



Eckersley
O'Callaghan

Practice Profile

Italy and Southern Europe

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About us

"In my experience, I have not come across another consultant engineer that can consistently deliver both the creative and technical integration of thought to yield the outcomes we have achieved."

BJ Siegel

Senior Design Director,
Apple

**Apple Marina Bay Sands,
Singapore**

**2021 IStructE Awards,
Construction Innovation
Award**

**2021 Vitruvian Honors
& Awards, Outstanding
New Facade**

**2021 WAN Awards,
Waterfront Gold Award**

Eckersley O’Callaghan collaborates with visionary clients on state-of-the-art projects that push the boundaries of what is possible.

Since forming in 2004, our team has grown to 160 across offices in London, Manchester, Paris, Milan, New York, Los Angeles, San Francisco, Hong Kong, Shanghai, Sydney and Delhi.

We have established an international reputation for our creative, yet rigorous, approach to engineering structures and designing facades. We work on a range of extraordinary building projects across the world, from complex structures, through to bespoke glass designs and specialist heritage projects.

Our innovative work has received some of the highest accolades in the industry, and we are synonymous with pioneering new advances in design and engineering. Our engagement with architecture and industry underpins our pioneering use of materials to realise projects of exceptional quality, efficiency, and elegance.

Sustainable thinking informs all our projects, beginning at the earliest conceptual stages and continuing right the way through to completion.

Eckersley O’Callaghan Milan, our Italian office was established in 2022, with the aim of working on a range of extraordinary building projects, from complex structures of timber through to world-first facade designs.

Current projects include the new IED campus in Milan, in collaboration with Cino Zucchi Architetti, a residential complex in Rome, via del Serafico, with One Works Architects, and two high-profile schemes in the center of Milan with AMDL Circle. While Past projects include a glass house for Bulgari in Valenza, and Apple retail stores in Milan and Rome. Across Southern Europe, Eckersley O’Callaghan is also working on projects in Greece, Cyprus, and Montenegro.

Sustainable thinking informs all our projects, beginning at the earliest conceptual stages and continuing right the way through to completion.

We offer a high quality creative service for the design of complex buildings, working with a range of materials with expertise in wood, glass, steel and concrete.



Left:
Sky Pool is the world’s first transparent swimming pool suspended 10 floors up between two adjacent residential buildings

Top:
Company architecture tour

Working in Italy and Southern Europe

Eckersley O'Callaghan is familiar with working in different countries and adapting to local standards

At Eckersley O'Callaghan we are very familiar with working in different cities and markets, adapting and designing to varying building standards. This flexibility and attention to technical detail is how we have developed into a global business.

Our newly established physical presence in Milan builds upon this. From this office we will build upon our existing experience and contribute our expertise to ambitious Milan regeneration plans. We will also do this more widely in Italy and Southern Europe.

From Milan we will provide the full remit of services which covers facades and structural engineering. We believe that our advanced expertise in designing complex facades using advanced materials and engineering principals will help in creating high performance buildings that meet existing and increasingly stringent legislation requirements in Italy and Southern Europe.

We are able to do this through our expert knowledge of different materials including a specialism in structural timber and glass and our passion for embedding sustainability and circular economy principles in our work and merging them holistically into the design process. This is also combined with our practice wide approach to research and development and cross industry collaboration which has ensured knowledge, understanding and application of design for manufacture and assembly (DfMA) and design for disassembly (DfD) principals, prefabrication and innovation.

Our Team

The Milan office is managed by Alessandro Baldini, Associate Director, a member of the Italian Order of Engineers. Alessandro has been educated in Italy, worked locally in Milan and Rome, and has extensive facade engineering experience on projects across the world while working in Eckersley O'Callaghan's London office.



Left:
Sustainable facade
design for Pireaus
Tower in Greece

Centre
Targeting net zero with
Black + White building
in London

Right:
Milan studio lead;
Alessandro Baldini

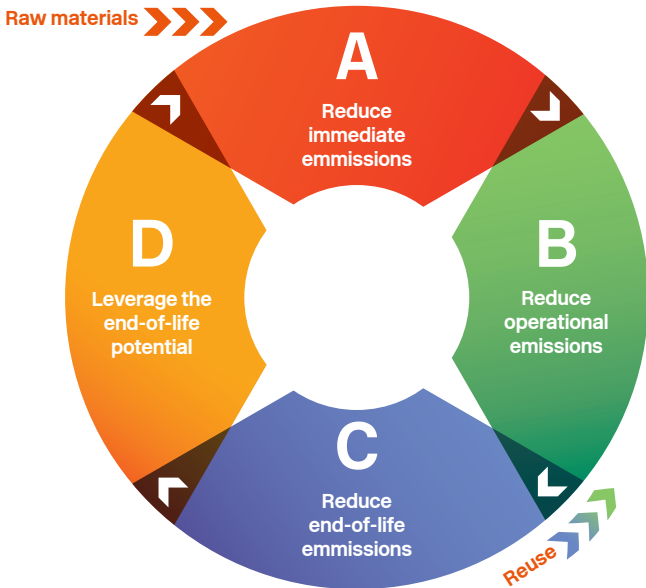
We are pioneers in our field committed to tackling the Climate Emergency by promoting sustainable use of materials, implementing and embedding circularity, resilience and reduced operational carbon into our designs.

We have an integrated design approach to our projects, where we put as much effort into addressing the challenges of climate action as we do to produce fine and efficient designs as well as realizing architectural ambitions.

We approach the sustainability of our projects through the lens of Sustainable Life Cycle Analysis aiming to reduce a project's impact throughout its lifecycle by; reducing immediate, in-use, end of life emissions and leveraging end of life potential.

This approach allows us not only to tackle the paramount issue of embodied carbon but also incorporate wider sustainability issues such as; resilience, circularity and user comfort. Through this approach we can reach positive and sustainable results at each stage of a project.

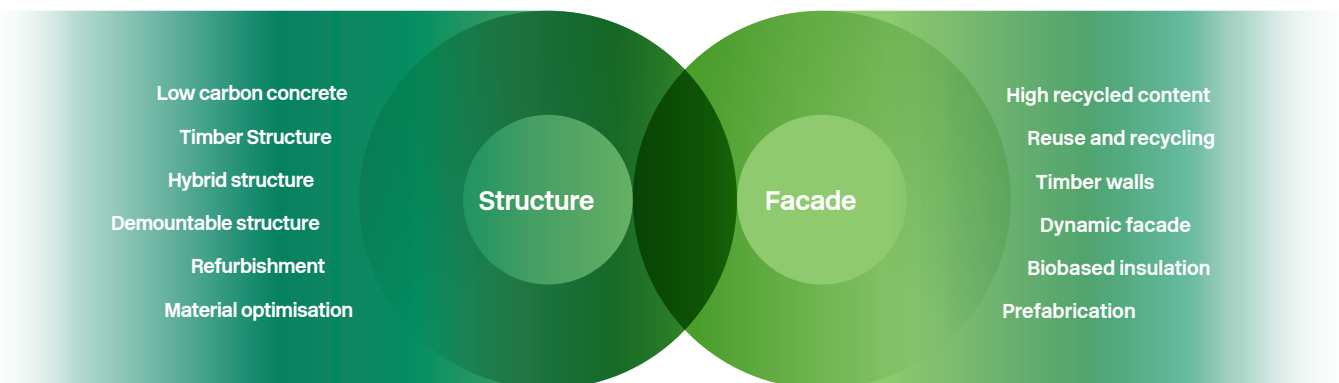
Sustainable life cycle analysis



Climate Action Charter

- Assess the embodied carbon of all our construction projects
- Challenge the briefs to reduce their environmental impact
- Optimise designs to be inherently efficient
- Challenge the industry and traditional practices
- Specify low carbon materials and systems
- Facilitate reduced energy consumption and increased internal comfort
- Develop resilience strategies
- Maximise the service life of the buildings and challenge the need for new build projects
- Integrate circularity principles as a basis of our projects
- Share knowledge and experience

Integrated low carbon design



Top:
We tackle carbon at each stage of a building's life

Bottom:
Our structures and facade teams bring together key skill sets to tackle the climate challenge through a holistic approach

Expertise

20 year+
collaboration with Apple

300+
stores worked on

20
design patents listed in



Steve Jobs Theater

California, US

2018 IStructE Structural Artistry Award

2018 SentryGlas Innovation Award for Engineering

Facade Engineering

Our facades group takes a holistic approach to design and engineering, working from a first principles approach.

As building envelope design becomes more complex due to increasingly stringent energy requirements and material and technological advances, facade engineers have assumed a central role in architectural and engineering design teams in recent years.

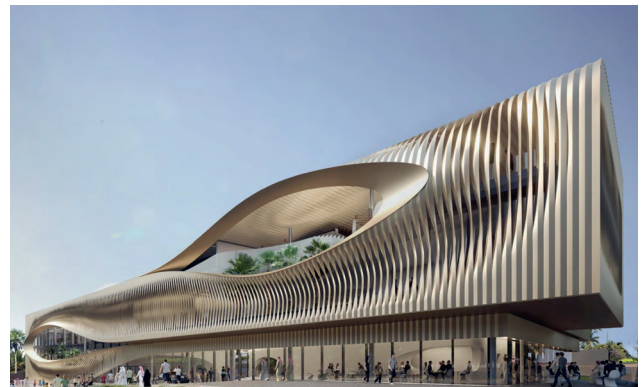
We offer a full service approach to facades in all material types, using standard or bespoke systems, delivered either as performance-specified or fully detailed design. In addition to structural design and system detailing, we have the tools to assess the facade energy performance and ensure compliance with efficiency targets. Additionally, we maintain a close relationship with industry suppliers to ensure we are aware of the latest technology in materials, manufacture and performance.

As a practice, we take a sustainable approach to design and at the core of this is the re-use of existing buildings. We therefore offer a comprehensive service of existing facade condition survey and reporting, in which condition and remedial works required can be identified and specified. Beyond that, entirely new facade systems can be designed and specified that can be compatible with the existing building structure, giving the building a new sustainable lease of life.

The breadth of our expertise across the discipline includes detailed environmental analysis. This supports our ability to engineer building envelopes that fully, and efficiently, meet all performance criteria.



Left:
70 Wilson Street,
London, UK



Top right:
Diriyah Urban Heritage
Centre,
Diriyah, Saudi Arabia



Bottom right:
Apple Westlake,
Hangzhou, China

In-depth Material Knowledge

As facade engineers our role to assist in material selection, system detailing and specification to ensure that the facade design is developed to satisfy both the architectural intent and the technical performance requirements. Central to this is working closely with both the architect and industry to research and identify appropriate materials that satisfy the design intent in terms of appearance, geometry and form.

Our team has expertise and delivered project experience in a range of facade materials, including

- Glass and aluminium
- Stone
- Terracotta
- Brickwork
- Timber
- Precast, UHPC and GRC
- Carbon fibre and GFRP



Terracotta



Timber



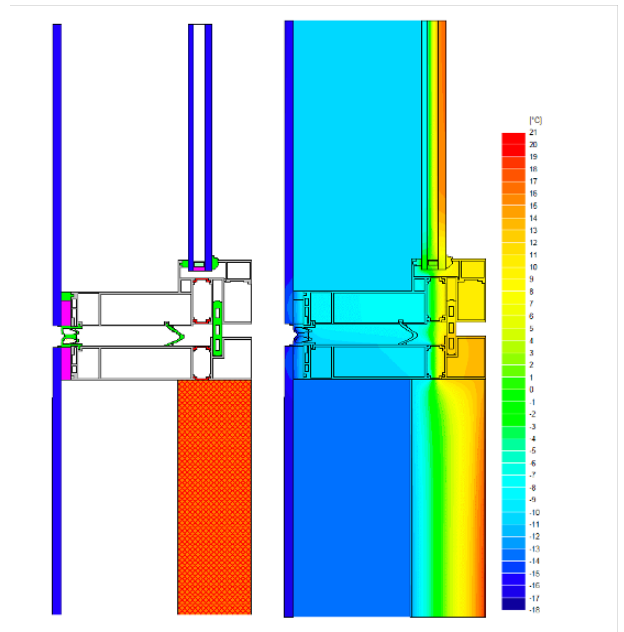
Stone

Rigorous Engineering

Building on our reputation for innovation in structural engineering and glass design, our engineers test concepts analytically and with an in-depth knowledge of engineering principles rather than relying on simple rules of thumb or past experience. We take pride in our rigorous approach and pre-engineer the facade systems to give us a level of comfort that the final working designs prepared by specialist contractors are deliverable.

Our engineers work across a range of software platforms and are adept at covering the full scope of design challenges involved in facade detailing and design:

- Structural design
- Thermal calculations: U-values, psi-values
- Thermal bridging: 2D and 3D
- Glass design
- Thermal stress analysis
- Heat build-up in shadow boxes



Top left:
Great Ormond Street
Hospital

Top centre:
Black & White Building,
London

Top right:
Novartis Institute,
Cambridge MA

Bottom :
Thermal Bridge analysis
of heat build-up over
time in a closed cavity
double skin facade

Buildability

We are very focussed on buildability and procurement, always developing facade system proposals with full consideration of how it will be assembled and installed. This leads us to carrying out option studies on alternative forms of construction and advising the client, architect and cost consultant on the relative benefits of each.

Where appropriate we champion DfMA principles and look to preassemble systems in a controlled environment to improve quality and performance. We collaborate with partners throughout the supply chain - from building owner, to main contractor, to specialist subcontractor - and apply the insights gained to all our projects.

Below:
Construction option studies for a brick, precast and window facade system

Hand laid brick with full span structural precast beam



Hand laid brick with precast rainscreen





Fabrication | construction monitoring and tender support

We understand that innovative design is heavily dependent on having a constructive, collaborative approach with industry, from commodity suppliers through to specialist fabricators.

To ensure that our designs are carried out in accordance with the brief and design intent, we seek to ensure that our specifications have clear criteria for benchmarking and quality control. We will advise on requirements for visual and performance mock-ups, in collaboration with the architect and specialist contractors. The timing of such mock-ups and tests is crucial to enable decision-making at the appropriate stages in design and production.

Our staff include several individuals with a background in construction. We leverage this experience to ensure that our designs are buildable and that the details are robust and accommodating of tolerances.



Top:
Performance facade mock-up of aluminium stick system overclad with bronze panels

Bottom left:
Mock-up inspection of innovate tubular glass facade in Hong Kong

Sustainability and building retrofit

We place a high priority on low-carbon building design whether in retrofitting existing building stock or creating the next generation of net-zero or energy-positive buildings. In both cases innovative facade design of exceptional quality is a fundamental ingredient.

High performance facades for net-zero buildings

Net-zero energy buildings require highly insulated facades that reduce the need for mechanical heating and cooling. Using software tools built in-house, we have the capacity to design and deliver high-performance facades through:

- U-value assessment and thermal bridging analysis
- Solar shading optimisation
- Daylight evaluation and glare mitigation
- Detailing for good air-tightness

Embodied carbon evaluation

The external building envelope can make up to 15% or more of a building's embodied carbon in initial construction. Minimising embodied carbon requires selecting materials with a low carbon footprint and ensuring that these materials have a long service life.

We carry out assessments on all our facades to present our clients with options for reducing embodied carbon. This goes hand in hand with responsible sourcing of products and ensuring healthy materials are specified.

Building retrofit

The reuse and improvement of existing buildings is in many cases a more favourable option than demolition and new build. However, components of a facade are often beyond their design life and need to be upgraded or replaced to make retrofit work from a comfort and energy use standpoint.

We have extensive experience in upgrading existing buildings through facade retrofit and upgrade projects. We design facades that maximize the qualities of their environment to provide optimal energy performance. This involves thermal, solar and finely detailed light analysis. We minimize material quantities, and when working with existing buildings, we seek to identify whether it is possible to repair, renovate, reuse and extend the life of the existing facade rather than building it a new.

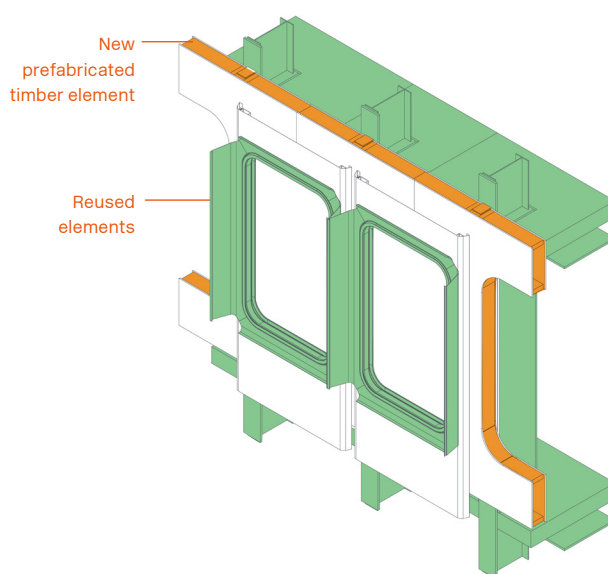


Top left: Unesco in Paris forms a pilot circular project of cladding reuse and glass recycling

Bottom left: Facade glazing panels are knocked out from frames to provide high quality cullet with low contamination risk

Right: The new facade will incorporate both new materials and retain existing elements of the cladding

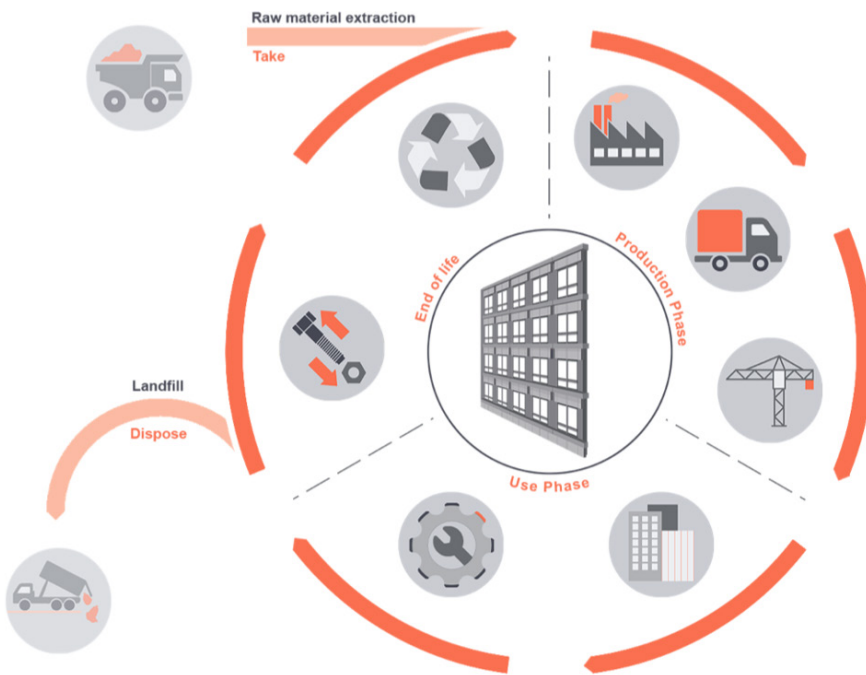
65%
reduction in
carbon emissions
due to material
reuse and
recycling and use
of a bio based
system



We prescribe low-carbon, biobased and geosourced materials with high recycled content and design “layered” systems that can be easily disassembled. This will allow future adaptation or easy future reuse, to eventually transform buildings into real “banks of materials”.

Diagnostic studies

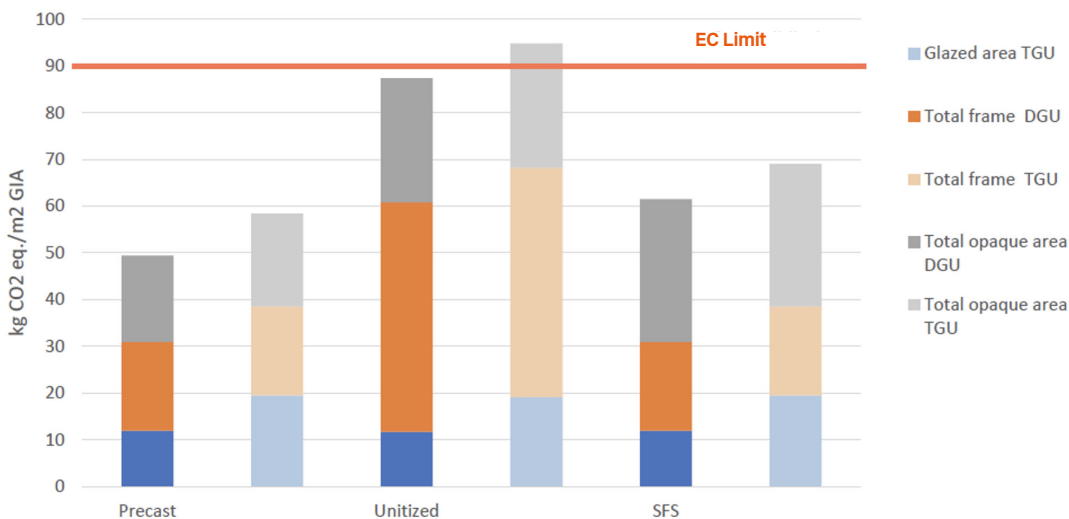
We help implement circular economy strategies by identifying opportunities for repair, reuse and recycling. We do this by carrying out diagnostics of existing facades and structures and pre deconstruction studies.



Circularity Principles

A modern facade is made as a kit of parts, with each component having a different lifespan simply stopping materials going to landfill doesn't go far enough and why we should be thinking more about the circular economy of facades by designing systems that can be dismantled and each component reused or repurposed.

Embodied Carbon of Facade - DGU v. TGU



Embodied carbon

Embodied carbon assessments are performed on all of our facades to ensure we select the most sustainable option

Structural and Civil Engineering

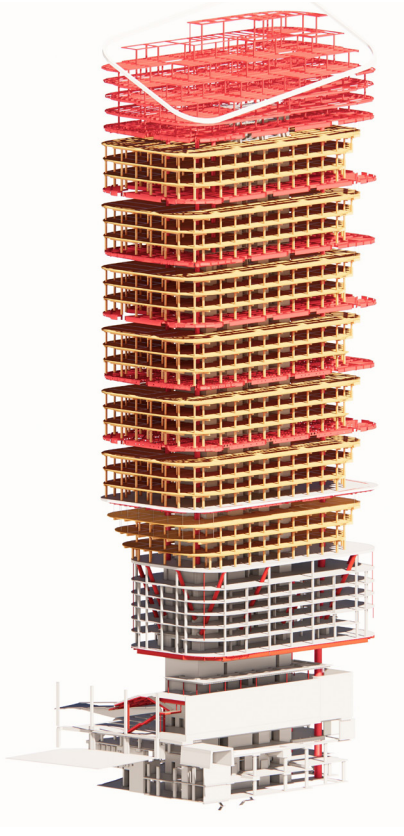
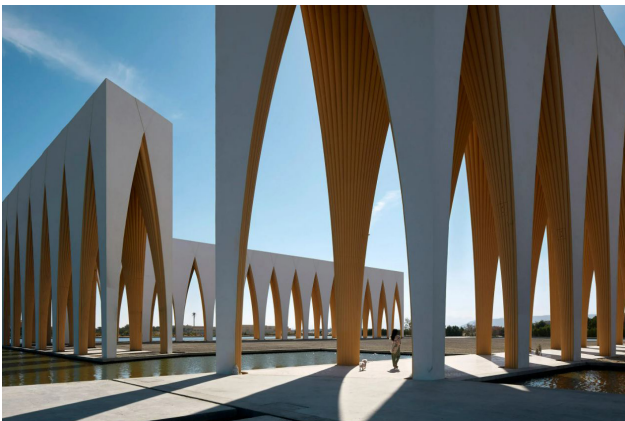
We approach our work by fully interrogating all structural options to identify the most efficient, economic and elegant solutions.

Our work covers all structural materials, traditional and non-conventional. We aim to provide clear options which address the parameters defined by the project and its architecture. Our team is a blend of both analytical and creative engineers, who can make pragmatic decisions as well as design refined details, enjoying a collaborative approach within a design team and beyond with the contractors.

We place high priority on our responsibility to help tackle the Climate Emergency and are committed to promoting low-carbon building design where we have developed a toolkit to monitor the carbon footprint of our design proposals. We have been at the forefront of modern timber design, utilising mass timber, Cross Laminated Timber (CLT) and highly engineered timber in a number of our built projects.

Projects might be in the context of new-build, or refurbishment and restoration of traditional and historic buildings. The extent of our involvement may be to provide creative conceptual design, more detailed work for bidding and tender, or for full input through construction of a project.

We engage with digital design tools and BIM, which are embedded in our workflow. These processes allow us to uncover efficiencies, improve decision making, fully integrate our structures, and enhance delivery. We believe that digital design tools are key to successfully realising intelligent engineering solutions for complex challenges.



Top left:
Tropicalia,
Côte d'Opale, France

Bottom left:
Gouna Cultural and
Conference Centre,
Egypt

Right:
3D model of hybrid
timber tower Atlassian
Central, Sydney

Glass Engineering

We are one of the world's foremost engineers and innovators in the field of glass structures.

Our glass projects range from spectacular staircases to some of the world's largest and most iconic glass structures. Many of these projects have pushed forward the boundaries of what is possible in structural glass. Our relationship with Apple spans over 15 years where we have provided engineered services for over 300 retail stores and are listed within 20 design patents.

Our services range from conceptual design commissions and assisting specialist fabricators and contractors, through to carrying out detailed design and full concept design to completion services for clients.

We use a rigorous approach to structural analysis making use of the latest digital design tools. Through our detailed analysis of material behaviour, we are able to refine solutions to appear simple, elegant, and effortless.

We are particularly adept at justifying innovative glass structural designs through the various, and often complex, building department requirements specific to the numerous countries we have worked in. We have been invited to sit on many of the standards committees formed around the world to develop more universal codes of practice governing the design of structural glass.

In 2010, in the UK our work in glass was recognised with a Queen's Award for Enterprise: Innovation by HM Queen Elizabeth II.



Top left:
Steve Jobs Theater,
California, US

Top right:
Apple 5th Avenue,
New York, US

Bottom left:
Apple Jiefangbei,
Chongqing, China

Bottom centre:
K11 Art & Cultural
Centre,
Hong Kong

Bottom right:
Apple Amsterdam,
Holland

We have specialised knowledge of timber design at both a conceptual and detailed level.

Our experience in the design of timber structures and facades is rich and varied, from inspiring education buildings and unique private homes to flexible warehouse buildings and innovative tall towers. Our engineers have specialist knowledge of timber design at both a conceptual and detailed level, giving us a unique perspective on the use of this sustainable material in the realisation of your project.

Through our work, we have developed strong relationships globally with timber suppliers and wood manufacturers. We study the wide variety of engineered timber products on the market to assess the benefits, drawbacks and value of each for the specific project at hand.

Depending on the particular structural, practical and architectural requirements, we have used Douglas fir, spruce cross laminated timber (CLT), glue laminated timber, laminated veneer lumber (LVL) beams, and columns of varying species from spruce to the finest beech.

Our most recently completed projects that make extensive use of timber include the multi award-winning Freeman's School pool building, Mansfield College student housing in Oxford, and sustainable furniture designer Vitsoe's visionary production facility.

We are currently designing projects at the cutting edge of the mass timber industry across the globe, including the net zero Black and White building in London and the ground-breaking new Atlassian tower in Sydney, set to become the world's tallest hybrid timber tower.

These projects use wood in combination with concrete, steel, masonry and glass in ways that complement or contrast each other to achieve the architectural vision.



Left:
Freeman's School
Swimming Pool,
Ashted, UK



Top:
Vitsoe Production
Building, Warwickshire,
UK

We are committed to advancing structural and facade engineering through Research & Development.

Our commitment to research and development is second to none. Annually, we reinvest 10% of our profits in research, while each of our engineers is given a minimum of two hours every week to work on research projects.

We regularly present and publish at technical and scientific conferences around the world, with our new innovations often referenced as landmark precedents. Our long-standing partnership with Apple has seen us widely recognised for progressively innovating structural glass engineering, while our engagement with global manufacturers has enabled us to experiment with novel applications for their products.

Technology transfer from other sectors into the construction industry has enabled us to achieve solutions that have not been realised before. A team dedicated to providing R&D services provides innovative solutions to our clients, including the optimisation of analysis approaches, development of new materials, fabrication and construction techniques, optimising

processes and identifying market needs. Currently our key R&D focus is sustainability and the climate emergency. Our strategy and activity in this area is focussed on developing innovative tools, workflows and products (in collaboration with our industry clients) that contribute to the decarbonisation of the construction industry.

This focus has included the development of a REVIT plugin called EOC ECO2 which we have released to peers and colleagues across the design and construction sector. It's a bolt-on piece of scripted software which gives a breakdown of the embodied carbon output for the structural materials used in a building.

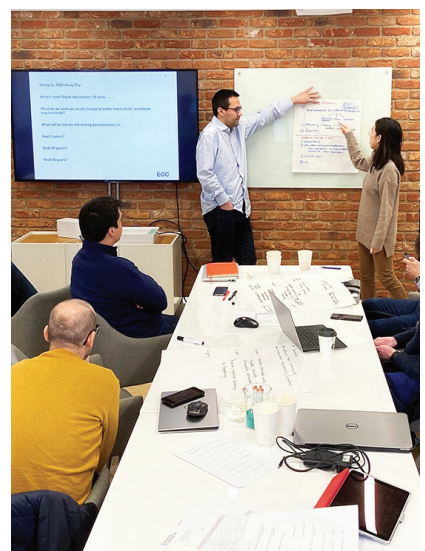
Our R&D work underpins all our design, the output of all our research is always tailored to suit, support and contribute to our everyday work on projects.



Left | middle: R&D project with Bodle Technologies to laser construction information almost invisible to the eye on the surface of a glass panel. Crucial information about the type of glass, composite, coatings, frits, when and where it was made will aid demolition contractors to reuse or recycle the glass



Right: Each year an away day is held to discuss, develop, innovate and set new R&D



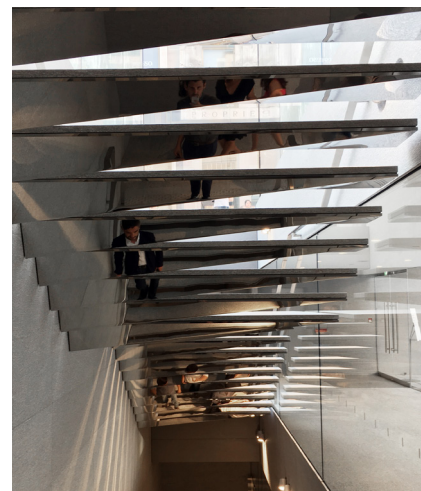
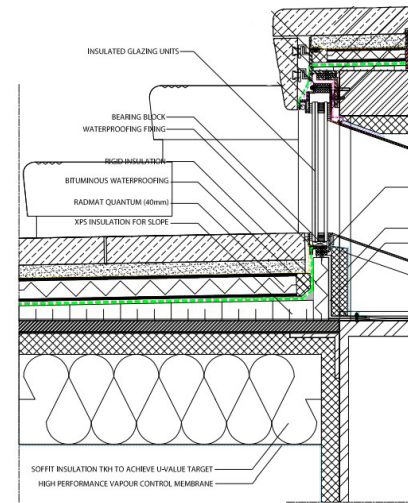
Projects

65%
gain in our carbon
footprint by
using biosourced
and recycled
materials

55 year
old facade
elements
recycled

Pioneering pilot
glass recycling
project to drive
increase in the UK
glass recycling
industry

UNESCO Headquarters
Paris, France



Location: Milan, Italy
Client: Apple
Architect: Foster + Partners
Date: Completed 2018
Services Provided: Facade | Glass Engineering

Prix Versailles Special prize Exterior Award 2019 - Shops & Stores

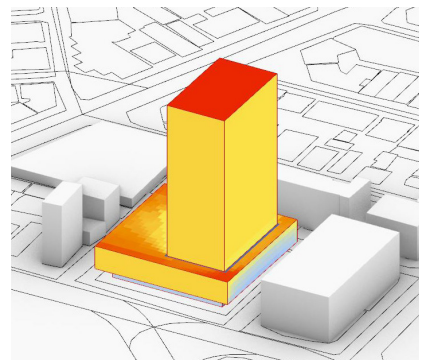
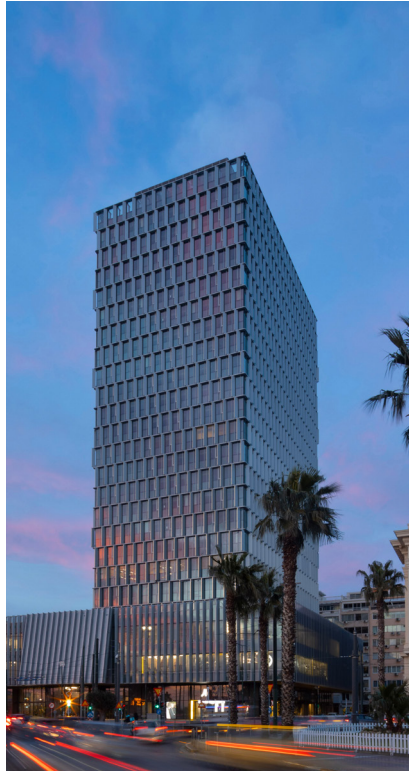
The renovation of this historic building presented an opportunity to feature a two storey glass stair, the first of its kind at the time. Extending our single storey glass stair concept to another level involved some modifications to the structural concepts.

Firstly the stair had to be designed as a gravity supported structure founded on a steel grillage placed beneath the ground floor. The central glass core supports cantilever glass beams which in turn support the outer ring of curved glass stringers.

As with our other curved glass stair designs, the outer stringer is laminated from three layers of chemically tempered glass.

The stability of the stair presented possibly the greatest challenge as the building was not particularly stiff in nature. To that end we needed to design a connection between the stair and building to allow enough flexibility so that the lateral distortions of the main building structure would not be transferred to the glass stair.

Top right:
 Facade detail of
 Amphitheatre steps



Location: Piraeus, Greece
Client: Dimand SA | Prodea Investments | EBRD
Architect: PILA
Date: Completed 2024
Value: Undisclosed
Services Provided: Facade Engineering

2024 Council on Tall Buildings and Urban Habitat Awards — Facade Award of Excellence

Piraeus Tower is the tallest structure on the port of Piraeus and the second-tallest building in Greece. The 84m, **22 storey high building** is often referred to as the 'sleeping giant' as it has never been occupied, except for the first three floors since its construction in 1975.

Our design of the new facade envisioned a structure that was visually intriguing and incorporated strategies designed to drastically reduce energy consumption. It also introduced planting and vegetation at ground level to enliven the streetscape around it.

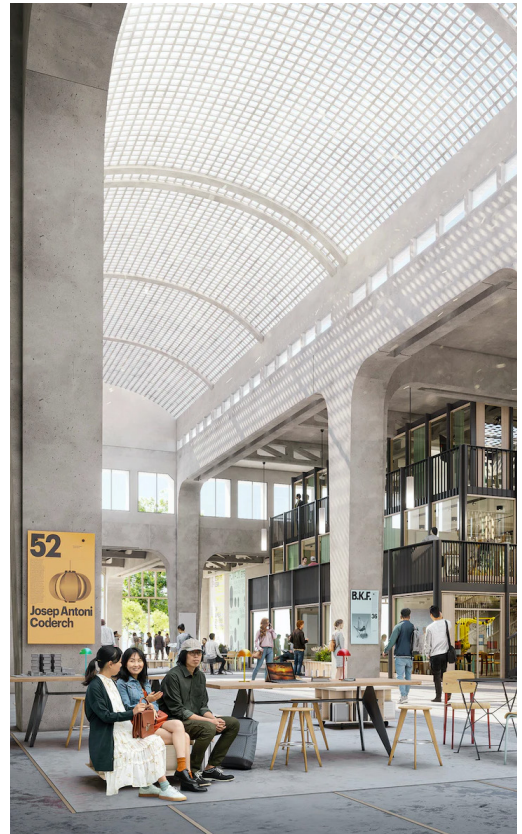
A shading structure consisting of vertical and horizontal overhangs encloses the tower. Each vertical fin is horizontally displaced from one floor to the next, creating a spring pattern that wraps around the building. The pattern appears to gently slide from one facade to another, with the resulting visual effect of the facade wrapping around the tower like an immense piece of

fabric. This dynamic pattern appears different from various locations, creating a rich visual experience that is constantly transforming, depending on where one is standing.

To further emphasise the movement of the facade, the vertical fins rotate as they rise toward the top of the structure. The rotation of fins is designed to optimise the shading performance of the building and amplify the panoramic views the property offers.

The design of the facade overhang system is a result of an ambitious sustainability and energy conservation strategy. Following a meticulous solar study, the vertical and horizontal louvers of the tower have been calibrated to reduce solar gain on the facade by 50%, resulting in a 20% reduction of the overall energy demand of the building. Additionally, 200 tonnes of glass were recycled in the process.

Bottom right:
Solar shading analysis



Location: Milan, Italy
Client: Redo SGR
Architect: Cino Zucchi Architetti
Date: Completion due 2025
Value: Undisclosed
Services Provided: Facade Engineering

Eckersley O'Callaghan has been appointed as the Facade Engineer for a new educational campus within a broad urban regeneration project in an old industrial area, currently in a state of decay. The project involves designing a 5-story flagship building and renovating two large industrial structures.

The project's primary objective is to achieve LEED Gold certification, emphasising sustainability and environmental responsibility. Eckersley O'Callaghan's Facade Engineering group collaborated on the project, providing an integrated approach from the concept phase to detailed design, resulting in a strong tender package.

The detailed design of the bespoke shading system for the flagship building involved various analyses, including natural frequency analysis to minimise resonant frequencies and vibrations. Implementing an installation

strategy for the external shading system and planning future temporary disassembly techniques for facade glazing replacement posed significant challenges. To streamline the installation process, the system will be manufactured off-site as modular panels, with efforts made to conceal joints between modules.

Developing an Access & Maintenance strategy for the facade behind the shading system was a crucial aspect of the design. Our solution involves an 800mm cavity to facilitate routine cleaning operations and glazing replacement by abseilers.



Location: Rome
Client: DeA Capital
Architect: One Works
Date: Completion due 2026
Value: Undisclosed
Services Provided: Facade Engineering

The Via del Serafico project in Rome is a residential development comprising eight buildings, each ranging from five to six storeys.

The buildings have terraces accessible through large glazed sliding doors. Operable side-hung windows, designed with external roller shutters are also present. The main building entrance boasts a multiple height glazed curtain wall. Furthermore, the opaque facade comprises an insulated terracotta rainscreen fixed onto a backing wall.

Eckersley O'Callaghan is actively providing facade engineering services for the "progetto definitivo" design stage (equivalent to RIBA Stage 3). This involves a comprehensive review of glazed and terracotta systems, structural calculations for glass and framing members,

thermal assessments, and detailing the facade in CAD format. Moreover, we are providing valuable advice on the cost aspects associated with the facade.

We also conducted a detailed study comparing backing walls for the opaque facade, considering factors such as weight, build-up thickness, rainscreen fixing, interface with windows, thermal and acoustic performance, installation quality, speed, and cost. This involved structural and thermal calculations, discussions with suppliers on cost and construction matters.

Additionally, we optimised the supporting strategy for terracotta cladding to minimise thermal bridging and reviewed window and door systems for the best project fit.



Location: Turin, Italy
Client: Fondazione Compagnia di San Paolo
Architect: Cino Zucchi Architetti
Date: Completion due 2025
Value: Undisclosed
Services Provided: Facade Engineering

Cavallerizza Reale Torino is set to become Turin's new cultural hub, situated within the historic Cavallerizza Reale complex dating back to around 1740. Eckersley O'Callaghan has been tasked with engineering the facades for this project, which involves renovating two existing buildings, Ala del Mosca and Le Pagliere. The aim is to enhance the existing architecture without altering its original characteristics.

The design for the Ala del Mosca involves installing large, glazed facades with brass frames in correspondence of the building's arches on the ground floor. Additionally, there is a new fully glazed double-height, semicircular volume at the main entrance, along with the addition of new dormer volumes characterised by glazed facades and opaque bronze facades.

While the design for Le Pagliere includes a new full-height 16m stick curtain wall, glazed arches, a large glazed rooflight at the central body of the building, and bespoke bronze facades in copper with a bronze effect.

We have provided facade engineering services for the Progetto Definitivo (Stage 3 equivalent) and the Progetto Esecutivo (Stage 4 equivalent) design. This includes detailing complex interfaces and custom facade solutions, conducting structural calculations for glass and framing, analysing thermal and condensation risks, coordinating with global design teams, and providing cost analysis support for facade-related items.

Both buildings are characterised by stringent Fire requirements. Eckersley O'Callaghan assisted the design team in investigating several framing and glazing options to achieve the fire rating performance required for the facade.



Location: Tivat, Montenegro
Client: Adriatic Marinas (ADM)
Architect: Woods Bagot
Date: Completion due 2029
Value: Undisclosed
Services Provided: Facade Engineering

Synchro is a luxury mixed use development and yacht club offering residential accommodation, hotel, leisure and entertainment space in the heart of Porto Montenegro harbour. The development features seven mid-rise buildings partially located on the mainland and partially on or around the jetty. Alongside a number of new buildings, the hidden gem of the development is the refurbished old submarine hangar. This historical place will be transformed to create a flexible space for events that will host a big exhibition hall, co-working spaces, restaurants and a recording studio.

Eckersley O'Callaghan is providing facade design and facade access and maintenance services for all the buildings of the Masterplan from Concept stage to Construction. We know that construction programme and site management are important features for this project as this particular geographic area is strongly affected by extremely changeable weather throughout the year, the harsh marine environment and the proximity to the water. For these reasons Modern Methods of Construction have been adopted to help achieve a just-in-time delivery with minimal site workmanship.

Due to the geolocation of Montenegro, strong solar radiation is expected to affect the comfort and energy consumption of the buildings. In line with the Client's ethos, we explored a wide range of passive design measures to ensure the comfort of the building occupants as well as reducing the operational energy of the building. All this whilst maximising the benefit of the view over the harbour and the hills around the site. This has been achieved through a sensible use shading strategies and glass coatings selection and appropriate use of glazing ratios, all supported by digital environmental design studies carried out through the various design stages.

Another key challenge of the project is the accommodation of movement for seismic loads. As Tivat falls within a highly seismic area, a higher coefficient for seismic load has been applied to the main structure and structural movement joints are required for the longer buildings on site. The facade has been designed to not only accommodate these movements but to disguise them in the articulation so to merge seemingly within the building context.

Apple Via del Corso



Location: Rome, Italy
Client: Apple
Architect: Foster + Partners
Date: Completed 2021
Services Provided: Facade Engineering

Apple Via del Corso a flagship retail store is located within Palazzo Marignoli in the centre of Rome. It is a historic building originally constructed in 1873.

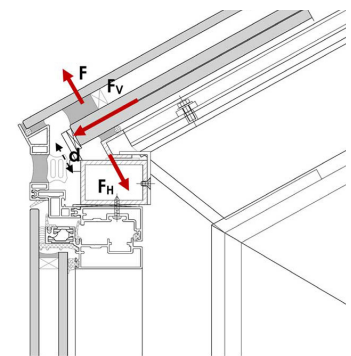
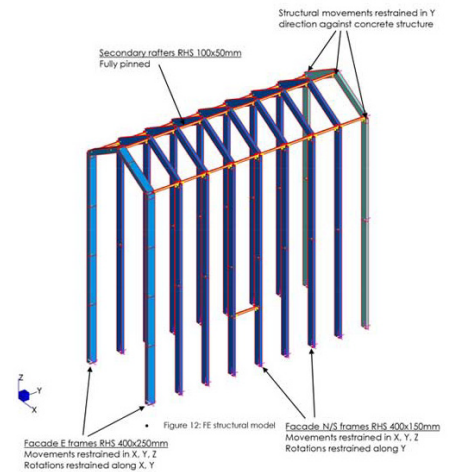
Eckersley O'Callaghan were appointed as facade engineers to design the shopfront elements and support Apple and Foster + Partners in the development of highly bespoke shopfront glazing systems.

A key project challenge was ensuring a focus on co-ordination with energy requirements and local regulations, in particular stringent solar control standards whilst achieving the highest level of glass clarity. To ensure high quality standards of the specification were met we inspected glass and window frames during production, conducted regular inspections onsite and assisted the contractor in resolving issues as they presented themselves.

We designed and oversaw the installation of a highly complex design for window frames and frameless doors, 20mm thick solid brass plates were used to make up a sharp and neat window frame. Despite the highly bespoke design we ensured it met the high standards for high thermal and weather tightness performance. This was achieved through detailed design through a two dimensional heat transfer model, undertaking structural calculations and Studying construction details in close collaboration with the appointed contractors.

The installation strategy of large format pieces were coordinated with the contractor who initially wanted to split the frames into smaller sections. Through close working and collaboration with the contractor we identified a solution for larger jointless elements to be sourced, fabricated and installed in line with the original design intent.

Bottom:
Image labels



Location: Valenza, Italy
Client: Bulgari
Architects: Open Project
Date: Completed 2017
Services Provided: Facade | Structural Engineering

The Bulgari Glass House forms the entrance to Bulgari's new state-of-the-art jewellery manufacturing facility. As an extension to an existing stone building, the design reflects the ideals of Bulgari, creating a bridge between tradition and innovation.

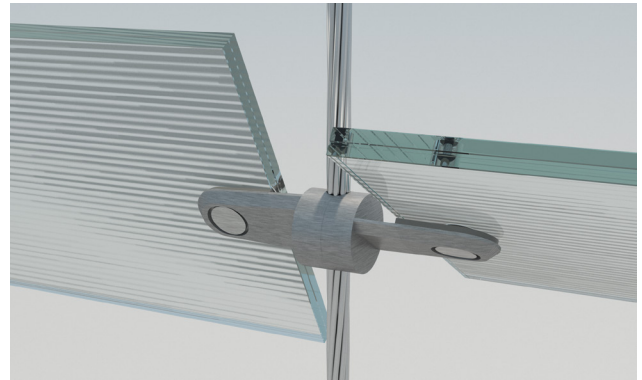
Eckersley O'Callaghan provided facade and structural engineering services for the new wing encased entirely in glass and standing at 13m tall. It has been specially detailed to accommodate the movements of the

lightweight steel structure. The bespoke detailing has been carefully optimised to allow for minimal framing other than the distinct steel portal frames, showcasing the glass and unique structural shape.

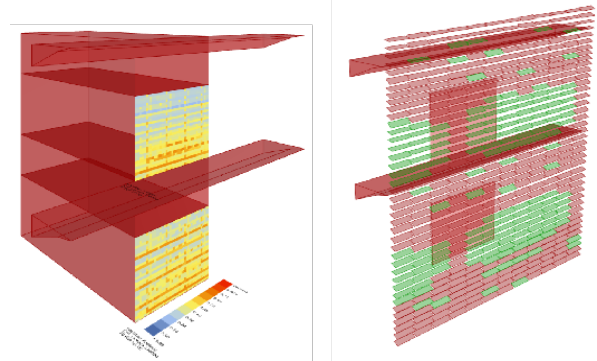
The steelwork is internally clad in mirror-polished stainless steel to enhance the feeling of lightness and openness within the internal space, whilst showcasing the quality of material and celebrating the minimal structural expression.

Top right:
FEA model analysis of structural behaviour

Bottom right:
Eaves connection detail



Location: Nicosia, Cyprus
Client: American Medical Centre
Architect: Amanda Levette Architects
Date: Completion due 2023
Services Provided: Facade Engineering



The state-of-the-art American Medical Center (AMC) in Cyprus is in the process of expanding. Two new buildings will add to its existing facility in Nicosia with a third planned elsewhere in the country. Eckersley O’Callaghan undertook the design for the highly innovative, challenging but extremely rewarding facade design for the western extension building.

With the new buildings, the client was keen to create a strong connection with the outdoors for those patients not able to leave the hospital. Because of this, the facade for the building is formed in three parts. An initial glazed and spandrel panel curtain wall on the envelope of the building provides a highly transparent connection to the outside world. A 2m wide cavity with mini gardens at each level follows with a wall of special glass louvres spanning between a series of vertically tensioned cables forming the solar shading on the external face of the building.

Sustainability was high on the client’s agenda and as such a passive cooling system is to be employed in each of the patient rooms. To achieve this ambition however, a strict value for the total solar energy transmittance of only 0.16 was imposed on the facade.

EOC supported the client team for the change from a ceramic louvred shading system to a lighter, more transparent array with glazed louvres. This materiality change introduced more challenges to meet the extremely stringent performance criteria for the total solar energy transmittance

To meet this challenge, our team completed a highly innovative parametric modelling analysis to rapidly develop a shading strategy using varying percentages of treatments to the louvres (such as ceramic ‘frit’ and coatings) to vary the translucency which met the performance criteria. The positions of the louvres were then engineered and rationalised to three simple orientations. A simple bespoke connection to accommodate all three louvre positions to the vertical tensioned cables was then designed and rapidly prototyped using our own in-house 3D printer.

The result is a beautiful, light but sustainable facade which will be rolled out across the AMC’s other planned new facilities around the country.

Top right:
Louvre connection detail visualisation

Bottom right:
Solar analysis of shading system to evaluate incident radiation on a glazed facade



Location: Geneva, Switzerland
Client: CERN
Architect: RPBW
Date: Completed 2023
Value: Undisclosed
Services Provided: Glass Engineering

The **240m long spine bridge** at Cern will be at the heart of its new scientific hub to inspire the next generation. The main structure for the bridge is along its roof, with the two completely glazed sides and walkway underfoot supported by suspended slim tension rods from the structure above. People are protected from the sun by slatted side metallic canopies. It has been conceived to act as a street, 'floating' 6m above both carriageways of adjacent Route de Meyrin. The bridge is naturally ventilated and considered a space between the interior and exterior.

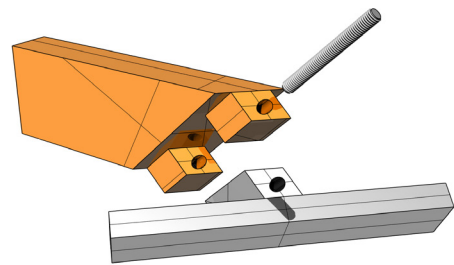
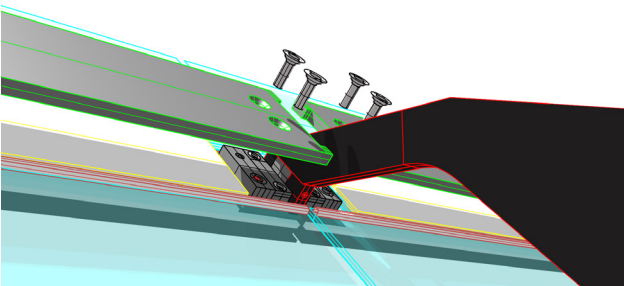
The primary aim for our structural engineers was to minimise the structure to maximise the amount of light in the space. To achieve this, our goal for the bridge was to remove as much of the steelwork as possible and use the glass floorplate as a rigid diaphragm, negating the need for visible cross bracing. The supporting tension rods offer no effective lateral restraint. By using our

considerable in-depth knowledge of glass, we were able to investigate this option when others may have been inclined to stick with a more conventional design.

For bridges of this nature, dynamic response is a critical design parameter and is something that required us to carry out in depth studies to better understand its behavior under horizontal accelerations from pedestrians using the bridge.

The goal of maximum transparency presented a number of challenges to the design team. This included high thermal performance, dynamics, integration of lighting and the requirement for sliding opening doors to the vertical cladding of the enclosure. In addition, every part of the design has to be sensitive to the overall architectural language of the science gateway.

Eleftheria Square



Location: Nicosia, Cyprus
Client: LOIS Builders
Architect: Zaha Hadid Architects
Date: Completed 2018
Services Provided: Glass Engineering

Located in the centre of Nicosia, Eleftheria Square is a bridge between the venetian walls encircling the old town and the new part of Nicosia. The new design by Zaha Hadid Architects is highly fluidic and futuristic providing a stark contrast to the traditional background.

A key part of the design is a curved and inclined balustrade that has been envisioned to make the bridge appear like a ship floating above the city gardens. Eckersley O'Callaghan is supporting on the design of the glass balustrade and a walkable, publicly accessible glass floor.

The glass balustrade was quite complicated because of the geometrical constrains and the requirement to deliver on aesthetic principals set by Zaha Hadid Architects. All fixings had to be developed so that they do not protrude outside of the basic volumes of elements; they needed to be hidden. At the same time, we had to

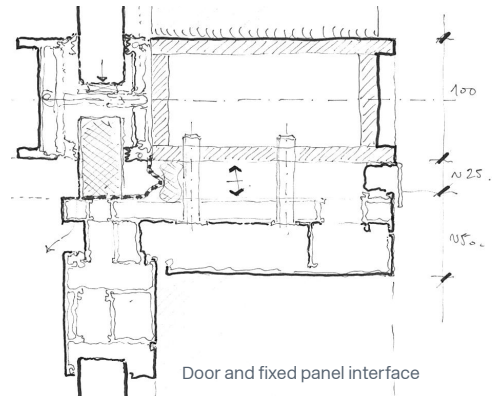
ensure feasibility of installation and replacement when necessary.

To support the glass we did not cantilever it from the bottom, instead we opted to use the stainless steel plate positioned mid-height. The challenge was connecting the two faces of the blade sandwiching the glass and then connecting that sandwich to the vertical support arms coming out of the concrete slab. This required creating cutouts in the glass that allowed the two plates to mechanically attach to each other, in such a way that then the two plates are linked together and hide the hole underneath the plates. Within the cutout, an additional bracket emanates ensuring connection to the arms.

All details were tailor made by Eckersley O'Callaghan's engineers using digital design software with a large amount of work being undertaken manually as this afforded our engineers the best control over the details.

Bottom left: Exploded view of top
Balustrade connection connection

Bottom right:



Location: Roquebrune Cap Martin, France
Client: Société d'exploitation et de détention hôtelière (SEDH) Vista
Architect: Wilmotte & Associés
Date: Completion due 2022
Services Provided: Facade Engineering

First designed by architect André Minangoy in the early 1960s, the Hotel Vista will reopen in 2020 following a major redevelopment to turn it into luxury five-star accommodation.

Eckersley O'Callaghan is providing facade engineering services, ensuring high weatherproof and acoustic performance for the building's envelope, with slim profiles that meet the architectural intent. We have also engineered bespoke minimalist sliding doors.

The project will see an increase in size from 7,000 m² to 9,500 m², with 83 rooms, including 15 premium suites and four 'troglodyte' rooms built into the rock.

Due to its situation within steep cliff-top topography, the Vista La Cigale will be broken up into three separate structures, linked by elevators and hoists.

M Y Venus



Design: Phillipe Starck
Client: Rompetrol
Ship Builder: Feadship
Date: Completed 2012
Services Provided: Glass Engineering

The client, whose experience was in the built environment, had a clear brief to use glass to its full potential within the marine environment. There was a desire to make large, structure free, glass walls enabling maximum visibility and openness rather than the traditional smaller 'porthole' window typology associated with larger ships.

We drew upon our extensive experience in large format glass and proposed to surround the pavilion deck by 10m long glass sheets slightly curved to the yachts lines and coated to provide a modicum of privacy while embracing the 360 views and maximising light.

Technically the challenges involved designing the glass to substantially higher loads than are typically accommodated for in buildings. This resulted in

laminated glass to resist loads while also needing to detail the glass to accommodate the significant movements experienced by the glass resulting from the ships natural flex.

The challenge of the process of approvals and rules governing the yacht design world was met. We navigated this successfully to facilitate this ground breaking approach to glass in yachts using our experience and design tools along with a testing regime witnessed by Lloyds Register.

Since this project we have been active in the yacht design world and invited to speak at industry conferences on the subject of glass in yacht design.

Our Global Team



11
offices
worldwide

30
nationalities

160
experts
employed



60% male **40%** female

50/50
split of
structural/
facade
engineers





- **Master of Architectural Engineering, Sapienza University, Rome**
- **Master of Environmental Design and Engineering, The Bartlett, University College London**
- **Chartered Member of Order of Engineers of Rome since 2015**
- **Member of Chartered Institute of Building Services Engineers**

Alessandro joined Eckersley O'Callaghan's facade engineering team in 2014 with a strong multidisciplinary engineering skill set focussed primarily on integrating

energy efficiency and environmental comfort into the design of the building envelope.

Chartered as an architect and engineer, he is passionate about detail orientated facade designs that can push boundaries.

Alessandro has published and presented at international conferences on topics of facade performance and leads the facade team's R&D work.

Project Summary



Apple Plaza Liberty, Milan

Istituto Europeo del Design (IED), Milan

2022-2026

Cino Zucchi Architetti | MPartner

Design of a school campus comprising existing low rise industrial buildings and one new building extension featuring student centre facilities, workshops and offices. Eckersley O'Callaghan is providing the full scope facade engineering design to both existing and new blocks, including central glazed dome system. Alessandro is managing the project and supporting in the development of a complex solar shading design and a large format glazing system.

Wadham College, Oxford

2017-2020

Amanda Levete Architects

New student centre/accommodation naturally ventilated building in the Oxford university campus, featuring special glazing elements and bespoke facade solutions. Facade engineering consultant responsible for assisting architects across the design development of the facade since early design stages. Coordinated facade technical requirements to achieve the target energy performance.



Wembley Park NE 02|03, London

2019-present

Hayworth Tompkins

Project Manager leading the facade engineering services for new residential blocks providing 816 homes. They comprise of reinforced concrete structures with precast concrete three dimensional facades characterised by surface pigments, moulded patterns and factory-glazed windows, prefabricated to improve QA and minimise works on site. The balconies are also prefabricated, designed so that they can be installed off the facades, which will support their loads.

Apple Plaza Liberty, Milan

2017-2018

Foster + Partners

New flagship retail store in the centre of Milan, with an outdoor amphitheatre. Responsible for design development of amphitheatre stonework, cladding package and construction monitoring services.



Station Hill, Reading

2019-present

Gensler

Project Manager leading the facade engineering design works through the RIBA stages 2-4, for new 19-storey office block, including two lower ground levels. Retail and catering areas are located at lower ground and ground levels, including triple, double and single height lobbies with open plan co-working spaces at levels 01 and 02. Office block comprises of pre-assembled aluminium unitised curtain wall and fins. Retail areas include stick curtain wall comprising steel and aluminium elements and double glazing with maximised transparency.

Smithson Plaza, London

2017-2018

DSDHA

Refurbishment of Phase 1 of three Grade II* listed brutalist towers constructed in the 1960s includes the retained facade, the replacement of glazing systems, a refurbished lobby facade and a new extension to the building realised in a glazed curtain wall system. Responsible for development of feasibility study and heat transfer simulations on existing facade.

Wadham College, Oxford



Smithson Plaza, London

Apple Via del Corso, Rome

2016-2020

Foster + Partners

New flagship retail store in the centre of Rome. Facade engineering responsible for design development of the 20 5x3m facade windows and glazed door system. Carrying out analysis work and working with the contractor to maintain the design intent through to construction.



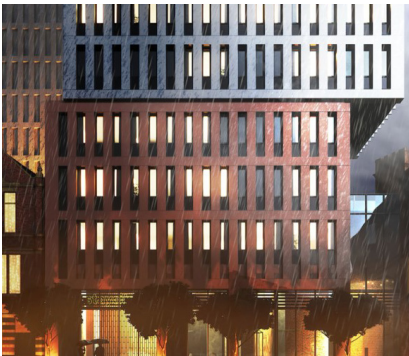
- **Masters in Structural Engineering, Politecnico di Milano**
- **Chartered Member of the Order of Engineers in Italy**
- **Chartered Member of the Institution of Civil Engineers**
- **Member of the Society of Facade Engineering**

Senior Facade Engineer in our Milan office, Chiara brings a wealth of experience having worked in both the UK and Italy. Her background spans a wide variety of industries, project types and sizes across

Europe, the Middle East, and Asia – working from concept through to detail design. Chiara has a keen interest in business development and combines unparalleled technical expertise with a passion for growing strong relationships with clients, developers, architects and contractors.

Chiara is a Chartered member of the Order of Engineers in Italy as well as a member of the Institution of Civil Engineers (ICE) in the UK.

Project Summary



325 Deansgate, Manchester

325 Deansgate, Manchester
2023-present
SimpsonHaugh & Partners

Project manager for a 25-storey new build development at the southern end of Deansgate. The development will include a hotel lobby and restaurant on the ground floor and mezzanine levels, as well as the restoration of the existing railway arches under the viaduct.

Synchro, Montenegro
2023-present
Woods Bagot

Senior engineer for the luxury development on the waterfront of Montenegro. The project includes four residential buildings, a hotel and a conference centre. Chiara is supervising the facade structural and thermal calculations performed by the project engineer.



Synchro, Montenegro

Haringey Civic Centre, London
2023-present
Hawkins\Brown

Facade Project Manager for the Haringey Civic Centre. The project consists of a complex of existing buildings subject to refurbishment (the Civic Centre and the West wing) and two blocks of new annexe buildings. The facade comprises existing brickwork with internal insulation, insulated GRC panels and windows and curtain wall systems in steel and aluminum.

Via Del Serafico, Rome
2023-present
One Works

Project Manager and Senior Engineer for the residential development in Rome composed of 8 buildings of 5 and 6 storeys. The facade comprises large size side hung windows with integrated external roller shutters, large size sliding doors and terracotta facade.



Via Del Serafico, Rome

Prior to EOC

NEO, Limassol
2018-2020
Woods Bagot

Luxury residential development comprising 4 residential towers and mixed-use podium. The facade comprises large size sliding doors, GRC and aluminium cladding and terracotta baguettes. Chiara was in charge of the development of the facade package information from detail design to tender documentation.

Office Building, Milan
2022

Park Associati

Project manager for the refurbishment of a 5-storey office building in Milan. The facade of the building comprised a glazed stick curtain wall, GRC cladding and timber cladding. Chiara supervised the junior engineer in carrying out facade structural and thermal calculations and the delivery of drawing packages to the client.

Mind West Gate 4.1.1, Milan
2021-2022

Waugh Thistleton

Chiara led the facade engineering team as project manager for a 10-storey, timber structure, office building. The facade comprises rainscreen panels mounted on pre-fabricated timber panels with glazed automatic windows. Chiara was responsible for the preparation of the facade access report and specification, coordinating with the architect and client.

Box in The Box, Milan
2022

MLA

Project manager for a new office building built inside an existing structural steel frame. The facade cladding comprises a polycarbonate facade, glazed steel curtain wall and metal cladding. Chiara supervised the delivery of the facade drawing packages and specifications.



- **Bachelor of Science – Washington University in St Louis, USA**
- **Master of Science – London School of Economics, UK**
- **Member of UK Institution of Structural Engineers 2005**
- **Member of UK Society of Facade Engineering**
- **Board member of Society of Facade Engineers**
- **CWCT sustainability committee founding member**

Damian joined Eckersley O’Callaghan in 2012 to establish a Facade Engineering group in the London

office. Under the success of his leadership, the group has grown into one of the largest facade engineering groups in the UK, engaged in the design of many innovative and sustainable building envelopes ranging from bespoke detailing of high-performance curtain wall systems, to refined interventions in historic buildings.

With 20 years of professional experience, Damian’s prominence as a leading expert in his field has led to client advisory roles and peer reviews, as well as contributing to industry panels and judging awards.

Project Summary



Piraeus Tower, Athens

Piraeus Tower, Athens

2020-present

PILA Studio

Director for the Piraeus Tower office building in Piraeus harbour in Greece. It is a recladding project of an existing 22-storey building that predominantly forms office spaces and retail areas up to the third floor. The main facade system of the Tower is a bespoke glazed unitised curtain wall with external fins.

American Medical Centre (AMC), Cyprus

Amanda Levete Architects

2018-present

Director for two hospital buildings with a cable net rain screen in front of a glazed stick system. The cable net supports fritted glass louvers oriented to allow views out but control daylight and solar gain. Detailed lighting analysis has been carried out to optimise the glass specification and ensure adequate light levels.



American Medical Centre (AMC), Cyprus,

Two Taikoo Place, Hong Kong

2017-present

NBBJ | Wong&Ouyang

Director of facade design for energy-efficient commercial tower. Standing at 195m tall, the building envelope includes curtain wall systems and a innovative structural glass lobby with 16m high-format glazed panels.

Google Headquarters Kings Cross, London

2016-present

BIG Architects | Heatherwick Studio

Director for structural glass engineering and technology consultant for Google’s new London headquarters. Large format glass facades including curved J and U-shaped structural glass panels.



Bulgari Glass House, Valenzia, Italy

Apple Via del Corso, Rome

2016-2020

Foster + Partners

A flagship retail store in centre of Rome. Facade engineering Director responsible for design development of the 20 5x3m facade windows and glazed door system. Carrying out analysis work and working with the contractor to maintain the design intent through to construction.

Bulgari Glass House, Valenzia, Italy

2014-2017

Open Project

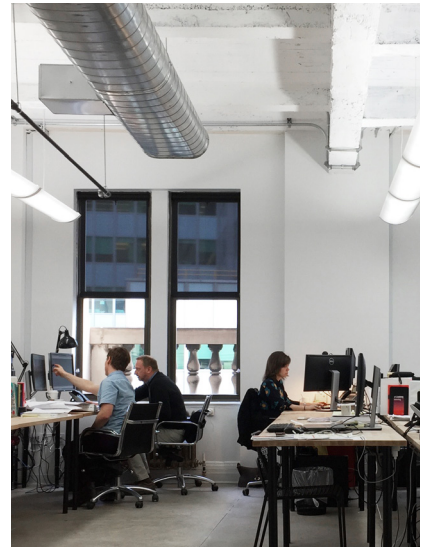
Director for a new headquarters wing encased entirely in glass, the completely renovated building has been dubbed the Glass House. The three storey 13m high structure is glazed on all sides and has been specially detailed to accommodate the movements of the lightweight steel structure. The steelwork is clad in mirror-polished stainless steel to enhance the feeling of lightness and space within the pavilion.

14 Westfield Avenue, London

2016-2021

SimpsonHaugh and Partners

Director for delivery facade design for new 750,000sqft commercial office development split across two identical 15-storey buildings. The facade features an external grid of anodised aluminium profiles to provide solar shading and a landscaped roof garden with public amenities. The buildings also feature two glazed atria and a glazed winter garden at first floor level.



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