist. I have been a Chartered Member since 1991. I have presented talks about the role of the Chartered Architectural Technologist, sat on professional assessment panels and acted as a judge for the Student Award for Excellence in Architectural Technology.

I was also involved in making a promotional film about CIAT membership. I am enthusiastic, committed and passionate about ensuring that I deliver the best quality technical solutions and information for clients and I actively encourage colleagues to provide the same in all aspects of their work.

I have acted as a Supervisor and mentor for over ten years within the CIAT membership progression system and have always sought to challenge candidates and mentees to provide the best possible examples of their work and experience to ensure that they are fully prepared to carry out their duties as a professionally qualified Architectural Technician or Chartered Architectural Technologist.

I am willing to propose solutions and to listen to and accept contrary solutions in a positive manner. I possess a calm

temperament and integrate well. I am happy to seek out other people to discuss their views and work towards a successful outcome.

I am a clear and concise communicator.

I possess strong technical skills and I work hard to ensure that I am fully informed of developments in our industry.

I am a good problem solver and will work diplomatically towards a solution with tenacity.

I am very comfortable with explaining my logic, assumptions and my decisions. I am approachable and conscientious.

I will bring mature leadership skills to the role of Vice President-Technical and will strive to carry out this responsible position with enthusiasm and commitment.



Kevin Crawford MCIAT Vice-President Technical

In this ever-changing and demanding environment that we work in, it is essential that we all collaborate to maximise available resources. We must recognise our strengths and limitations in order that we elect the best team to represent our discipline in the industry. My background is similar to a great

number of Chartered Architectural Technologists in that I have worked in a number of different sectors. Starting out in an architect's practice, then working for local government, multi-disciplinary consultancies and then house-building before running my own Architectural Technology practice.

As the Institute for Architectural Technology, one of the fundamental goals is to maintain and promote CIAT as the lead body in all matters relating to Architectural Technology. This takes time, dedication, effort and motivation, as well as the capability to stand up and speak for the Institute and the profession.

During my term, and ably assisted by the staff, I have been at the helm of the team that is ensuring the role of Vice-President Technical is a respected position within

the construction industry. I am fortunate in that running my own business allows me to be flexible in making time available to dedicate to the technical function of the Institute and to represent it externally.

Last year, we responded to the APPG on the Quality of New Build Housing in England. As a direct consequence, I was invited to give evidence at the House of Commons, demonstrating the respect that CIAT has commanded. I intend to build on these instances to create a greater awareness of CIAT.

However, the world does not stand still. To ensure that CIAT keeps moving forward, I have set out key milestones for my next term.

- Technical Conference – a conference with subject themes for practising

Chartered Architectural Technologists (employed and self-employed).

- A continual review of the Award schemes so that the profile of the Institute and Award entrants are raised and respected worldwide.
- To investigate the setting up and/or supporting of existing local technical taskforces across all Regions and Centres.
- To update and review the Technology Network, increasing its awareness and accessibility to the entire membership.

- To increase the visibility, diversity and scope of the technical committees and Taskforces by engaging with newer members and experts from inside and outside the institute to maintain balance and provide a fresh perspective.
- To develop position statements, technical papers and reports to clearly lay down CIAT's stance on important technical matters.

As Vice-President Technical, a key function has been to encourage members who have specialisms in Architectural Technology to become actively involved,

be it conservation, BIM or many of the different fields in which we work, to stand up and promote what we do. The Institute will only grow with engagement from the members and their involvement to improve its profile.

I would be honoured to be re-elected so that I can continue to build on and develop the Institute's technical activities and further enhance the services which the Institute offers to its members and the public.



David Taylor MCIAT Vice-President Technical

I am pleased to accept the nomination for the position of Vice-President Technical of our Institute and it is an honour to be recognised by my peers and colleagues in nominating me for this position.

I have been actively involved with the Institute for the past several years. For the past three years I have served the East Anglia Region (07) as Regional Chairman, and as an Interview Assessor for the past five years. My career history and experience within the construction industry started in 1973, and my early career was formed in the design and maintenance offices of the National Coal Board, where I was able to harness my design skills working on a vast array of NCB variable project types. I then moved on to specialise in disabled adaptations and conversions for many healthcare organisations, plus local and legal authorities, and then to the inception of David Taylor Associates (UK) Ltd in 1993. I have now been in private practice for

over 25 years providing architectural design and contract management services across a broad range of public and private sectors, carrying out numerous projects throughout the UK and in Poland, Denmark and France, to name a few other countries, and along the way I have been the fortunate recipient of several design awards, the last being in April 2015.

The Party Wall etc Act also forms an additional element to my services. I have specialised in this legislation since 1999 and lecture part-time on the subject to HNC students locally, as well as providing past articles on the subject for inclusion in *AT* magazine.

I have extensive knowledge within the built environment and remain passionate about Architectural Technology, sustainability and life safety values, and have provided past design input on some high profile projects throughout my career, and have also represented CIAT on a number of occasions at the 'Ask an Expert' stand at the Grand Designs Live show.

The position of Vice-President Technical involves ensuring good relations with external organisations and our members, and this must continue to flourish and grow to enable an exchange of collaboration and integration, which in turn provides available practicable guidance and member information, creating a better environment for our members.

Buildings and structures are no longer duplicate boxes, buildings of any nature are now personalised and customised, more challenging, complex and visionary and this diversity offers a collaborative connection of architectural and engineering glamour, which in turn provides a powerful and inspirational influence and a desire to push the technical boundaries of excellence, quality and visionary engagement. Our members with these unique specialisms and skills should be encouraged to become more actively involved.

The vast expertise and knowledge of our members ensures our Institute has a global presence, conviction and respected influence with other organisations, which enhances our relationships with fellow professionals, and it is essential that the Institute continues to move forward in order to remain at the forefront of our profession, whilst advancing the standards for the benefit of members and society.

Those who know me, know I am passionate about my profession and the Institute, and I hope this very brief introduction gives you a flavour of my character and vision. I believe I can actively participate in further strengthening the Institute's profile and I would consider it a privilege and honour if elected. It is a role I would look to fulfil with integrity and to the utmost of my ability.

The manifestos will be featured in a special ebulletin. Ensure your views are taken into consideration by your Regional/Centre Committee.



Southampton

AGM, President's Ball and Awards

You are invited to attend the Institute's AGM weekend. Don't miss this great opportunity to network and attend the Annual President's Ball where the 2016 Awards will be announced and presented.

Join fellow members and guests at one of the highlights of CIAT's year. The AGM, President's Ball, Awards and associated events take place this year on 11-12 November in Southampton. This is a great opportunity to meet fellow members from across the UK and overseas, as well as external industry guests. The events are as follows:

Charity evening

Friday 11 November

This event is hosted by the South East Region and is an informal networking event to raise funds for the Region's chosen charity, Youth and Families Matter. It will be held at the Grand Harbour Hotel, Southampton.

Annual General Meeting

Saturday 12 November

The AGM will take place at The Spark, Southampton Solent University. This is a brand new state of the art facility which delegates will have the chance to explore. The Institute is working with the university and South East Regional Committee to organise the day. Further details on the schedule will be available nearer the date. Voting at the AGM is for delegates only, but members who have registered

in advance are welcome to attend. During the AGM, there will be an organised tour to Tudor House and Garden (adjacent to the hotel). This tour is open to guests and partners.

President's Ball and Awards

Saturday 12 November

The President's Ball will be held in the Mayflower Suite at the Grand Harbour Hotel, Southampton. This event will incorporate the announcement and presentations of CIAT's 2016 Awards. Along with delegates, the President's Ball is attended by a range of key industry guests, shortlisted entrants and Award recipients. The evening includes a three course dinner followed by live music and dancing.

Further information

For further information on the events, please contact Isabelle Morgan, Administrative Coordinator. Email isabelle@ciat.org.uk

For information on sponsorship opportunities, please contact Hugh Morrison, Communications Director. Tel. +44 (0)20 3286 2201. Email hugh@ciat.org.uk



Credit: C. Finot



Credit: Geni

2016



Working in partnership with **Southampton Solent University**



Notice of the Annual General Meeting 2016

Notice is given that the Annual General Meeting of the Chartered Institute of Architectural Technologists will take place at the Spark Building, Southampton Solent University, Southampton, UK, on Saturday 12 November 2016 for the following purposes:

- To consider the Annual Review
- To consider the Accounts and Balance Sheet as at 30 April 2016
- To re-appoint the auditors and authorise Council to fix their remuneration
- To announce the results of the election of members to the Council and Regional and Centre Committees
- To receive and debate the resolution(s)

Francesca A H Berriman MBE
 HonDTech FRSA
 Chief Executive,
 June 2016

CIAT, 397 City Road, London
 EC1V 1NH UK



Main picture:
 The Spark,
 Southampton Solent
 University.

Below, from left:
 Historic Bargate,
 Southampton.
 The modern marina
 development. The
 Grand Harbour Hotel.

Price of success

Glayne Price MCIAT, Chartered Architectural Technologist, was recognised as Europe's Best Woman Architectural Technologist 2016 at the European Women in Construction and Engineering (WICE) Awards in May. Hugh Morrison, Editor, caught up with her.



Why did you decide to become a Chartered Architectural Technologist?

As a teenager I had a real love for technical drawing and I wanted to see if there were careers out there that enabled me to draw for a living. My careers advisor at school helped me find a course (BTEC OND in Building Studies) which meant pursuing a career within the construction industry and this was the gateway to me joining The Company of Designers as a Junior Graduate Technician. The Company of Designers later became LHC Architecture + Urbanism my current employer.

How did you get involved with the Awards?

The current Equity Directors (Rob Bramhall and John Baulch) of LHC nominated me for the Award and the first I knew of it was that I was being put forward. I was delighted to have been thought of in this way – that my hard work over the years had been recognised again.

In 2002 I was nominated for and won Plymouth Women of Achievement in the 'Business' category. This really was a kick start to my career and I used the recognition wisely to develop my skills and work hard with projects and client relationships. So this new nomination came as a bit of a surprise!

Has taking part in the Awards helped you in your career?

My career path has been created over the past 26 years of working in the industry. However, I do believe that being nominated within an awards process can help careers and enables decisions to be made on your path. For me, winning the Plymouth Women of Achievement in 2002 really provided focus for me. Now winning

the WICE Award has given me a huge amount of exposure recently but the hard work was behind the scenes over many years. Will it help me in the future? Who knows what is around the corner?

Should we recognise talent regardless of sex – or is there a place for all-female awards in today's construction industry?

I am keen to promote the industry as a whole and not just focus on females only. It would be fantastic to think in years to come that separate recognition is not required. However, I also realise that this may not happen any time soon so it's great to see women being recognised for their strength and ability within the construction industry.

One of the aims of the awards is to encourage more women into STEM subjects (science, technology, engineering and mathematics). Do you think there is any particular reason why women have until fairly recently been a small minority in these fields?

I believe that promotion of STEM subjects in schools has generally been poor, or perhaps seen as uninteresting / male orientated fields to work within. Education facilities are getting better at promoting but this is at a stage that is a little too late to capture the imagination of a female teenager. Bringing professionals into primary schools to provide an insight at a very basic level could help to generate an interest.

How has CIAT helped you in your career?

Becoming a Chartered Architectural Technologist enabled me to promote myself and my abilities further within LHC, who recognised those skills and competences and promoted me to

Technical Associate in 2006 and then Director in 2008.

What projects are you working on at the moment?

Up to 2011 I took the lead on commercial and educational projects including the multi-award winning JCB Academy in Staffordshire. More recently I have been involved in the growth of the residential sector within the practice, ensuring successful delivery of a number of key, large-scale developments across the South-West.

I am currently looking at a number of Cavanna Homes developments having forged an excellent client relationship with the technical team over the past three years.

Who are your role models?

Generally I don't have a role model but I do have a lot of respect for strong people who are able to control situations, engage with others and develop an understanding with those around them. Those kinds of people inspire me to better myself and keep me striving to do something a bit different.

What advice would you give to aspiring Chartered Architectural Technologists?

Learn from those around you and from information available. Your personal development of detailing and more specifically the understanding of materials will come through experience in design and project involvement. Don't expect it all to come at once – I still enjoy learning!

Look out for the 2017 Awards – visit www.wice.com to find out more.

A class act in India



A CIAT delegation visited India in March to promote membership and international development. The trip included visits to Jacobs Engineering, New Delhi; and Gensler, Atkins, and BMS College of Engineering, all in Bangalore. Institute representatives also visited the

Middle East in May, holding meetings, professional interviews and membership workshops in Dubai and Abu Dhabi. A full report will be published the next issue. The picture shows Professor Norman Wienand MCIAT addressing students at BMS College of Engineering, Bangalore.

Member is 'Female Entrepreneur of the Year'

Genevieve Wells MCIAT was named 'Female Entrepreneur of the Year' in this year's Actioncoach Business Excellence Forum Awards.

Genevieve was recognised for implementing sales and marketing systems into her business that have helped it grow by 224% over the last 19 months. Speaking about her award, Genevieve said 'I hope this award will

inspire other women business owners and I would like to use it to educate young people in local schools to seek a career in business'.

Genevieve runs CIAT-registered practice Lewis Visuals Ltd in Surrey. She was also named 'Business Person of the Year' in the recent SME Surrey Business Awards and received the WICE Best Woman Architectural Technologist award in 2016.



Grillagh thriller

On 5 May Patrick Bradley Architects was presented with a plaque for joint winner of CIAT's 2015 Alan King Award, for the Grillagh Water House, near Maghera, County Londonderry. The picture shows (from left) President Gary Mees, Patrick Bradley, Mark Nelson MCIAT, Eddie Weir MCIAT, Vice-President Practice.



Commended in Cambridge

On 19 May Gary Mees (above, left) presented Chris Senior MCIAT with the Commended plaque for The Alan King Award 2015 in Cambridge.

aspirATion Group: event and vacancy

CIAT's inaugural aspirATion West Midlands networking event, for students and recent graduates, took place in Birmingham City University in June.

The event included a display of work from students on the Accredited Degree Programmes from Birmingham City University, Coventry University, and the University of Wolverhampton. Speakers included Paul Laycock MCIAT, Vice-President Education and Francesca

Berriman MBE, Chief Executive. The event was well attended and the Institute hopes this will be the first of many such events for the burgeoning aspirATion Group, which targets students and recent Architectural Technology graduates to raise awareness of the Institute, the discipline and the position it holds in the industry.

If you would like to find out more about your local Group, please email

Holly Banks, Education and CPD Administrator: holly@ciat.org.uk

There is a vacancy for a Region/Centre Chair for the South East Region in the aspirATion group.

If you would like to find out more about the vacancy, please contact Amina Khanum, Assistant Membership Director. Email amina@ciat.org.uk or telephone +44 (0)20 7278 2206.

New members and re-entry

We are delighted to welcome the following as Chartered Members

020131	Robert Baxendale	02 Yorkshire	027017	Nicholas Corby	10 South East
020424	Christopher Oddy	02 Yorkshire	028460	Joseph Elliott	12 Western
030402	Mark Akister	02 Yorkshire	030342	Dermot Campbell	14 Scotland East
010727	James Carrick	03 North West	015970	Keith Barr	15 N Ireland
018066	Ian Riches	03 North West	017339	Wayne Somerville	15 N Ireland
029411	Mark Alston	03 North West	020738	Gerald Lockard	15 N Ireland
021630	David Cooper	05 West Midlands	017685	Aled Rees	16 Wales
019235	Roby Mekkarra	06 Wessex	020155	Lisa Harman	16 Wales
022363	Stephen Nixon	07 East Anglia	08560	Pat Fitzpatrick	C2 Rep of Ireland
018353	Richard Dilley	07 East Anglia	031202	Eymard Ahern	C2 Rep of Ireland
020115	Jade Semple	07 East Anglia			
030401	Jonathan Sin	09 Gr London			
015108	Nicola Davies	10 South East			
027043	Jake White	10 South East			
025304	Cara Loughran	10 South East			

Congratulations to the following who has re-entered the Institute:

023041 Mark Nicholls 10 South East

Congratulations to the following member on his upgrade to TCIAT:

029315 Simon Campbell 09 Gr London

Congratulations to the following Member on his five year reaccreditation as an Accredited Conservatorist:

018467 Paul Travis 09 Gr London

We regret to announce the death of the following Member:

008837 Craig Gill 03 North West

Region and Centre news and events

North West Region 03

An MCIAT Interview Board and Membership Progression Session will be held at the MacDonald Hotel, Piccadilly, Manchester M1 2PG on Tuesday 2 August 2016.

The Progression Session will run from 11.30 am to 1.00 pm and will provide guidance and insight on the qualifying routes to TCIAT and MCIAT. If you would like to sit your Professional Interview for Chartered Architectural Technologist status in Manchester, please confirm in advance.

Please note you will need to have submitted your completed MCIAT POP Record or MCIAT Professional Assessment application by Friday 15 July 2016 to be considered for Manchester.

If you would like to attend the session, please email membership@ciat.org.uk to reserve a slot.

Greater London Region 09

A sports day for Region members and guests will take place on 2 July from 2.00 pm to 6.00 pm in Regent's Park. For further details please see the events page at www.ciat.org.uk

Western Region 12

An MCIAT Interview Board and Membership Progression Session at the Mercure Southgate Hotel in Exeter on Thursday 18 August 2016 from 12.00 pm to 1.00 pm.

If you would like to sit your Professional Interview for Chartered Architectural Technologist status in Exeter, please confirm in advance. Please note you will need to have submitted your completed MCIAT POP Record or MCIAT Professional Assessment application by Monday 25 July 2016 to be considered.

To book your place for the Progression Session, please email James Banks, Membership Director. Email james@ciat.org.uk

Republic of Ireland Centre 02

Drainage and waste water: The Technical Sub-Committee has made a submission to the DECLG in response to the public consultation on the revised TGD H – Drainage and Waste Water Disposal. The Committee has also written to the Minister for the Environment requesting that a consolidated version of the Building Control Regulations 2007 – 2015 be issued, incorporating all the various revisions. This letter was copied to the

Law Reform Commission, who responded in very positive terms.

Government contracts: It should be noted that changes have been made to the government contracts, making the bill of quantities the principal document of the contract and incorporating the principles of the Construction Contracts Act 2013. The new rules came into effect on 4 April 2016. See www.constructionprocurement.gov.ie for details of the new forms.

CITA membership: CIAT has confirmed its membership of CITA (Construction Information Technology Alliance) for 2016. This Irish organisation affords our members two free places at any of CITA's very useful monthly early morning seminars on IT in Construction (BIM). For information on upcoming events and reports of events attended, please read the regular ebulletins issued by Central Office, and contact our CPD Officer, Christophe Krief, if interested in attending future seminars (email: chris@ckarchitecture.ie).

BIM: Mel McGerr MCIAT has been asked to be the BIM Champion for the CITA Midlands BIM Hub. A programme of events for the Midlands area is in preparation. Any member interested in taking part should join the LinkedIn CITA group for notifications.



The premier event and Awards for Architectural Technology professionals

Opportunities to promote your product or service to project leaders and specifiers within the UK and to a global market

There is a diverse range of sponsor packages for the Institute's 2016 Awards, AGM and President's Ball in Southampton this November. Packages start from £1500.

For more on the Awards, turn to page 38

To find out more, visit
tinyurl.com/sponsorCIAT

Or contact Hugh Morrison, Communications Director on +44 (0)20 3286 2201. Email hugh@ciat.org.uk

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for CIAT members



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