

Title: **CTBUH 2019 Congress Special**

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50 Forward | 50 Back

Abstract

On the 50th anniversary of the Council on Tall Buildings and Urban Habitat's founding, the CTBUH 10th World Congress returns to the Council's home: Chicago. Focusing on the theme 50 Forward | 50 Back, the Congress explores the most significant advancements in tall buildings and cities from the last 50 years, whilst inquiring into the future of our cities 50 years from now. This event thus represents a critical reflection on both the skyscraper typology and urban development, by marking their trajectory to date, and considering the evolutions that must take place to accommodate a dynamic and uncertain global future. The tension between human-centric and technologically-advanced design progress that was brought into sharp focus in the late 1960s, arguably, has never truly been resolved. We again stand at a critical juncture in time, amidst major change in the typological status of tall buildings, the cities they call home, and the people that inhabit them. The Congress directly addresses critical issues in the future progression of our cities, drawing the most important lessons from the past. The following pages contain highlights from the program.

Keywords: Sustainability, Tall Buildings, Vertical Urbanism, Mass Timber, Smart Buildings

Perfect City: What are the Drivers of the Modern Metropolis?

Opening Plenary—50 Back: Urban Evolutions
Tuesday, 29 October



Joe Berridge, Partner,
Urban Strategies

The world is rapidly urbanizing and at the same time an elite of global cities seems to be gaining more and more economic and cultural power. That growth seems fueled by similar forces: the

financial services industry, high-achieving universities, a vibrant tech sector, a vigorous cultural life and well-connected airports. Yet we all share the same problems of inadequate transport infrastructure, rising social inequality, a lack of affordable housing, and a sense of urban sameness. In this presentation, dive deep into the drivers of global urban success and examine the cities that are most successful in tackling these common problems.

Eight cities are examined, with guidance for how they might best mobilize themselves for success. No city is perfect in every category, but each offers unique insight: Shanghai, in its dramatic expansion of its subways and management of unprecedented growth; Singapore, in its a unique way of making large projects happen; London is restructuring of

its growth to revitalize the east of the city; Sydney, in its response to the challenge of tech giants; Manchester, in its inspired re-invention of its economy; Belfast, in its forging of civic peace after two decades of urban civil war, and Toronto, the city that successfully settles more immigrants than any other.

Lessons from each of these cities covers not just the strategies each city employs, but also analyzes the leadership involved and the quality of the urban places they achieve, suggesting at a formula for the "perfect city."

A New Chicago Legacy: High-Rise Buildings as an Equitable Development Tool

Opening Plenary—50 Back: Urban Evolutions
Tuesday, 29 October



Eleanor Gorski, Acting
Planning Commissioner,
City of Chicago

Chicago is an active test bed for policy innovations that are leveraging unprecedented downtown construction activity on behalf of under-invested neighborhoods, local infrastructure, and city landmarks. The improvements include new density bonus

provisions that are generating tens of millions of dollars' worth of grants for small businesses, an expanded downtown zoning district that is bringing office and residential uses to outmoded industrial corridors, and new approaches to density and design that are making Chicago more urban, sustainable and affordable. These new policy innovations are coincident with ongoing efforts to preserve and protect Chicago's most noteworthy high-rises.

As the principal planning agency for the City of Chicago, the Department of Planning and Development (DPD) promotes the comprehensive growth and sustainability of the city and its neighborhoods. The department also oversees the city's zoning and land use policies, and employs a variety of resources to encourage business and real estate development, historic preservation, accessible waterfronts, walkable neighborhoods, and related community improvements. This presentation provides an invaluable insight, through the eyes of a high-level official, into the workings of the third-largest city in the United States. It can serve as a template for other cities seeking to drive innovation and high-rise development, in the context of a city seeking more equitable and better health and economic outcomes for all citizens.

Formgiving—Giving Form to the Future

Closing Plenary—50 Forward: Urbanism for the Future
Wednesday, 30 October



Bjarke Ingels, Founding Partner, Bjarke Ingels Group

Architects and city-makers today find themselves designing for a future that is on track to be drastically different in the next half-century. There is clearly an appetite for “sustainability” in all its dimensions, and we still want buildings that soar, that speak to us, that inspire. The great human migration to cities, particularly in the developed world, is on a collision course with climate change. The forms we are creating now must embrace this paradox, harnessing technology that will make structures and cities timeless, and buildings that are robust and yet adaptable, with the permanence of landscapes and the dynamism of intelligent machines.

What we design today gives form to the future, and what we understand today as our limitations are in fact the driving forces of design. We will design buildings that look “different” because they will perform differently, and because we have no choice. By necessity, our thinking will be more multidimensional, more conscious, and our cities will reflect that thinking.

Mass Timber and the City

Closing Plenary—50 Forward: Urbanism for the Future
Wednesday, 30 October



Karim Khalifa, Director Buildings Innovation, Sidewalk Labs

Cities around the world are wrestling with urban problems associated with rapid growth—from rising costs of living, access to housing and longer commutes. How can cities be built that benefit everyone?

Focusing on building innovation practices, Sidewalk Labs is leading the development of the first-ever neighborhood built entirely of

110 North Wacker, Chicago



Jim McCaffrey, Senior Vice President, Howard Hughes Corp.

Anthony Scacco, Executive Vice President, Riverside Investment & Development

Considerations for the development of the office space at 110 North Wacker are referred to as a case study in order to explore the relationship between commercial real estate and fundamentally driving the user's access to talent. Key design considerations and decision-making for commercial office towers in a dense urban setting are reviewed through subject matter that focuses on goals common to modern office users. The implications of these goals on the design process of high-rise buildings are discussed thoroughly, including matters of enhancing branding and identity; enhancing recruitment and retention capabilities; optimizing space efficiency and lease economics; encouraging collaboration; adopting new technology standards and addressing the growth and flexibility needs with respect to uncertain economic conditions.

Each of these goals necessitates careful thought by the users, (relative to the premises design) and by owners, insofar as planning and infrastructure decisions can

mass timber—a burgeoning material that is just as strong and fire-resistant as steel or concrete, but dramatically more sustainable—to address some of the toughest challenges.

Sidewalk Labs' proposal for Toronto's Eastern Waterfront also includes a mass timber factory, which would not only accelerate project timelines by up to 35% without compromising safety or design excellence, but also help to catalyze an industry focused on sustainable construction and building technologies in Ontario that could be applied in cities across the globe. An innovative approach to building design that uses mass timber is discussed; one that can help urban environments move one step closer to sustainable, accessible and affordable housing for all.



110 North Wacker, Chicago. © Goettsch Partners

serve to limit—or enhance—the opportunities on which users can capitalize. The rate of technological advancement facilitates innovation, yet requires constant monitoring and updating of best practices. The user's premises designs are largely dependent on the core-and-shell planning decisions made by owners. Ultimately, the “optimal” building designs originate based on a deep, “inside-out” focused dialogue between owners and users.

Completion Date: 2020 (expected)

Height: 249 m, **Stories:** 56

Function: Office

CTBUH 2019
10th World Congress

Jim McCaffrey & Anthony Scacco will present in Session 2G, *Developments in Chicago*, on Tuesday, 29 October. **110 North Wacker** will be featured in the Off-Site program on Thursday, 31 October.

The Garden City in Three Dimensions

Closing Plenary—50 Forward: Urbanism for the Future
Wednesday, 30 October



Moshe Safdie, Principal, Safdie Architects

The avant-garde in architecture today often treats towers as heroic sculptural objects within the skyline of the city. There is little exploration of the livability and quality of life within the tower,

let alone a critical assessment of how it might respond to the density, scale, mobility and transportation issues of our era. Subsequently, there has been less attention to the impact on the quality of life of high-rise buildings, be they residential, workspaces, or public institutions.



Wrigley Building, Chicago. © Antony Wood

Completion Date: 1922
Height: 134 m , **Stories:** 27
Function: Office

Wrigley Building, Chicago



Janice Goldsmith,
Principal, Zeller Realty
Group

A highlight of every architecture tour of Chicago, the Wrigley Building is one of the most iconic tall buildings in the city. Completed in 1924, its gleaming white terra-cotta façade and clock tower are worldwide emblems of Chicago's architectural significance. Its south tower and north addition frame a

pedestrian gateway that has been cherished by Chicagoans for generations. The interiors, however, are private offices and rarely seen by the public. During its near-century of existence, substantial renovations have taken place, but not always with Wrigley's integrity in mind. However, the latest redevelopment, completed in 2013, has removed



various building additions over time, restoring it to its original splendor, along with the transformation of the building's expansive plaza into a three-level, 52,500 square foot dining and retail shopping destination.

Through several mega-projects in Asia, new building arrangements have been studied in distinct combinations, all with open systems linking to an urban system. The goal has been to connect workspace, communal space, and urban recreational space in such a way as to generally improve the quality of their experience; while increasing porosity of building mass to provide better exposure, and contact with light and air. We have been exploring the potential of bridging and linking towers to form a more fluid and connected 3D

network—essentially thinking of urban design in three dimensions.

The clustering of tall buildings, the order of their arrangement, the provision and penetration of daylight and sunlight, require some fundamental rules and guidelines. This cannot be accomplished through the public or private sectors alone. Urban design concepts, which strive to create a new order, and imaginative designs, which respond to this potential, are key to the future of the city—and the life within it.

“We will design buildings that look ‘different’ because they will perform differently, and because we have no choice. By necessity, our thinking will be more multidimensional, more conscious, and our cities will reflect that thinking.”

– Bjarke Ingels, *Founding Partner, Bjarke Ingels Group*

Urban Advances: The Reality and the Virtual

Opening Plenary—50 Back: Urban Evolutions
 Tuesday, 29 October



Adrian Smith, Partner,
Adrian Smith + Gordon
Gill Architecture

Gordon Gill, Partner,
Adrian Smith + Gordon
Gill Architecture

As our population expands exponentially, urbanization is both an outcome and a solution for our future cities. In this keynote, Smith and Gill discuss how appropriate design and city planning can effectively reduce negative urban environmental impacts, while simultaneously improving the overall quality of life for the residents of a city. What are the foundations of sustainable design for today's cities and what do the visions for our future cities look like? They demonstrate why innovative and purposeful performance-based design is needed—exploring these ideals through a range of scales and typological diversity to show how a comprehensive design process influences AS+GG's work.

Past, present, and future AS+GG projects exemplify how design can reduce the major

issues facing all cities, including crime, homelessness, and lack of education. The appropriate use of technology can reduce crime and improve our urban circumstances with techniques, tools, and activities that integrate city data into existing and/or future design projects (Kingston Community Center + Police HQ). Additionally, a pro-bono R+D effort has spawned an innovative plan that pushes a city to adapt a new set of environmental standards (Chicago Decarbonization Plan), and another has created enterprise zones that offer real economic solutions (South Bend Renaissance District).

The Competitive Edge: How Today's Smart Building Solutions are Changing the Game

Session 2B—Space Matters: Workplace Evolution
Tuesday, 29 October



Brad Haeberle, Vice President, Service & Solutions, Siemens Smart Infrastructure

The office buildings of the 20th century were shaped by the emergence of a group of industrial technologies, including the elevator, complicated HVAC systems, communications advancements, and IT

infrastructure. Today, a host of new digital technologies is radically redefining our workplaces—how they are built, how they operate, and how they support working life. Our workplaces have become Internet-of-Things (IoT)-enabled environments that engage with and adapt to the building's users and the real-time needs of their operational equipment. Organizations that are pushing the envelope by successfully harmonizing information and operational technologies are getting ahead of their competition, and staying there.

Real-world scenarios showcase how smart offices today have become a new source of competitive advantage. Smart buildings can actively support talent attraction and

The Now: Servicing the Modern Tall Building Occupant

Plenary 2—Panel Discussion
Wednesday, 30 October



Chair: Steve Watts, CTBUH Chairman/ Partner, *aline Consulting*

Abram Gamboa, Senior Director, Project Management, *CBRE*

Kirsten Hull, Vice President of Development, *EQ Office*

Thomas Vining, President, *Otis Elevator Company*

Nancy Yost, Senior Vice President, *JLL*

The ultimate object of establishing the best design and operational approach to a tall building is to meet the needs of its intended occupants. Understanding the requirements of a huge range of occupiers necessitates new levels of collaboration between ownership, management, and design teams. Increasingly,

strong technology partners are also a critical ingredient in the mix, as the demand scope calls for ever-greater flexibility and sophistication. In this panel discussion plenary, hear from senior executives at some of the world's biggest names in development, property management, and tall building technology.

retention, encouraging collaboration and innovation, while improving employee productivity, satisfaction and well-being. Whether you are a tenant in high-rise building, a developer considering innovative solutions for your next project, or a building owner who is looking to add value for their tenants—a deeper understanding of how modern workplaces have the potential to drive competitive advantage will inform the steps needed to make that happen.

buildings in particular—are an important part of the urban solution.

Unique insights on the growing use of mass timber in the United States are provided, beginning with a brief overview of the attributes that make wood a sustainable choice, including renewability, carbon sequestration, low embodied energy, and the potential positive impacts on forest health. Discussion shifts to buildings, including international projects that have pushed beyond perceived height limitations for the past three decades, and government policies that have supported their construction.

Mass Timber: The New Urban Solution to a Global Carbon Challenge

Session 2E—Defining a New Era of Timber Construction
Tuesday, 29 October



Jennifer Cover, President & CEO, WoodWorks – Wood Products Council

How can more sustainable cities be created in order to meet the needed carbon reduction goals in the face of a 30% world population growth over the next 30 years, when the construction industry already generates 49% of CO₂ emissions? Mass timber systems—and tall wood

Shifting to the United States, the unique characteristics of mass timber products are introduced—such as cross-laminated timber (CLT), nail-laminated timber (NLT), and glue-laminated timber (glulam)—that enable them to meet safety and performance requirements for tall wood buildings. The changes approved for the 2021 International Building Code that are allowing wood buildings up to 18 stories are discussed. The current state of mass timber in the United States is then reviewed and summarized, including the key market drivers for early adopters of the techniques and technology.

Building the CTBUH Legacy

Session 4A—Panel Discussion
Tuesday, 29 October



Chair: Steve Watts,
CTBUH Chairman /
Partner, *aline Consulting*

Timothy Johnson,
Partner, *NBBJ*

Sang-Dae Kim,
Emeritus Professor,
Korea University

Ron Klemencic, Chairman
& CEO, *Magnusson
Klemencic Associates*

David Malott,
Founder & CEO,
Al. SpaceFactory

Leslie Robertson,
Director, *See Robertson
Structural Engineers*

David Scott,
Founder & Director,
Laing O'Rourke

As the global arbiters of height, CTBUH has made a lasting impact on the tall building industry over its first 50 years. From passing the crown of “world’s tallest” to the Petronas Towers from the former Sears Tower in 1996, to updating its height criteria to

incorporate the rising popularity of timber as a tall building structural material, the Council has continued to evolve its standards as the demands of a growing urban population concerned with resource conservation have changed.

Join prominent and founding figures in CTBUH history to hear about the origins and future of the CTBUH legacy.

Perspective on the Construction of High-Rise Buildings

Session 2I—Developments in the MENA Region
Tuesday, 29 October



Shaofeng Wang, Chairman,
*China State Construction
Overseas Development*

The high-rise building is inevitable, based on increased levels of urbanization. Data shows that the distribution of high-rise buildings generally has a close connection with the

urbanization process of a region. In more and more developing countries, when urbanization reaches a certain stage, the high-rise building follows. With urbanization growth slowing in developed countries, the high-rise building market is transferring to developing countries in Southeast Asia, the Middle East, and North and East Africa.

Based around the super high-rise building, the CBD is created. This can push the upgrade of infrastructure and the development of a region. Some of the latest know-how and key technologies have been adopted to build a skyscraper

that stands up to 1,000 meters. But how do we develop high-rise buildings that are more reasonable? Special understanding and construction experience are required in the particular desert environment of the MENA region. Driven by social, environmental, commercial, and operational needs, and fully considering the various issues of the building life cycle, high-rise buildings will truly play their role in driving the economy, enhancing city competitiveness, and creating better living spaces for human beings.

Bringing Intelligent Services to Vertical Transportation Solutions

Session 4D—Digital Platforms
Tuesday, 29 October



Larry Wash, Executive
Vice President, *KONE*

Today's organizations understand that technology must be a part of their operational bedrock, informing, shaping, and monitoring every decision. With smart building management solutions, technology provides greater insight into

how a building's assets are performing, maximizes uptime of vertical and horizontal transportation solutions, and helps to identify problems at the earliest possible opportunity. Data and real-time evaluation can help to determine and refine a proactive response to issues. Whether it's predictive maintenance or forecasting a product's life cycle, smart building management provides a 360-degree view of the real-time performance of a building's assets—which translates into a better experience for building occupants. Smart building management solutions predict potential issues, drive an evolution in processes from reactive to predictive, and deliver real-time analytics to improve decision-making. Smart building management applies advanced analytical tools, such as machine-learning algorithms, to create deep insights into people flow. Cloud-based data can be used to predict equipment issues faster and more intelligently, and sophisticated analytics take the guesswork out of long-term decision-making.



875 North Michigan Avenue, Chicago.
© Marshall Gerometta

875 North Michigan Avenue, Chicago



William Baker, Partner,
Skidmore, Owings &
Merrill

875 North Michigan Avenue (formerly John Hancock Center) is one of the most iconic buildings on the Chicago skyline. Completed as the city's tallest building in 1969, it is notable both for its novel use of a braced-tube structural system, and its mixed-use program. It accommodates residential, commercial, and

office spaces, and exhibits the scale and grandeur of a robust tower of strength with honest visual expression, without embellishment. It introduced a new, recognizable vocabulary of structural expression of tall buildings that continues today, with contemporary variations like the diagrid system. The exterior bracing allowed 875 North Michigan to consume the same amount of steel as that of a conventional building half its height. Due to its distinctive, elegant style and unique views up and down the lakefront, it remains a popular tourist destination for Chicago, even as it has slipped in the rankings to become the city's fourth-tallest. Its observatory has been updated with new features, including TILT, a hinged glass box that tilts outward, giving occupants a thrilling downward-facing view of the streets more than 300 meters below.

Completion Date: 1969
Height: 344 m , **Stories:** 100
Function: Residential / Office

CTBUH 2019 10th World Congress

William Baker will present during the Off-Site program *Explore the World's First Mixed-Use Supertall* on Thursday, 31 October.

Silicone Structural Glazing: 50+ Years Proven Performance Paves the Path for a Sustainable Future

Session 6H—Technical Solutions in Europe
Wednesday, 30 October



Adrienne Bowman-Grittini, Technical Service & Development, Dow

With the evolution of tall buildings and the desire for increased building performance, silicone-based products have been leveraged for structural glazing and weatherproofing.

Silicone's durability and weatherability make them the optimal choice for reduced maintenance and increased life expectancy of buildings. A history of the structural silicone glazing evolution over the past 50+ years is provided. Examples of aging data from existing buildings are presented to demonstrate real-world performance, and an overview of today's top 20 high-rise buildings are examined for the benefits brought by structural silicone.

Looking forward to the next 50 years of building design, increased computing capabilities allow for modeling of structural silicone as a hyperelastic material to analyze additional stresses due to glass rotation via finite element analysis. Currently, buildings account for nearly 40% of global energy consumption. In considering the impact of increased urban density, the building sector has a higher responsibility to ensure new and existing buildings reduce their energy intensities and deliver sustainable improvements to ensure the future of our cities. Silicone-based products will continue to enable high-performance buildings: ones that are energy-efficient, cost-effective, safe, flexible, aesthetically pleasing, and, most importantly, sustainable.

High-Performance Buildings in Asia

Session 4F—Panel Discussion
Tuesday, 29 October



Chair: Tyler Jensen, Studio Leader, Environmental Systems Design

Stuart Fowler, CEO, Norman Disney & Young / TetraTech

Dakki Hui, Senior Property & Facility Manager, Sun Hung Kai Properties

May Wei, Vice President, CallisonRTKL

Zoe Zhou, Deputy Director, Tongji Architectural Design

As the continent containing the most skyscrapers above 150 meters, each new high-rise in Asia must compete within an incredibly dynamic landscape of tall, supertall and megatall buildings, each of which demands more efficient performance benchmarks than the last. This panel

discussion includes case-study references to several contemporary high-performance buildings in Asia, and breaks down some of the technical features that allow these buildings to conserve water, mitigate stack effect, optimize airflow and other strategies—even at incredible heights.

The Third Dimension of People Transportation

Session 7A—The Evolution of Megaprojects and Multi-Dimensional Cities

Wednesday, 30 October



Michael Cesarz, CEO, thyssenkrupp

As of today, urban mobility is rather two-dimensional: Connections between transportation solutions like elevators, escalators, moving walks, and metro stations are rather static. Future

urban mobility will require a holistic view: Seamless transportation, enabled by innovative IoT technology. A dialogue between the city, its buildings and transportation systems, considering the specific needs and preferences of each and every citizen, must be adapted. Traveling through the city will be a lot more individualized, interactive and customized to specific requirements.

With MULTI, thyssenkrupp Elevator harnessed the power of linear motor technology to move multiple cars in a single shaft, both vertically and horizontally, re-imagining the elevator by removing the cables and equipping passenger cabins with linear motors. It is an elevator that can provide new options for the transportation of people and architectural design. With skybridges, connections to metro systems, air-taxis, etc., MULTI will interact with a variety of transportation systems.

The digitalized interface, a state-of-the-art building facilities management system created in partnership with Willow, integrates hundreds of data sources to streamline building performance and efficiency—from maintenance, resource utilization, and energy efficiency, to improving the user experience for building tenants and visitors. Naturally, that includes elevator operations. Interacting with each other, intelligent transportation solutions will become the backbone for smart buildings and the creation of smart cities.

LondonHouse, Chicago



Leonard Koroski, Principal, Goettsch Partners

Located in downtown Chicago at the prominent intersection of Michigan Avenue and Wacker Drive, the LondonHouse Chicago is an adaptive reuse project that brings together old and new. A 1923 Beaux-Arts office building, originally designed by Alfred Alschuler for the London Guarantee & Accident Company, is combined with a new slender infill tower on an adjacent site to define an integrated 452-key hotel.

Completing the street wall by filling in a previous parking lot, the new tower is designed to respect the cornice lines of the existing property, while introducing a series of subtle saw-toothed angles in the new façade that respond to the signature views west down Wacker Drive and the Chicago River.

The hotel's main entrance, located in the new glass tower, features a gateway arrival leading to the historic elevator lobby and a grand second-floor check-in lobby and bar. The top of the hotel is the main feature. Previously unoccupied, underutilized space has been converted into a tri-level rooftop terrace and bar, including a special-events space within the refurbished cupola. Designed in keeping with the city's landmark codes and approvals, the rooftop space sensitively inserts glass rails stepped back from the original façade to allow the historic building details to shine, while providing guests exceptional views of downtown and along the river.



LondonHouse, Chicago. © Lou Stejskal (cc by-sa)

Completion Date: 1923 (retrofit 2016)

Height: 97 m, Stories: 22

Function: Hotel

CTBUH 2019
10th World Congress

Leonard Koroski will present at the Off-Site session *Adaptive Reuse for Tall Buildings* on Thursday 31 October.

High-Rise Design Drivers: Now to 2069

Session 7C—Panel Discussion

Wednesday, 30 October



Chair: Shelley Finnigan, Head of Technical Sales & Marketing, ArcelorMittal

Kyle Bernhardt, Director, Building Design Strategy, Autodesk

Dominic Bettison, Director, WilkinsonEyre

Agnaldo Santos, Vice President, Head of R&D, Schindler

Juliane Wolf, Partner, Studio Gang

The core factors influencing the design and development process for tall buildings have evolved significantly over time in response to changing user needs, cultural shifts, emerging technologies, in addition to seemingly intractable issues such as climate change and

economic uncertainty. Professionals from a diverse set of disciplines will discuss their views on the drivers for tall building design 50 years in the future, and how technologies and design approaches will need to evolve to address both current and future needs.

Greenland Centre, Sydney: Extending a 25-Story Office Building into a 70-Story Residential Tower

Session 7F—Australia as Urban Exemplar
Wednesday, 30 October



Andrew Johnson,
Principal, Arup

Creating an iconic residential tower linked to a hotel within the adjacent heritage building, the Greenland Centre will be the tallest residential building in Sydney

at completion in early 2020. It is the first building in the world in which 45 stories have been grafted onto the top of an existing 25-story building, resulting in a slender tower of 10:1 aspect ratio integrating the existing structural frame and foundations into the redeveloped building.

Constrained by the planning requirements of retaining the existing 1965 building structure—once the second-tallest building in Sydney—the structural design has integrated the original primary vertical steel structure into new composite columns and existing steel girders into the new low-rise floor structures, and has augmented the deep pad footings founded on sandstone to support the higher gravity and wind loads of the new building.

The existing, retained tower structural grid and geometry, combined with contemporary set-back requirements from adjacent boundaries, have dictated the form and location of outrigger and transfer structures at the interface between the existing and additional floors, also used to articulate the massing of the old and new.

TAIPEI 101: From Record Height to Record High Performance

Session 6F—Seminal Asian Icons, Today
Wednesday, 30 October



Angela Chang,
President, Taipei
Financial Center Corp.

From 2004 to 2010, TAIPEI 101 was the world's tallest building. But its enduring legacy has had as much to do with its operational acumen as its height. TAIPEI 101 represents a worldwide

precedent for sustainable skyscraper development. It achieved a LEED Platinum certification for Operations and Maintenance in 2011, and became the world's first LEED v4 Platinum supertall building with a record-setting score (90 points) in 2016, an impressive feat for a tower of its size and complexity.

TAIPEI 101 already implemented a high level of performance when it was completed in 2004, but this was only the beginning of a 10-plus-year upgrade campaign that has allowed the tower to meet and exceed continuously intensifying green standards recognized around the world. Rigorously adopted and implemented by the management team, the sustainability program for the tower is comprehensive—



Editor's Note:

Select papers relating to Congress presentations can be found in the **2019 Congress Proceedings**, available at the Congress and on the CTBUH Web Shop at store.ctbuh.org/2019-proceedings

from various indoor air quality and energy-saving improvement measures, to a robust waste collection system and occupant engagement scheme. Equally successful is the tower's collection of data, which is examined and reflected upon as systems are further optimized over time. The building is continuously improved, readying its occupants and citizens of Taipei for future inspirations and surprises.

“A dialogue between the city, its buildings and transportation systems, considering the specific needs and preferences of each and every citizen, must be adapted. Traveling through the city will be a lot more individualized, interactive and customized to specific requirements.”

— Michael Cesarz, CEO, thyssenkrupp