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Taikoo Place 2 - Hong Kong

HIGH-RISE
NORTHERN EXPOSURE
2023

HOTEL PRESIDENTTI
ETELÄINEN RAUTATIEKATU 4
HELSINKI
13.6.2023
Schedule 8:45 – 17:00

Getting Glass to Work Harder - High- and Low-Rise Advancements

Keynote Speaker James O'Callaghan

Founding Director, Professor
Eckersley O'Callaghan

James O'Callaghan is a structural and facade engineer with over 25 years of experience. He is known internationally for his leading expertise in the design and application of structural glass. Widely acknowledged as an authority on structural glass, he is perhaps best known for his highly innovative designs for glass envelopes, stairs, bridges and other structural elements in Apple's iconic retail stores around the world. He co-founded Eckersley O'Callaghan in 2004, a practice that has since grown with a global presence with the same aim of providing creative engineering solutions with innovation at the core. The practice has been recognised with multiple awards, and he received the Institution of Structural Engineers Gold Medal in 2019, the highest honour in the UK for a structural engineer. He has been Professor of Architectural Glass at TU Delft since 2019 where he is building a research group focused on how glass use in the built environment will evolve, particularly in a world subject to climate change.

Abstract
Getting Glass to Work Harder - High- and Low-Rise Advancements

The use of glass in high rise buildings has fundamentally underpinned their appeal and therefore wide adoption. As material glass has leant itself to being a complimentary partner in the development of curtain wall and then unitised systems, both of which are the standard now for high rise envelopes. The glass tower may have been the ambition of yesterday, but achieve it today is often met with questions or even stigma. Today's climate emergency has led to us to rightly question all materials we use and glass is no exception given its relatively high embodied carbon credentials. Building codes address the need for higher performing facades by restricting the ratio of windows to solidity. The tighter the energy performance becomes the less glass is justifiable. As engineers we have learned to navigate this algorithm by developing higher performing glass systems and even the glass itself. This requires continued innovation at all levels from academia to industrialisation to ensure we can maintain the vision and light we enjoy in the spaces we in habit. There is a race on to ensure that the balance between the quality of our internal spaces as relates light is maintained and is a race that needs coordinated focus among us all. This presentation will review the challenges and the technologies that have emerged and are developing to help bring balance in the equation of light and energy management at the interface of our buildings.

Decarbonizing the Built Environment
How SOM is Decarbonizing the Built Environment
A Holistic Approach to Decarbonization

Keynote Speaker Christoph Timm

Principal
SOM New York

Christoph Timm has an education Degree in Architecture, Universität Karlsruhe, Germany and Cand. Architecture Degree, RWTH Aachen University, Germany. He has more than 25 years of experience in the creative field. During his career Christoph has designed a great variety of projects encompassing products, furniture, street lights and architectural spaces. At SOM, he currently serves as Senior Leader of the Enclosure Group, whose practice is embedded among the various architectural design and engineering studios in the New York office. Christoph's expertise is in building enclosures, both in their aesthetically crafted appearance in varying light conditions as well as performance. With the developing climate crisis, Christoph is focusing on all building components through the lens of expended energy to fabricate vs. the benefits during their service life. This holistic approach to buildings with the parallel investigation for components to be reduced, reused or recycled is needed today. Within SOM, Christoph has started a construction site visit program that regularly takes young architects onto different construction sites in the city with the goal of creating a better understanding of construction complexities and how these conditions are influencing design. Christoph participates or acts as a design critic on most of SOM's New York projects. Outside of SOM Christoph shares his expertise actively at conferences and industry events. He has lectured on design and building performance related topics in North and South America, Europe, Middle East, and Asia.

Abstract
Decarbonizing the Built Environment How SOM is Decarbonizing the Built Environment a Holistic Approach to Decarbonization

The building sector generates nearly 40 percent of all global carbon emissions, and as urban populations continue to grow in the coming decades, United Nations studies have predicted that another 230 billion square meters of new building stock will be needed by 2050. Architects, engineers, and developers all have a major role to play to decrease the industry's emissions, and in this presentation, Christoph Timm will focus on the strategies Skidmore, Owings & Merrill (SOM) is undertaking to advance a net zero carbon-built environment.
Using projects spanning across the globe—from Gothenburg and Paris to New York City and Long Beach, California—Christoph will illustrate how densification, adaptive reuse, and a careful balance between operational and embodied carbon can create healthier cities. Looking toward the future, he will explore some of SOM's latest research in high-rise design and material fabrication, introducing innovations that will help buildings sequester carbon from the atmosphere.

Glass and Facades:
Challenges and Opportunities in a Carbon-Constrained World

Invited Speaker Stephen Selkowitz

Affiliate/Retired
Lawrence Berkeley National Laboratory
Berkeley, CA USA

Stephen Selkowitz is recently retired as Senior Advisor for Building Science after a 40-year career at Lawrence Berkeley National Laboratory where he created the LBNL Windows Group and led the Building Technologies Department, partnering with industry to develop and demonstrate new technologies, systems, processes and tools that address energy, sustainability and human factors. An internationally recognized expert on glass and window technologies, window software tools, façade systems, shading solutions, daylighting, and integrated building systems solutions, he is now a building science/façade consultant to global firms and research institutes. In 2012 he was the recipient of LBNL's first "Lifetime Achievement Award for Societal Impact".

ABSTRACT
Glass and Facades: Challenges and Opportunities in a Carbon-Constrained World

Glass plays an essential, but challenging and evolving, role in most modern building facades. The appropriate/optimal role of glass in building facades has been the subject of architectural debate since the 1970s in terms of its impact on building energy use, and concurrently, its overall impact on carbon emissions. More recently, its role in carbon emissions and its place in the circular economy has focused not only on the emissions due to the operation of the building but the embodied carbon associated with materials selection, design details and the building life cycle. There are unique challenges in severe, cold northern climates but many are shared with global applications. The design response in high rise buildings has been diverse. At one end of the architectural spectrum, small physical windows in an insulated, opaque envelope can be augmented by video/virtual reality connecting occupants to the outside world. But we see more highly glazed façade solutions, perhaps tuned by orientation, where the latest super-insulating glazing is part of a dynamic, smart facade that manages all solar and thermal flows, with daylight, glare, and view to optimize comfort, health and productivity, while generating power for the building and the grid to minimize or offset carbon emissions. These competing technical "visions" are further constrained "as-built" by financial limitations, time, and manufacturing capabilities. We outline and explore some of the emerging design solutions in use today, and the RD&D trends that will drive and/or constrain optimal design solutions in the decade ahead.

Advanced bird-safe glazing design

Rory Back
R&D Incubator Technical Manager
NSG Group

Rory Back is the NSG R&D Incubator Technical Manager. The Incubator is a hub for partnerships with start-ups and universities, enabling early-stage innovation and development of new glass technology and applications.

Rory, a dual national of Ireland and Britain, has a background in chemistry and thin film coatings.

ABSTRACT
Advanced bird-safe glazing design

This presentation examines the background and performance of an advanced bird safety glass coating.
The necessity for consideration of bird collision prevention is a topic that has grown in importance in recent years, originating from the influence of ecological, legislative, and consumer requirements.
These needs for bird safe designs are discussed, in addition to the development of the technology of the coating.
The method for testing of the collision prevention performance of the coating is described, and the results compared to alternative technologies.
The precision manufacturing techniques required to produce the coating are presented.
The combination of the bird safe coated glass with other functional glass coatings, via use in an insulated glass unit, and/or laminated glass, is described. This allows for the pairing of properties including thermal insulation, solar control, security, and sound attenuation, for application in high performance windows and façades.
Aesthetics are a significant consideration for bird safety coatings, as they are most effective when deployed on the outermost surface of a façade. The high-quality appearance and durability of this advanced design is illustrated, including installed project references.

New design options for photovoltaics

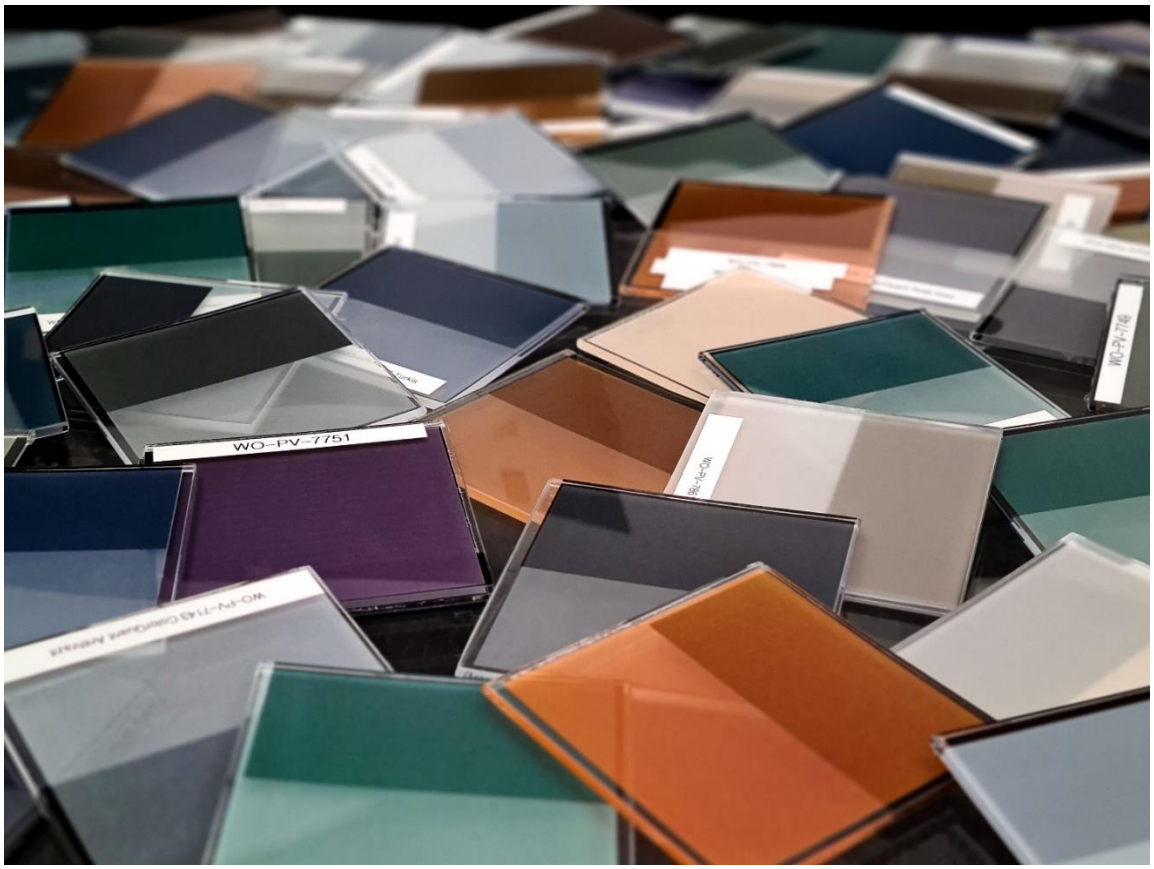
Sebastian Barth

Business Development Manager/Electronic Materials
Merck Group

Chemist by background (studied at Ulm and Darmstadt University)
Joined Merck 2009 in R&D PV for Diploma
Since 2012 in PV and semi area (Optoelectronics) in strategy development, sales, and strategic marketing roles
Since 2017 “Founder” of ColorQuant™ responsible for basically, all since then

ABSTRACT
New design options for photovoltaics

Building integrated photovoltaics are getting more and more importance – and thus their appearance. By using translucent, reflectant pigments we enable a broad range of bright photovoltaic colours perfectly suited for integration in modern architecture. Most kinds of solar modules and sizes can be used at a competitive cost/performance ratio.



New ways to print architectural glass using laser technology

René Beinke

Strategic Product Management & Technology Development SolarQuipment
LPKF SolarQuipment GmbH

René Beinke has trained in construction mechanics; he has degree as higher technician in machine building.
Started as an application engineer in Laser centre Hannover. Joined LPKF in 2008 as an application engineer for the process development of Thin film Solar scribing.
He took over the technical product management for LTP in 2015.
Move on as the leader for the product management & application department LTP since mid of 2019.

ABSTRACT
New ways to print architectural glass using laser technology

Laser Transfer Printing is an innovative digital printing technology that uses laser beams to transfer precise images, patterns or texts onto various materials, especially glass. The ink is applied homogeneously to an ink carrier. The laser heats the ink, which transfers pigments to the material. The advantages are high resolution, flexibility and quality. This creates completely new possibilities for the design of flat glass for interior and exterior architectural applications. The technology is already successfully used in industry.

Fire-rated façades – interaction between fire safety, design and fire-resistant glass

Martin Brown
Technical Sales Manager
SCHOTT Technical Glass Solutions GmbH

A diverse role encompassing clients, engineers, designers and manufacturers across the UK, Ireland and Nordic countries, advising on the correct fire rated glass types for their application, achieving the correct solutions to save lives and protect property.
Based just outside of London, he has worked within the specialist glass sector for over 40 years, and since 1999, working with the technical glass products produced at the SCHOTT TGS GmbH factory in Germany, Martin's role focuses on fire resistant glass applications and how life safety products can be integrated into both new and existing architectural designs. He is actively involved with the UK glass trade association, the Glass & Glazing Federation (GGF), where Martin is the Deputy Chair of the specialist group for fire resistant glazing.

Abstract:
Fire-rated façades – interaction between fire safety, design and fire-resistant glass

Evidence shows that fire in high-rise buildings can be deadly. Interlayered EI glass types are well established having been developed and used to allow people to safely pass by the glazing in the event of fire. The technology also protects the escape routes of buildings eliminating flames and minimizing heat radiation. In contrast, the protection target of facades is usually to avoid vertical spread of fire, which can be fulfilled by the integrity function of E glazing.
National building codes require fire rated barriers between each floor to prevent flame spread. New concepts, based on real fire testing, offer alternative solutions, and allow easy integration of the fire-resistant glass in a façade concept with minimal impact on the design.

The thermal effect on the acoustic attenuation of laminated glass

Allan Gibson

Manager - High Performance Products
North Europe
Kuraray Europe GmbH

Based in Oxford; Allan is a chartered Supply Chain Manager with a BA in Management and an MSc in Façade Engineering. For the past 23 years he has managed the supply and specification of specialist materials used in the construction industry in the UK and Middle East. Now responsible for the specification and supply of the Kuraray Trosifol PVB and SentryGlas interlayer business in the North of Europe for use in laminated architectural glass with a strong focus on new technologies and innovations underlining the Kuraray commitment towards serving the ever-changing demands of the global glass industry through innovation and leadership.

Abstract
The thermal effect on the acoustic attenuation of laminated glass

Modern building designs have culminated into the increased adoption of laminated glass façades. The use of laminated glass in the façade industry mainly adds the benefit of safety, security, structural and sound insulation properties. Sound insulation has been a major consideration for buildings due to the need to maximise comfort for occupants. The sound insulation properties of laminated glass depend on various factors including temperature. Thermal variations determine the optimal performance conditions for laminated glass under different conditions. Most of the acoustic tests are carried out at room temperature which may not reflect the actual scenarios. The presentation will aim to highlight this effect and better understand how it can be compensated in design.

Practical Tips for Façade Design

Agnes Koltay

CEO
Koltay Façades

Agnes Koltay holds a Masters in Architecture and Façade Engineering. She has worked with Zaha Hadid and international engineering offices, before starting her own award-winning façade engineering consultancy, Koltay Façades, in 2011 in Dubai. She opened their second office in Singapore in 2016.
The consultancy firm is one of the largest specialist practices in the ME, well known for the capability to work on the large-scale developments, high-rise and complex geometry buildings.

Abstract
Practical Tips for Façade Design

This presentation will list some important aspects of façade engineering, draws attention to certain considerations, analysis tools, practical approaches that contribute to a successful project.
We will hear briefly about system selection, wind tunnel testing, building movements, bent geometry practical considerations, current technological limits, importance of facade access strategy, specification hints, site inspection tips.

Beyond sustainable building envelopes

Anne-Christine Roulet

Sales Director Big Projects North
Hydro Building Systems Ltd

Born and grew up in France, studied business management in France and Germany, worked with Japanese companies in France, Vietnam and Sweden for more than 15 years.
Joined Hydro (through legacy Sapa) in Sweden in 2007 and spent a total of 8 years in China to support commercially turnarounds and reorganization of our local operations in Extrusion and Building System. Heading Big Projects unit for Wicona North Europe since Sep 2022 and active promoter of sustainable aluminium for the building industry.

Abstract
Beyond sustainable building envelopes

We know that 39% of global CO2 emission comes from the construction industry throughout the whole life circle. Façade and fenestration represent 13% of the construction footprint in CO_2 per surface m^2 of office buildings. In a normal window, even though the aluminium part represents only 24% of its weight, it is representing 65% of its CO2 footprint.
That's why in Hydro, we have a very strong commitment to the society by using green energy to produce our raw material, increasing the content of post-consumer aluminium in our billets and increasing the recycling content in our building systems
To close this loop and build more sustainable buildings, we work on smarter design and promote circular deconstruction.

Glazing mistakes and solutions

Jens Schneider

Prof. Dr.- Ing.
Glass Competence Center TU Darmstadt/
Future Rector TU Wien/Austria

Civil Engineer, professor at TU Darmstadt, where he founded the Glass Competence Center. He designed innovative structures (bridges, roof and façades structures) with a focus on glass and sustainability. His research focuses on glass, polymers, fracture mechanics and energy efficiency. He served as Vice President of TU Darmstadt until 2023.
From October 2023, he will start as rector of TU Wien/ Austria.

Abstract
Glazing mistakes and solutions

The complexity of today's building skins requires a fundamental knowledge in facade design, especially for the correct use of glass and the related polymer materials. The different process steps, from the initial design to glass and facade production, transport, erection on site and handover to the client hold many pitfalls for technical and organizational glazing mistakes. Only if we holistically consider the relevant aspects of structural design, building physics, process technology, transport, site conditions and management & quality control, the finally built solution will be sustainable. Our research in the Glass Competence Center therefore covers the full range of glass processing and technology. Examples show how errors can be avoided based on the knowledge from research and how complex the interrelationships between the individual process steps can be.

Long term engagement in building façades

Aulikki Sonntag

Chief Business Development Officer
Staticus

Aulikki Sonntag has her focus on the growth strategies of the company. New system and service developments for a sustainable façade business are developed with Staticus partners in an innovative market driven response. With a sound technical knowledge and broad international experience on both the planning and execution side, the building envelope is viewed holistically.
“Challenging the state-of-the-art in pushing technical limits and innovative design solutions, while ensuring high quality and best value in planning and execution phases in
close cooperation with all parties involved”, is what she thrives for.

Abstract:
Long term engagement in building façades

Recent focus in the construction industry has shifted from operational energy to embodied carbon.
To fully close the circularity loop both must be considered in conjunction with end-of-life stages.
Designing for disassembly in façades as an enabler for reuse and material take back is a must to close the circularity loop.