

IRELAND INSIGHT

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Global Insight for the high-rise residential sector

MAY 2022
Issue No. 01



Unlocking Residential
Construction **in Dublin**

Editor's Note

Welcome to the May edition of the Ireland Insight Magazine. I am Janani Aravind, and it is quite a thrill to be the editor of this Magazine. We focus on a wide range of topics in this issue as we unlock Dublin's residential construction.

We discuss our current projects in Dublin, the challenges we faced and how our team were able to resolve these issues. A Zero-carbon future, where our panel discusses how the industry is abuzz and is moving towards the net-zero goals.

Our Q&A lead feature for this issue comes from Bryn Griffins, director at Turner & Townsend's cost management business in Dublin, who shares his valuable insights on the future of Residential Construction in Ireland.

On a further note, we share some valuable insights on fire safety planning, BIM, managing construction sites safely, and plenty more inside. The authors of these various topics are industry experts and contributors to our book 'The External Envelope Vision'.

I always welcome your feedback! Please contact me anytime at Janani.aravind@sapphire.eu.com with suggestions you may have or ideas you would like to contribute.



Regards,

Janani Aravind
Janani Aravind



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Upcoming Events

- MAY** ○
- JUNE** ○ Sapphire 30th Anniversary
20 July 2022
- JULY** ○ Delivering the Vision
20 July 2022 | 12:00 - 13:30
- AUGUST** ○ Maintaining the Vision
10 August 2022 | 12:00 - 13:30
- SEPTEMBER** ○ Resibuild | Midlands Summit
September 2022
- OCTOBER** ○
- NOVEMBER** ○ Resibuild | Flagship Event
November 2022 | London Venue TBC
- DECEMBER** ●



Take a **360° view** of our **upcoming construction projects in Dublin** from Guinness Storehouse!





Suttons Wharf, Bethnal Green

Client: Guinness Trust

Contractor: Hollybrook Limited

Location: Bethnal Green, East London

Balconies: 145 Cassettes® and balustrades for 59 inset balconies

Value: £1.2m



Challenge

Suttons Wharf, an award winning development of over 190 private homes in East London, where Sapphire installed 145 Glide-On™ balconies and provided glazed balustrades for 59 inset balconies. The project was a rapid build as the contractor managed the construction program very well. The customer for Suttons Wharf wanted solid ends to some of the balconies in addition to a thin slab build up.



Solution

For this project, Sapphire manufactured the balconies in advance and kept them in storage so the shipments could go in fast when the install happened. The deliveries to site were optimised using Sapphire's trailers which have the capacity to transport four pre-assembled balcony units stacked two high. To match the narrow floor slab depth, Sapphire used a closed Cassette®, many of which also had a custom made 'end box' detail with aluminium cladding to the exterior, and decking on the inside.



Installation process

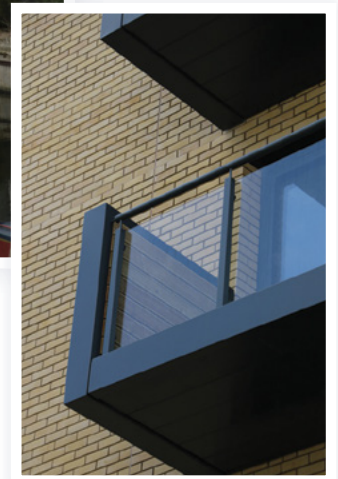
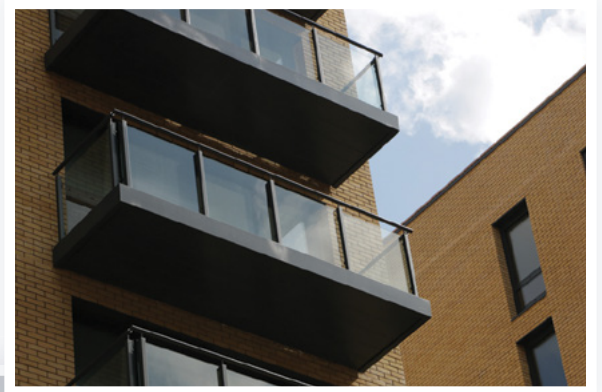
Step 1 Sapphire manufactured the balconies at its offsite production facility while balcony arms were fitted to the already cast-in Schoeck anchors.

Step 2 The balconies were kept in storage until required, allowed a faster shipment of units being received.

Step 3 When required on-site, the balconies were loaded onto Sapphire's trailers which have the capacity to transport four pre-assembled balcony units.

Step 4 Once on-site, the balconies simply glided on to the pre-installed brackets.





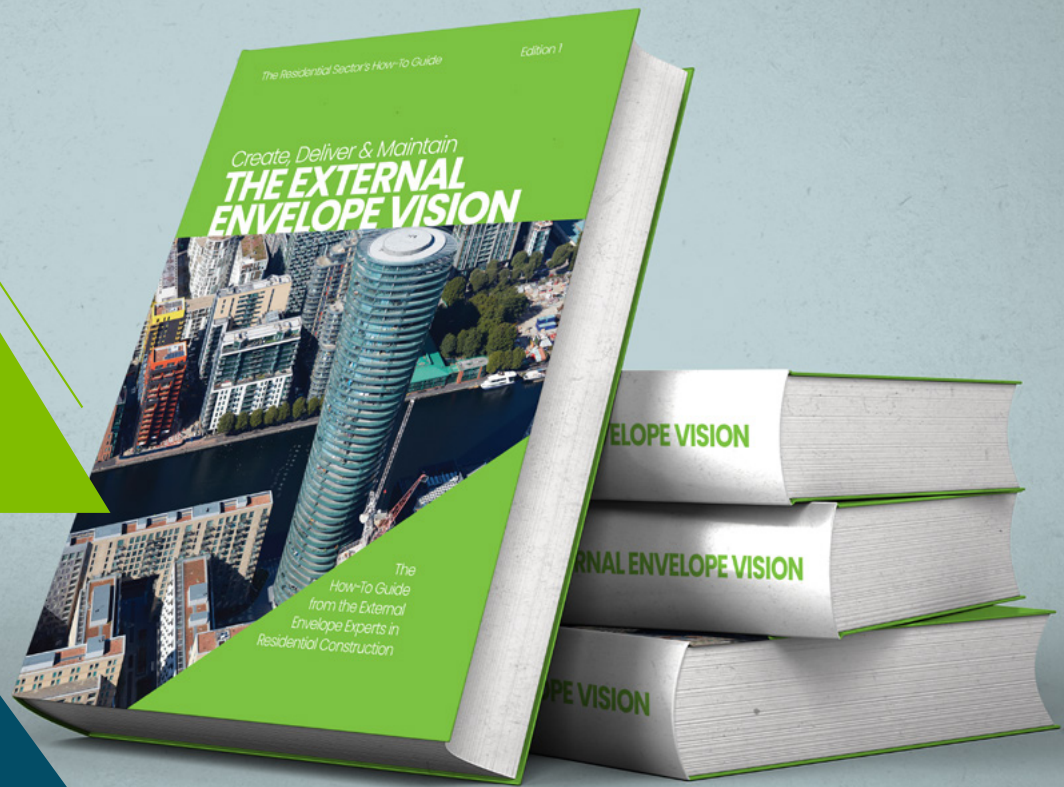
NBS Specification

Suttons Wharf, Bethnal Green

Manufacturer	Sapphire Balustrades Ltd 11 Arkwright Road Reading RG2 0LU 0844 88 00 553 sales@sapphire.eu.com www.sapphire.eu.com
Reference	Glide-On™ aluminium Cassette® balconies with Opal® coated framed balustrade system with glass infills.
Balcony anchor	Cast-in Schoeck® KS20 anchor incorporating thermal breaks.
Arms	One piece galvanised steel arms, fitted from scaffold after concrete casting.
Cassette® structure	Extra slim Glide-On™ closed Cassette® balconies
Soffits	Polyester powder coated aluminium Cassette® to Ral 7016 matt, free draining to sides of balcony.
Deck finish	Softwood decking fixed with screws.
Toprail	Polyester powder coated 50mm diameter tubular stainless steel Opal® handrail to RAL 7016 matt
Guarding	Polyester powder coated stainless steel 50x50mm Opal® balusters to Ral 7016 matt. Offset 10mm clear toughened glass infill panels with all edges flat and aris polished and 3mm diameter nominal radii corners. Some balconies to have solid wall end boxes to sides of balconies from Polyester powder coated aluminium to Ral 7016 matt with softwood deck to match deck finish recessed to inner faces end boxes.
Base fixing	Mechanically posts fixed to sides of balcony Cassette®.
Fascias	Polyester powder coated aluminium fascias to Ral 7016 matt to hide all fixings.



Experts Guide on
the Creation, Delivery
& Maintenance of the
External Envelope



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A Zero-Carbon Future: Creating Steps not Footprints



The industry is abuzz with talks about sustainability and moving towards net-zero goals. However, most companies are still in the initial stages of their journey towards net zero. For those looking to navigate the way forward, we asked Michael Troussel, Director of WSP, Dr. Syeda Zainab, Head of Sustainable Technology at Wates Group, Chris Lister, Commercial Manager at Farrat, Toby Cambray, Founder Director of Greengauge Building Energy Consultants and Nick Haughton, Head of Marketing at Sapphire Balconies to reveal what they think are the next steps for the industry.

- The first step in the sustainability journey is to understand that the drive to net-zero is not going to go away. Anyone who has a stake in the future needs to analyse what they can do to contribute to a sustainable future.
- When it comes to action, construction companies need to identify sustainable products, especially for the façade, that is compliant with building regulations. They also need to get the insulation right and make the façade as continuous as possible.
- While designing the façade, other factors like the thermal bridging also need to be taken into consideration as this will play a major role in the energy efficiency of the building. For example, the energy savings you get from triple glazing in some cases can weigh against the embodied carbon. A double-glazing element with less

embodied carbon, along with how the occupants heat and cool the building, could create less carbon over the lifetime of the building.

- When it comes to calculating the whole-life carbon, both the embodied and operational carbon emissions need to be taken into consideration. In such cases, the focus needs to be on how different components that make up the façade work together, as opposed to the emissions of individual products. Additionally, better tools and means of production need to be designed to ensure that buildings perform to predictions.
- When it comes to carbon offsetting, companies need to understand the proper hierarchy to be followed. First energy usage needs to be lean and clean by supporting energy efficiency, next the energy used should be green energy and only after that should carbon offsetting come into the picture. There are RIBA guidelines that push for achieving net-zero by using the offsetting option.

Learn more by tuning in and watching the panel discussion live.

Precast Wall Panels – The Future Is Sustainable

Darren Brown

Pre-construction Manager

Derek Russell

Technical Director, Techrete

There is an increasing desire in concrete design and manufacture to move towards a more sustainable way of constructing buildings and having a positive impact on waste and energy efficiency. Sustainability is becoming more and more important too, with the design, function and manufacture of buildings needing to be low carbon.

Investing in energy efficient and environmentally sustainable processes, equipment, workshops, office facilities, management systems is key to creating an environment that has sustainability at its core.

The Benefits of Precast: Future-proofing buildings

Architects and designers are looking to manufacturers to help create carbon neutral buildings and precast façades lend themselves very well to that. They are being used in conjunction with precast frames to increase the amount of construction carried out remotely. The advantage of that is the decreased number of people on site, as crews are typically 4-5 people in total compared to wet trades that can typically number ten times that. Other benefits include better health and safety, less need for large site facilities, lack of waste on the construction site and reduced time from manufacture to erected finished product.

The speed of manufacture and erection doesn't reduce the range of designs available to the architect either. If anything, they can be offered a lot more. The range of façades available from precast concrete manufacturers far outstrips what can be done on site with wet trades. The design-in geometry can be a lot more complex, with added textures, colours and integration of other materials available without secondary framing and

Key points at a glance

- Increased desire for sustainable and low carbon and carbon neutral solutions to building façades.
- Precast wall cladding reduces time and waste on the construction site
- Early engagement with designers and architects enables the life of the project to be low cost and low carbon.

Darren Brown, Pre-construction Manager at Techrete

Darren has a wealth of experience in sales and estimating for the architectural precast façades industry. He is particularly interested in problem-solving with clients to assess project suitability and ensuring best fit for production capacity and clients programme.



Derek Russell, Technical Director at Techrete

Derek joined Techrete in April 2018 as Head of Engineering & Design and was promoted in 2021 to Technical Director. He is responsible for our large team of Engineers and Draughtsman across Ireland and the UK. He is an accomplished Civil and Structural Engineer with over 20 years' experience in his field.



fixing required. This reduces cost as well as the number of trades needed to finish the façade. The incorporation of elements such as windows and brise soleils into a single precast system makes for the fast and efficient construction of a building.

Many clients will be looking for cost and programme reduction. This can be achieved in many areas of the build with offsite manufacture and less people onsite to install. With precast façades, the panels can be made up to 20m², and 100m² can be installed in a day.

Early engagement is key to creating a low carbon footprint

As with most stakeholders involved in any project, early engagement with clients, architects and manufacturers makes the difference in sustainable building. The right design at the beginning reduces cost and time as well as the margin for mistakes that will inevitably lead to redesign and waste.

Being involved at an early stage with the architect and structural engineer, precasters can work out the optimum panel size and placement of restraints and fixings to the structure to reduce relative movements. They can then look at how to design and rationalise the panel layout to reflect the architectural intent. They can even disguise the fact that it is a prefabricated façade, if necessary, by the careful placing of joints.

For balconies, the ease of fixing to precast panels comes down to the design of the building and the geometry of the façade. The design has to take into consideration the need to reduce cold-bridging through structure, water egress and thermal breaking back to the building.

Sustainability over cost

Precast is not always the cheapest option to reduce material costs, but the benefits far outweigh the additional cost of the panels. Fixing the panels from the inside, covering the building a lot quicker and lifecycle cost of the panels works out to be more economical and you can design the panels to match the life of the

building. Sustainability, testing and quality control can be assured with offsite manufacturing too.

This leads to a lifecycle of high quality walls panels matched to the life of the building – between sixty to 100 years.

“The range of façades available from precast concrete manufacturers far outstrips what can be done on site with wet trades.”

“Precast is not always the cheapest option to reduce material costs but the benefits far outweigh the initial cost.”

“...early engagement with clients, architects and manufacturers makes the difference in sustainable building.”

References

The Concrete Centre



Sustainability and precast concrete cladding



Coopers Cross, Dublin

Client: Kennedy Wilson

Contractor: Sisk

Architect: O'Mahony Pike

Location: Dublin

Balconies: 355 balconies; 382 lifts

Dublin's historic North Dock embarks on a new journey that has carefully curated public spaces, intelligent architecture, and a high standard the city has never seen. A Kennedy Wilson project, Coopers Cross, is the latest building innovation in the city of Dublin. It is a mixed-use campus which has the highest sustainability standard.

Coopers Cross brings together office occupiers, retailers, and residents with social, cultural, and business at heart. Sapphire Balconies was commissioned to design and manufacture balconies for the spacious apartments centred around the most significant public park in the North Docks.

Over 355 balconies were designed and manufactured. Our accredited installers are now installing them.

Being our first project in Dublin, it was ambitious. However, our innovative team at Sapphire Balconies ensured that the project was seamless.



Challenge

Coopers Cross project was started in January 2020, which was right at the start of the pandemic COVID - 19. The site was closed for almost three months and faced some significant delays.

Pre-cast concrete frames were extensively used in Ireland, whereas the primary trend was in-situ concrete in England at that time, meaning different sequencing and a different approach to the balcony anchors. The next biggest challenge this brought was designing and implementing the express frames over the building.

To add to the further complexity, the balcony drainage specification was to have pipe drainage, which is comparatively more expensive than controlled drainage.



Solution

At Sapphire Balconies, we ensured the pandemic caused no disruption to our balcony supply, so we continued the design process even when the site was shut down.

To resolve the post-brexit, mid-pandemic supply and support complexity, we set up a factory in Lisburn, Northern Ireland, to ensure there was no disruption.

Our in-house balcony designers, created an innovative custom anchor design to work well with the projects specific challenges and the sequence of the pre-cast concrete frames.

Our innovative team at Sapphire Balconies had a live modular framework assembled onsite, in addition to our in-house R&D test house conducting physical testing of the specific assembly, which includes extruded and qualicoat powder-coated vertical bar for a seamless onsite process.

Our experts at Sapphire Balconies had discussions with the assigned certifier at Dublin and the city council to use controlled edge drainage instead of pipe drainage. We provided a site specific drainage strategy and ensured controlled drainage and sideways drainage was implemented for balconies over the main entrance to avoid nuisance dripping.



Rigid.Ready.Right.

Step 1

Cast-in anchors were cast into the precast slab & incorporated thermal break connections offering superior rigidity to the balconies.

Step 2

RLD (Remote Locking Device) Cassette® balconies were preassembled offsite, including the balustrades, decking & soffits.

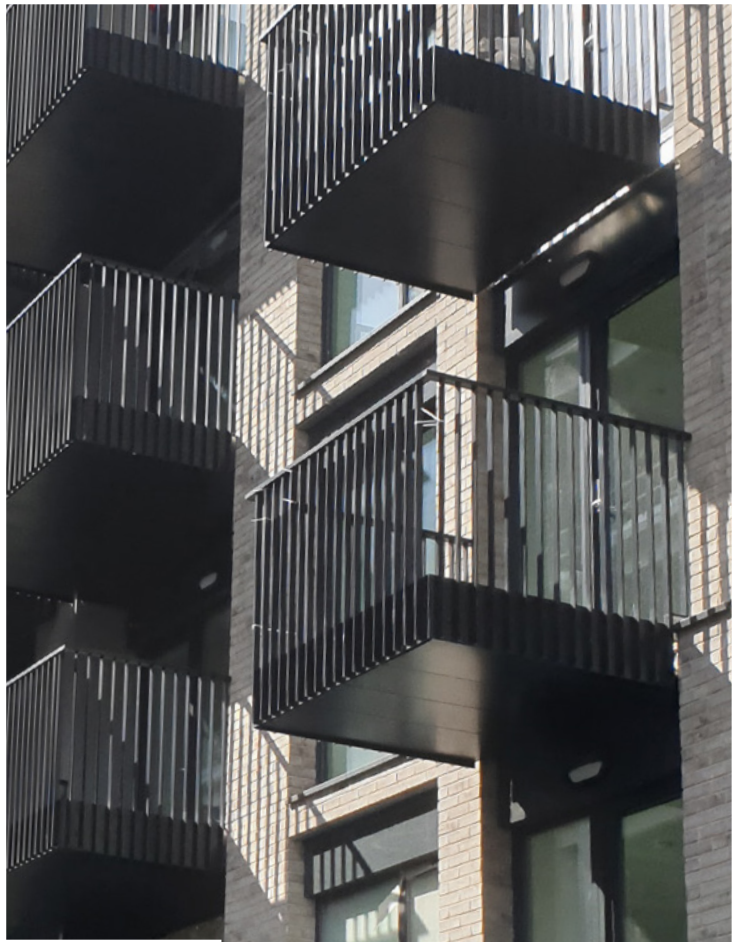
Step 3

RLD Cassette® balconies were transported with balconies 'nested' making transport cost effective, lower footprint and safe. Balconies were pre-slung offsite ready for installation upon arrival.

Step 4

Once lifted into position, the RLD Cassettes® to the pre-erected support arms, before completing the simple mechanical fixings. The RLD enabled remote control of the balcony connection from within the building.





NBS Specification

Coopers Cross, Dublin

Manufacturer: Sapphire Balconies Ltd, 11 Arkwright Road, Reading, RG2 0LU
0844 88 00 553
sales@sapphire.eu.com
www.sapphire.eu.com

Reference: RLD aluminium Cassette® balconies with vertical bars

Balcony anchor: Cast-in anchors incorporating thermal breaks. Deflection designed to L/360.

Arms: 2-piece galvanised steel connected using remote locking device (RLD)

Cassette® structure: Standard 400mm modular Glide-On™ Cassette® balconies polyester powder

Soffits: Polyester powder coated aluminium controlled draining soffits

Deck finish: MyDek Aluminium Decking fixed with hidden clips

Toprail: 60x30 polyester powder coated aluminium handrail

Guarding: 40x12 polyester powder coated vertical bars

Base fixing: Mechanically fixed to Cassette®

Fascias Polyester powder coated aluminium fascia behind vertical bars



Planning for Fire Safety in Residential Building

Shane Ryan

Associate Director, BB7 Fire

Passive and active fire protection systems are at the heart of fire safety design in residential buildings. So, it's important to know how fire behaves and how that can be addressed to manage and quell a fire as soon as possible.

The height of a building is of particular importance when designing the fire protection systems. As soon as a building is taller than 18 metres, it's harder for the fire service to tackle the fire effectively from the outside. This means firefighters need to go into the building and reach higher floors in a reasonable amount of time. Firefighting shafts are required in buildings taller than 18 metres and sprinklers in buildings over 11 metres.

Slowing and controlling the spread of fire and smoke

Of course, nobody wants an incident, but designers can mitigate the spread by ensuring the building performs well during a fire. Residential apartments are seen as single compartments, so passive fire protection is really important to stop the spread from one apartment to adjacent ones.

Fires do spread out once the windows break, so it's important for it not to get into the cavity of the façade, which leads to very quick spread across the building and potentially back in elsewhere. Passive fire protection can really help here. The use of cavity breaks to stop the fire spreading past the floor and up the building should be incorporated in any design.

Controlling smoke is just as important as fire spread. Any outlets to the outside of the building need to be well sealed to prevent smoke and heat entering the cavity. Preventing smoke escaping to the staircases needs to be considered too, as they play an important role for escape and firefighting.

Key points at a glance

- The design of passive and active fire safety systems needs to match the life of the building
- It's important to make sure the products selected are subject to rigorous testing and are suitable for the building
- Installation needs to be managed well and maintenance of the systems carried out regularly.

Shane Ryan, Associate Director at BB7 Fire

Shane is a fire engineering consultant and manages fire engineering projects liaising with clients and writing fire strategies for a wide range of buildings. He has worked on a range of residential and commercial design projects throughout the world.



A safe external envelope

The key to constructing a safe external envelope is making sure that fire prevention and protection is part of the early stage design. Selecting the right products and materials should include checks that they are suitable for the type of building.

Once the products have been selected, and they meet the test criteria and certification, it is just as important for them to be installed correctly onsite.

Resident education also has a role to play in fire protection. For example, regulations now state that all balconies have to be non-combustible, but it's hard to control what is placed on a balcony once it is occupied. To make people aware of the risk, it is essential that any resident package includes guidance on fire safety so they don't, for example, overload their balcony and hallways with combustible materials.

Once the building is occupied, management and maintenance of the building needs to incorporate regular checks and maintenance of fire safety and protection systems – even simple things like checking fire doors are working correctly. What is vital at the handover stage is the fire systems include servicing contracts that ensure they are maintained throughout the life of the building.

“It’s important to know how fire behaves and how that can be addressed to manage and quell a fire as soon as possible.”

“...designers can mitigate the spread by ensuring the building performs well during a fire.”

References

Fire regulations



Managing Construction Sites Safely

Kenneth Farnon

Director Cooley Construction Services

Accidents that occur on construction sites often happen because of an oversight which can nearly always be avoided. It might be a product hasn't been packed correctly or stillages that have been used that don't support the site conditions.

It's easy to assume that safety is at the top of the agenda when manufacturing products offsite, but factory conditions will be very different to a construction site. Weather conditions exist outside of a factory and surfaces will be very different onsite to the controlled conditions of a manufacturer's building.

To look at risks and pre-empt accidents, architects need to look at every scenario in their design.

Early engagement is key to safety

In terms of cladding, balconies or indeed anything that goes onto the external envelope of a building, you have got to have early engagement from the supply chain. This should ideally start when the design is just out of stage two.

A project must be developed collectively, so that safety is designed into the onsite programme. This should include the main contractor, supplier and contractor involved in the installation. Together with designers and manufacturers, they can look at lifting points, weights and ratios, all of which lead to working out how to package and deliver products to site and install them safely. Having all the information in front of the collaborators is also key. This means finding out the fine details, such as what the procurement route is and what processes have been subcontracted.

If you follow the process of initial thoughts to design to packaging and delivery, logistics and method of installation and bring all that information together early on you can avoid most incidents and accidents. And let's not forget getting the most competent people to be on board!

Key points at a glance

- Early engagement of supply chain is key to pre-empting safety risks
- Collaboration from clients to operatives is important throughout the whole project
- Ongoing monitoring ensures risks are spotted and mitigated quickly

Kenneth Farnon, Director, Cooley Construction Services

Ken studied civil engineering, construction management and construction law and has been in the construction industry for twenty years. He has worked at director level since 2003 and at Cooley leads a team offering solutions for clients in terms of procurement routes, supply chain recommendations and construction strategies focused on offsite solutions.



A great example of where early collaboration made a difference is on the 35-storey tower called The Waterman in Greenwich. The land is next to the river, with all its built-in climactic conditions. Engagement early on with contractors showed us it was quite clear that we needed to stop looking at cost and look at value, which comes in many different forms. We used Scheldebouw as the façade contractor because of their careful consideration of safety. They designed stillages especially for the job, where the clamps could only be released if no one was standing in front of the panel. This lesson was learned in an incident from a previous project where a panel came free from a stillage and caused serious injury. The value of early engagement won't show up on a cost analysis, but it gives great value to the project. As a consequence, there were no first aid incidents on the external envelope of that project.

I have personally taken that learning to every project I have done or advice I have given since.

Digital tools to enhance safety

To enhance safety even further plans can be made pictorial through a digital platform. A 60-page written instruction booklet is not going to mean much or be effective in any action plan, because people simply don't have the time to read and then disseminate the information to the relevant people. A digital format is available to everyone from any tablet or phone.

A good way to take safety even further is to look at it through the process of something called "show me". This is where everyone gets together and records the process of, for instance, lifting a panel into place: from taking it off the lorry to its lifting equipment then putting it into place. From that, a risk assessment can be done alongside changes to the process that ensure maximum safety.

Monitoring to kick out complacency

It's important to not let complacency set in during later stages. Continuing a collaborative practice throughout the design and build process means you are building a culture of safety. Everyone has to continue on the journey for it to work successfully. Clients and main contractors need to be open to advice from the supply chain very early on.

It might be that you don't choose a certain supplier but if they are involved in advice, they need to be recompensed. All too often clients assume that the supply chain can be used to get free information. Keep the competitive edge in all interactions and pay suppliers for their advice – it is a service they are supplying.

Monitoring price, safety, programme and quality and reputation needs to be done throughout too. Anyone can get a cheap price, what you need is to get the right price and that means looking at the value people and products bring. Once that is recognised, it changes the culture and filters down to the rest of the contractors and installers. Someone who is installing a panel feels valued because he has been involved from the start, especially if you are using the "show me" process. To ensure sites are safe, a change in culture means that suppliers and installers are part of the decision-making process to keep onsite safety a priority.

Designing out risk

Compressing timescales can cause the most damage, both to personnel and materials. In competitive single stage tendering especially, it's all about the programme and it seems the easiest thing to do is cut times. Something like a NEC contract that allows for time-risk allowance can be built into the programme in a more collaborative way, more than a perhaps a JCT contract might.

More client involvement in the procurement route could mean clients delivering their own projects. This would be a better process as it would allow more time on the project and a greater focus on safety. Pressure points are often with the supply chain so again, early involvement is key.

MMC brings certainty around quality as products are built in a controlled and quality-assured environment, which brings certainty to a programme. The fewer people on site, the less chance there is of accidents happening. MMC can also bring certainty to costs – you know what your cashflow forecast is as you have certainty of the products coming off the production line. At the end of the design and build process many contracts end up in dispute, but MMC will mitigate

the amount of dispute that occurs, making the whole process simpler because you design the safety into any components and hazards are eliminated in the factory.

For balconies that are now designed offsite, hazards have reduced immensely. For concrete balconies in the past, it was difficult to know who had overall responsibility of managing them, as there were so many elements to the design and build of the balcony, each with their own inherent hazard.

All this isn't to say that safety hasn't advanced over the years. Largely due to a mix of leadership from clients, education and supply chain engagement, onsite safety has greatly improved. Having the client engaged in a project is key to bringing all of this together.

Technology has played a major part in making sites safer, with QA processes in place from factory to site – all done on a phone or tablet. There is lots of free education from manufacturers who want to do things right and pass that knowledge on and a push for operatives to have more of a voice and be involved in creating method statements.

The biggest safety risk to the external envelope is not getting the design and the logistic strategy right. Getting the onsite logistics in place, where control measures are already in place informs the design and ensures the safest possible construction site.

“Continuing a collaborative practice throughout the design and build process means you are building a culture of safety.”

“The biggest safety risk to the external envelope is not getting the design and the logistic strategy right.”

“Technology has played a major part in making sites safer...”

References

The 10 Point Plan



The Waterman, Greenwich





Ask the Expert



A Q&A with **Bryn Griffins** on The Future of Residential Construction Ireland

Bryn Griffins, director at Turner & Townsend's cost management business in Dublin, shares his valuable insights on the future of Residential Construction in Ireland.

Q: What is the biggest challenge facing the Irish housing sector, particularly the multi occupancy-based?

A: The FastTrack planning system that was designed to speed up delivery of residential units saw some challenges. We have been tying schemes up for 12 months and 18 months, and we have seen very few schemes delivered. That is one of the vital challenges, and those systems came to an end in February. Any system put in place to plan for residential needs to address the speed to try and unlock the backlog and get things moving forward.

Q: How has the industry in Ireland been affected by the upstate shortage, skilled labour shortage, and mature materials coupled with price hikes?

A: We are moving steadily towards issues in terms of skills, shortage, an ageing workforce, and fewer young people joining the industry. Many labours left Ireland for the UK due to the lockdown of our work construction sites. Premium tender prices had to be issued to attract them back.

From a material point of view, the issue was well documented. We were able to stockpile a bit of material, but the impact is on the risk moving forward. We saw a significant hike in tender prices because of the effect. However, tendering strategies can mitigate some issues and cause the hike to return to normality.

Q: Does MMC provide a method to increase productivity to the sites and deliver the homes needed in Ireland?

The residential sites we were working on had elements of MMC - bathroom pods and precast frames saw the benefit during the lockdown as the factories continued working. The materials were assembled and installed quickly once the sites were reopened. It's not the only solution to the housing crisis, but it certainly plays a significant role in delivery predictability.

Q: What would you think of the role of rationalisation, and how much should the designs be rationalised?

A: To take advantage of delivering at scale, approach the portfolio of projects to a standard design project. E.g., If you have a portfolio of 5,000 units, get the design for your standard one bed, two bed, rationalised, tight and efficient. Also, base it on standard modules, so there are no issues on site.

This sets a standard playbook for your Architects with standard details, which needs some planning to turn into an actual building. If you have the base set, rationalised and standardised, it is unnecessary to create it again, saving time and money. As the book 'The External Envelope' says, many products can be pretty costly despite making different details, even on the same site.

What do you think about the government's recently launched housing fraud, and what will it deliver in the next ten years?

A: Housing for all tries to address the situation with multiple facets. They are trying to tweak and change various aspects of the industry. There are various focuses on introducing different affordable models, cost rental, planning and shared equity schemes, like the one in the UK, but it has its own set of problems.

The critical issue is the primary supply and demand issue as we have demand that outskirts supply. It is essential to increase the supply and get things moving forward dramatically.

What does the site need right now to deliver more homes in Ireland?

A: To deliver more homes in Ireland, the site needs several vital things. It starts with planning and then the infrastructure of where the residential developments are built.

With labour and skill shortages, the right strategies must be in place to attract young talent. Modern Methods of Construction, greater use of digital technology will make the industry appealing to the younger generation.

With a proper plan of what is needed, where is it required and who delivers it, the demand in the market for affordable housing can be tackled.

What is the role of digital in residential construction? And do you think it should play a more significant role?

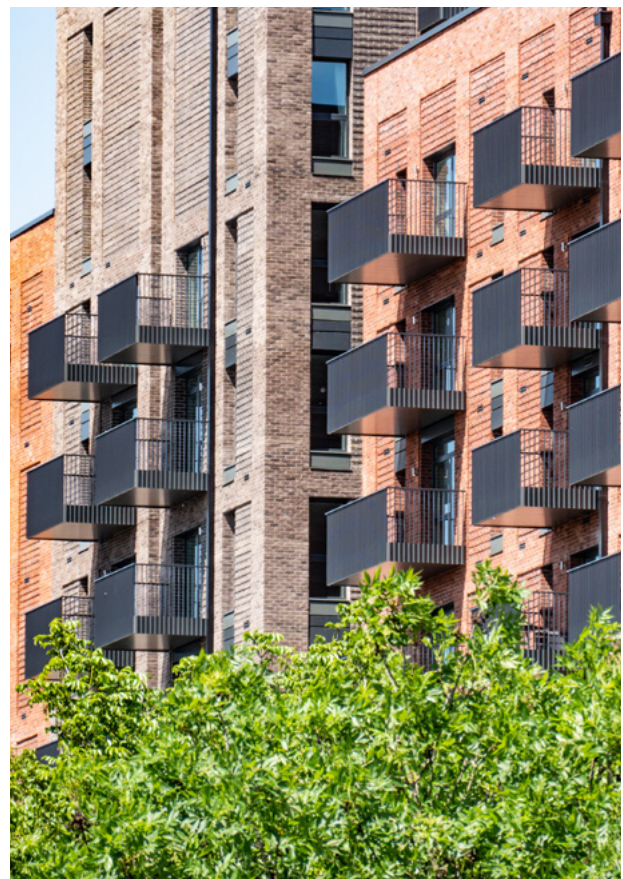
A: It should be playing a more significant role than it is right now. The benefits are reduced potential for error and the time and cost involved with addressing errors when they happen, but they need to be done in the early stages of projects. When introduced relatively late, it doesn't have the benefits.

There are many new technologies in the construction industry that can be used at different stages.

Digital tools like BIM cost premium, but it drives a bit of efficiency through the system.

With a myriad of challenges in the construction industry across material shortages, skills, and planning, what is the one key takeaway from yourself?

A: Having a long-term strategy around efficient delivery from all sides of the industry will be the key takeaway to making the fundamental shift.



BIM – from Design to Build, to Occupation, to End of Life

Johnny Furlong

BIM Strategy Lead

L&Q Housing Association

BIM has rapidly become an ubiquitous acronym across the whole of construction. The government, keen for the UK to be a world leader, have written a strategy that outlines its potential for the industry.

We have a slightly different view of what BIM is to the mainstream. For us, it isn't so much about a 3D model, it's about being in control of information at the right time for the right people.

The potential of BIM as an information tool

BIM's potential to be used as an information tool for all is what makes it so innovative. Long gone are the paper copies and data that nobody understands or uses. For the industry as a whole, it has to be considered in three ways:

The “what” – the content and templates that are useful and will be analysed during and after a project to improve quality

The “when” – the timing of information received in a construction programme. This can mean sign offs, approvals and reviews at the right time, so a stream of information is available for review and audit.

The “where” – creating digital information on an easy to use platform.

This level of understanding goes deeper than just recording the weight and height of products because the information needs to be valid to users throughout. This will be a fundamental change for the industry, as construction is used to using information as a package and not at an individual level. BIM will allow detailed data down to individual components to be selected, used and even replaced. The whole process encourages improvement of outcomes and long-term quality of a product.

Key points at a glance

- BIM provides the what, when and where of all information relating to a project.
- Specific requirements in relation to testing, linked back to standards is vital to ensure quality and safety are built in
- Information on all aspects of the design can be held and across the whole life of a building

Johnny Furlong, BIM Strategy Lead, L&Q Housing Association

Johnny has over a decade of experience of BIM in construction and has implemented BIM and digital strategies on large scale projects ranging in value from £20m to £500m.



Making sure you ask the right questions

It is essential to know exactly what information you need at the different stages of a project. For instance, testing certificates are a vital part of the information flow, but you could ask a manufacturer for all their certification and that will mean different things to different manufacturers.

An example of this is that clients require all flat roofs to be adequately tested. But quite often flat roofs leak, so what does 'adequately' mean? Without accurate information in BIM, we need to be careful we aren't asking the wrong questions. BIM ensures that tests are linked back to standards and that's what a client should be asking for, rather than relying on manufacturers to decide on their own testing. Being clear on what type of testing is needed is important to keep warranties valid and people safe.

The golden thread of information

The storage of information enables a wealth of data that can be opened up to the complete supply chain.

It is widely accepted that we can't construct modern buildings without 3D modelling - it is essential for detailed calculations of designs. 3D, however, is perfect to enable visualisation and analysis but doesn't lend itself to details of an impact test, for example. So, creating a database where 3D, pure data and graphical information and certificates are stored together is the creation of a golden thread of information. If all the information is available separate from the 3D model as well, it can be easily accessed by the people who need it.

Simplifying the maintenance process

BIM makes the whole process of maintenance easier if all the data on products and building elements is kept early in the design phase and throughout. The common perception of BIM is that it is a tool for avoiding conflicts to make the construction phase easier, but the whole point of BIM is to use that information from design, to

construction, to end user, to end of life. This saves time, money and energy and is a gateway to a more sustainable building.

The extent to which BIM can be used is yet to be realised and a lot of value can be had by all. Clearer and better data leads to better maintenance checks and a greater longevity of products and buildings as a whole. Initially overheads may be added to, but BIM opens up so many possibilities for better decision making and in the long run it will make for a more efficient industry.

"...BIM opens up so many possibilities for better decision making..."

"Without accurate information in BIM, we need to be careful we aren't asking the wrong questions."

"The extent to which BIM can be used is yet to be realized and a lot of value can be had by all stakeholders."

References

BIM Industrial Strategy



L&Q Group



Effective Building Element Design for Fire Safety

Harem Hussein

Fire Safety Engineer, Efectis

From small components to the finished building, learning how everything performs in a fire is crucial information for designers, clients and end users alike.

Good building design in terms of fire safety means it accounts for every aspect of the building - that every wall, ceiling, door and floor has been tested in line with standards and regulations. It is important that every element has enough fire resistance as specified in the standards and regulation to ensure life and building safety. Therefore, every element has to be fire tested in recognised UKAS accredited labs (testing houses) to secure impartiality and achieve required trust in the product. In a nutshell, fire testing is divided into two main categories – reaction and resistance to fire.

Designing for fire resistance and reaction

Building components and structures are tested in terms of minutes they are resistant to a fire in a laboratory-controlled furnace, when they are subjected to a standard fire curve with regulated pressure and furnace temperature. Three main resistances (load bearing capacity, integrity, and thermal insulation) for the element in a fire resistance test are usually considered depending on the nature of the element and its function in the building. For example, a door is not a load bearing element in a building so that only integrity and thermal insulation will be considered in a door fire resistance test. REI is used to shorten the elements fire resistance test and followed by the achieved time in the test. R signifies the load bearing ability during a fire, the E signifies the integrity and I signifies thermal insulation. It is highly important to understand each fire resistance (REI + achieved time) for each element as required in Approved Document B or BS9999 to ensure fire safety in a building. Having less fire resistance REI in a building for an element than needed one can be life threatening in case of fire since that element will not hold fire for the required period as required.

Key points at a glance

- BS and EN standards are used in fire testing
- Components and structures are tested in terms of load bearing, integrity and thermal insulation, which is usually referred to as REI and how long they resist in a fire.
- Each material can also be tested to understand its fire reaction classification and categorised from A (the best) to F (the worst meaning it is highly combustible)

Harem Hussein, Fire Safety Engineer, Efectis

Harem is a Fire Safety Engineer at Efectis UK/Ireland with a BSc and MSc degrees in Mechanical Engineering and PhD degree in Safety Engineering (jet fires). Harem has performed numerous fire testing, façade fire safety and Passive Fire Protection investigations through his work at Efectis.



Reaction to a fire determines behaviour of every material in a building element or system when exposed to fire. This indicates its combustibility and its role in the spread and development of a fire. Materials are classified based on their combustibility according to BS EN 13501 (European standard) or BS 476 (UK national standard).

For example, according to European standard for reaction to fire classification EN 13501-1, materials are categorised from A (the best as it is non-combustible or very limited combustibility) to F (the worst as it is highly combustible). These categories are defined based on various relatively small-scale fire tests such as non-combustibility test (ISO 1182), bomb calorimeter (Gross Calorific Value test ISO 1716) and so on. It is also important to know the used materials in building elements to achieve compliance to regulations and guidance, or to design an element which can have a great chance of passing a resistance to fire test. For example, it is necessary to have appropriate material fire rating classification for a façade system to comply with Diagram 40 of ADB regarding external surfaces and walls fore surface spread flames.

Since the Grenfell Tower tragedy, fire safety is certainly a topic of focus in the UK. It is important to test every element in a building and ensure its fire resistance and reaction to fire before contemplating it to be in the building design. For instance, if all façade systems have been tested against BS 8414, the chance of having tragedy like Grenfell Tower would have been much lower since the combustibility of ACM cladding and its fire spread would have been identified much earlier.

Principles to follow when testing

It is crucial for architects and building developers to ensure that every element and material to be used in their building has been tested to appropriate standard and achieved all requirements. This must be sought in the design stage, not when the materials and elements are already in the building and then looking for solutions. It is best practice to communicate with the product manufacturer or the supplier about every material and element fire safety requirements before specifying it for a building.



There must be an appropriate testing report and classification report from a recognised UKAS accredited lab for every element resistance to fire. In absence of a testing report, it may be possible to have an assessment in lieu of a fire testing from a UKAS accredited lab with profound knowledge of testing. It is worth it to mention that desktop studies (assessment) for façade systems is not permitted in recent Approve Document B and BS 9414 has been published to make any assessments for façade system.

Special consideration must be made for high-rise buildings as resistance times of building components are always increased the further up the building you go to ensure residents have time to evacuate to safety.

Sometimes it can be a difficult process to review all the elements of the building. We need to look at the coating as well as the structure for some and ask whether these components comply for the specific building. A building beside a national heritage building, for example, must be specially examined to look at how it can resist a fire to save the building next to it.

Testing and assessment is an essential part of the golden thread mentioned in the Hackitt Report. If this is started early, safety will be at the forefront of the design and build programme throughout. Adequate information needs to be available to all stakeholders, with a paper trail according to testers' guidelines.

If all future decisions are based on appropriate fire testing at foundation level, the building, elements and products will be safe for a lifetime.

“Usual tests in the UK should include fire resistance and fire reaction tests...”

“Testing and assessment is an essential part of the golden thread mentioned in the Hackitt Report.”

References

Fire safety: Approved Document B



BS EN 13501 (Part 1 and 2)
Full scale façade test according BS 8414
and assessment according to BS 9414:

BS 8414



BS9414





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Cost Consultancy in Construction

Joseph de Klerk
Partner, Stace LLP

Construction industry clients need to satisfy themselves and their investors that they are achieving the best value. That means they require their consultant team to exhibit confidence and a degree of certainty that estimated construction costs are robust and not vulnerable to unexpected change.

Cost consultants provide a unique overarching view to the construction process from inception to completion. Whilst other disciplines inherently tend to focus on specific elements of a construction project, the cost consultant needs to be aware of all elements of the construction process in order to provide overarching commercial and contractual advice.

Early engagement in the process provides cost consultants with the biggest opportunity to add value, as they will be able to contribute to setting the client brief and the target metrics required to achieve viable projects. These metrics guide the consultant team to optimise the scheme design and are monitored and evaluated at each stage to ensure compliance and avoidance of any scope creep or deviation from the client brief.

Actions required to ensure budgets are kept to

Budget and cost control is key in the delivery of successful construction projects. On all projects, therefore, it's important to make sure, in conjunction with the client, design team and other stakeholders, that robust procedures are put in place from day one to ensure budget compliance throughout the RIBA stages. Equally important is to provide clients with seamless reporting from inception to completion to ensure knowledge is transferred and retained throughout the process.

The key to budget compliance lies in a detailed engagement with the client and the wider team, to build a clear understanding of client requirements and brief. This understanding will drive the need for high quality, coordinated designs, whilst ensuring the entire team (designers, consultants

Key points at a glance

- Collaboration with clients and designers is key
- MMC is a vital part of the construction industry
- The supply chain is needed earlier on in projects
- Construction needs to change to entice young people to apply for jobs

Joseph de Klerk, Partner at Stace LLP

Joseph is a Partner with a Chartered Quantity Surveying background. He is experienced in managing and providing a wide range of pre-, and post-contract cost management services for a variety of clients in the mixed-use residential, commercial, hotel and leisure sectors, both in the UK and overseas.



and contractors/subcontractors) communicate continuously to collaborate throughout the process. By doing this they can identify the cost drivers, challenges and risks as early as possible and work together to mitigate these.

MMC and cost-saving

Like many in the industry, I am very excited by the increasing availability of modular and other modern methods of construction.

Collaborating with clients and designers to incorporate MMC solutions is relatively easy. It does mean a mindset change and learning opportunities for those unfamiliar with MMC. However, great changes can be made that can save time and money. Solutions can even include full volumetric modular construction, where units are fully fitted out off-site as well as panelised systems such as timber or light steel frames. Site-based MMC includes thin joint blockwork and sub-assemblies and components.

We have been involved in 101a George Street in London, also known as Ten Degrees, which is currently the tallest volumetric modular building in the world and the input of MMC has been invaluable.

Whilst there is still a long way to go, we believe that continued investment and innovation by all parties will ensure that MMC will ultimately provide us with more economical, safe and environmentally friendly projects.

Involving the supply chain earlier

Market testing designs and costing elements are essential at every RIBA stage in order to ensure that estimates and cost plans are reflective of the latest market-related costs, conditions and trends in construction. This has the added benefit of receiving design and buildability commentary from the supply chain at an early stage, while continuing throughout to installation and completion.

Involving not only main contractors but also



key subcontractors and suppliers at the earliest opportunity during the design process has proven to inform projects on a much deeper level. It has led to greater collaboration between lead designers and product designers and installers. Early engagement and collaboration provides teams with an in-depth understanding of the design, cost and programme drivers, which help us to better define and manage risks (cost, time, quality and safety) throughout the process.

The biggest issue to be solved

One of the greatest challenges that lie ahead for businesses and the wider collective is getting more young people interested in our industry. If we are to attract the next generation, the time to do so is now. I firmly believe that we can take a proactive, collaborative approach in changing our narrative and providing the right opportunities for the next generation.

As part of this drive, we initiated The Stace Next Gen Index in conjunction with the Construction Youth Trust, to survey 16 to 18-year-olds across the UK to better understand their perception of the construction and built environment sector.

The findings were shockingly clear for all to see – we are, right now, in a war for talent which we are currently losing. But, if the construction industry as a whole can come to the table with a new game plan, there is ground to be made. Nearly 63% of 16 to 18-year-olds are calling out for more information on the career opportunities available to them. Eighty-eight per cent highlighted work experience as the best way for them to understand potential career opportunities, which increased to 92% for female and BAME respondents.

As an industry, we need to be more engaging and showcase the fantastic career opportunities that are available to them within our industry. Arguably the profession which presents the largest opportunity to create and influence everyday lives including the environment, the construction and built environment sector should leave a lasting legacy for generations to come.

We need to work together in order to welcome the next generation to our industry, improving our approach collectively to ensure our future prosperity and our industry's status as a global leader.

“Cost consultants provide a unique overarching view to the construction process from inception to completion.”

“The key to budget compliance lies in a detailed engagement with the client and the wider team...”

“Early engagement in the process provides cost consultants with the biggest opportunity to add value...”

“As an industry, we need to be more engaging and showcase the fantastic career opportunities that are available to [young people] within our industry.”

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RIBA Plan of Work



101a George Street,
Ten Degrees



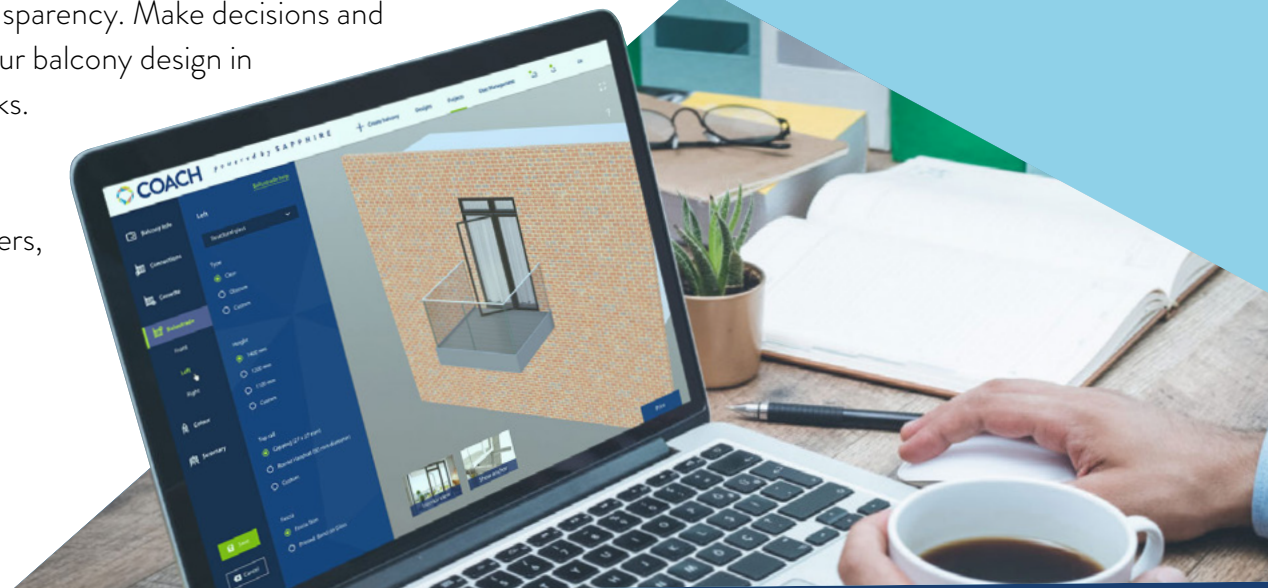


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