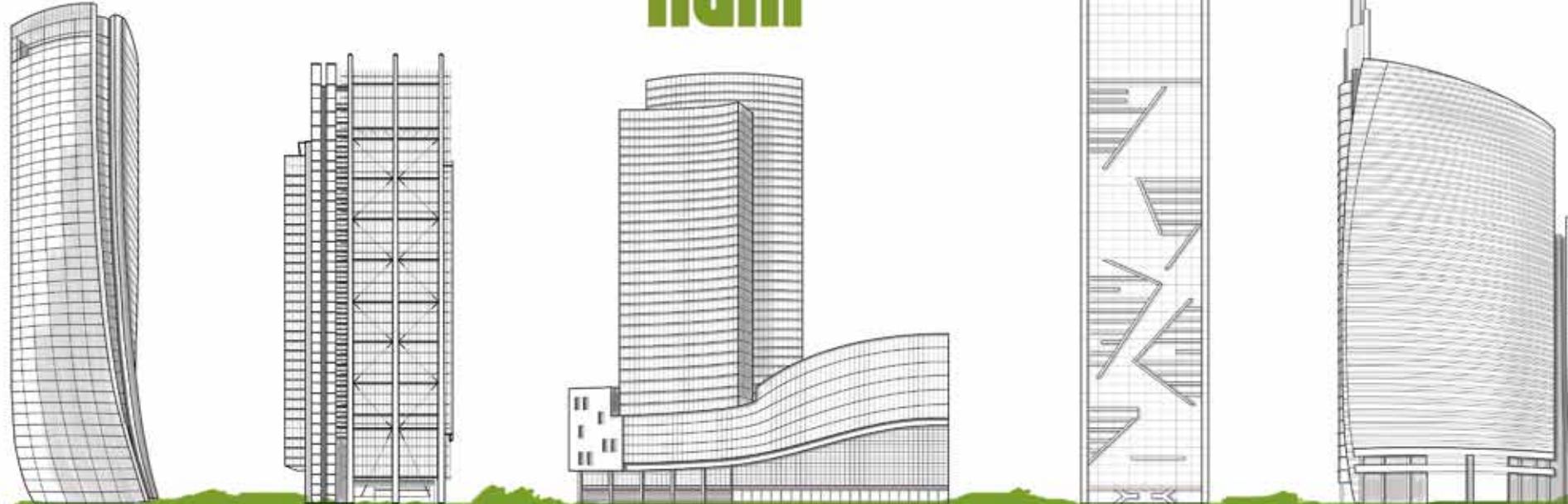


# Tall Buildings



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# GIOIA 22

PORTA NUOVA

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THE NEXT GENERATION TOWER

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# Editorial

This special issue, intends to focus on a particular building typology (and technology) of great significance for the challenges of the project culture in architecture and in design. This is especially true of Milan, Italy, where three major tall buildings were successfully built some sixty years ago (two of which renovated). After that a diffusion can be noticed in other major cities, namely Naples (eight in the new Cbd) and sparsely in Rome, Bologna, Padua. Turin where a couple of skyscrapers, the most recent, date from this decade. But the real news is the renaissance of tall buildings in Milan (reinforcing its role as the national economic and financial capital) where 11 structures have (or are being) built in two major clusters defining two iconic new urban areas: Porta Nuova and CityLife.

The importance of this new trend goes beyond the Peninsula's renaissance as six of them have been selected by the world leading organization in the field (Ctbuh – Council on Tall Buildings and Urban Habitat) either with a prize or with a nomination. Not only but the Italian world most renowned architect, Renzo Piano, has already won two special prizes for tall buildings in the U.S. and the U.K.

Moreover the new Italian *know-how* in tall buildings is proved by the accelerated development leading to the

world role recognized to the team at Università Iuav di Venezia (Iuav) led by Ctbuh research manager, professor Dario Trabucco, coordinating two other research teams in just as prestigious world institutions: Illinois Institute of Technology (Chicago) and Tongji University (Shanghai). Thus, referring to the Ctbuh activities of research and information dissemination this publication reports the contents of the 8th Italian Tall Buildings Conference, which took place in Milan on June 19<sup>th</sup> 2018, hosted by the major bank UniCredit, along with notes on the previous seven annual events which started off in Venice. It also hosts other contributions from a number of Italian authors on selected topics.

## Perspective

The extraordinary come-back in Italian experience of skyscrapers has a double face: the more occasions of such achievements are offered in urban context, the more opportunities open up for Italian architects and designers to seek success in the rest of the world. Especially so as the country, which is (in spite of just 60 million inhabitants) the ninth industrial international exporter (but especially the 3<sup>rd</sup> furniture exporter), continues to develop very special skills stemming from creativity in all the fields (and

sales) of the built environment. Thus not only are the Italian "magistri of elegantiarum" more and more successful in designing outstanding facilities abroad but a number of skilled manufacturers are driven to prospect foreign markets by the very fame that Italian architects and designers win, projecting it on the whole "made in Italy". Hoping not to forget any major name, the list of such "stars" is already long: following the already mentioned superstar, Renzo Piano, growing satisfactions are achieved by individuals as well as firms: Stefano Boeri, Antonio Citterio – Patricia Viel, Mario Cucinella, Michele De Lucchi, Joseph Di Pasquale, Massimiliano Fuksas, Park, Paolo Pininfarina, Piuarch, Marco Piva, Carlo Ratti, Massimo Roj (Progetto Cmr), Matteo Thun. As far as the mere (but often decisive for its "branding" content) interior design by other major authors should be recognized: Aldo Cibic with Degw / Lombardini 22, Goring & Straja, Iosa Ghini Associati, Piero Lissoni, Simone Micheli, Patricia Urquiola and many more.

Aldo Norsa  
Ex-Full Professor,  
Università Iuav di Venezia  
Member of Ctbuh

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# Tall Buildings Conference 2018: an eight-year long debate on High-Rises

**O**n 19 June 2018, the eighth edition of the Tall Buildings Conference occurred, chaired by Professor Aldo Norsa. It was hosted at the new UniCredit Tower in Milan and received the patronage of Ctbuh for its impact on the contemporary discussion of tall buildings, in Italy and worldwide as well as Università Iuav di Venezia and Politecnico di Milano.

The speakers shared their professional experiences in tall building development, design, construction, and

growth in new technologies. The themes and case studies completion that had been presented in the previous events (since 2010) were developed and, in some cases, actualized due to completion of the buildings. The 2018 speakers gave an update on the newest Italian skyscrapers (all in Milan): Paolo Zilli (Senior Associate, Zaha Hadid Architects) showed the design process and the final result of the Generali Tower in the CityLife complex and in reference with the "genius loci" of Milan: the most

advanced design technology forthcoming; Maria Persichella (BIM manager, Mario Cucinella Architects) illustrated the UnipolSai Tower: the technological and formal development in the building façade; Daniela Franzosi and Paolo Delfino (Partners, Mpartner) explained the Gioia22 demolition and reconstruction process.

This edition emphasized and confirmed a new trend introduced in 2017 by Steve Watts (Partner, Alinea Consulting; now Chairman, Ctbuh), who focused on the importance of the psychological feedback from inhabitants of tall buildings. He closed the 2017 conference going beyond technological aspects: the smart technologies and the intensive use of internet and social media could be destroying social experiences and physical relationships. This year, Sara Busnelli (Partner, Citterio-Viel) and Lars Ostenfeld Riemann (Executive Director, Ramboll) debated livability in cities that are becoming a complex system of high-rises, and how they can strive to achieve harmony between physical exchanges, relationships, and interactions. The new residential tower prototype designed by Citterio-Viel embodies the "livability" as the art of integration.

The event confirmed its value as a cultural gathering (and special occasion for updating the Italian know how) where the attendees could meet the best experts in the field.

*Angela Mejorin  
Università Iuav di Venezia,  
Ctbuh Research Division - Research Assistant*



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# Five Years of research on tall buildings in Italy

The Council on Tall Buildings and Urban Habitat, based in Chicago, established in 2014 a partnership with the Iuav University, to conduct its sponsored research activity from Venice, Italy.

During the past five years, Dario Trabucco, researcher at Iuav (and associate professor since July 2nd), served as Ctbuh Research Manager, personally conducting or overseeing the successful completion of numerous research projects.

The topics covered by the research activity span across several disciplines, and investigated relevant issues in

the inception, design, construction and management of a tall building.

“Life cycle assessment of tall building structural systems” explored the environmental impacts caused by different tall building above-grade structures, in steel, concrete and composite materials.

The topic of composite (steel-concrete) columns was also the focus of “architectural and engineering properties of composite megacolumns”, which explored the constructability and mechanical properties of very large columns up to 2x2 meters in plan, built with 4 hot-rolled steel profiles in reinforced concrete.

The behavior of tall building structures under wind and seismic conditions was also investigated by the research “damping technologies: comfort and safety” where the needs for supplemental damping – by various active and passive technologies, such as tuned mass dampers, liquid dampers, viscoelastic dampers, etc. – was determined.

International code comparisons were carried out on the topic of the maintenance, irrigation, fire and wind protection for vegetated roofs and facades in the “green living technologies in international standards” research, while the façade resistance to flying debris from typhoons was investigated in the first stage of the

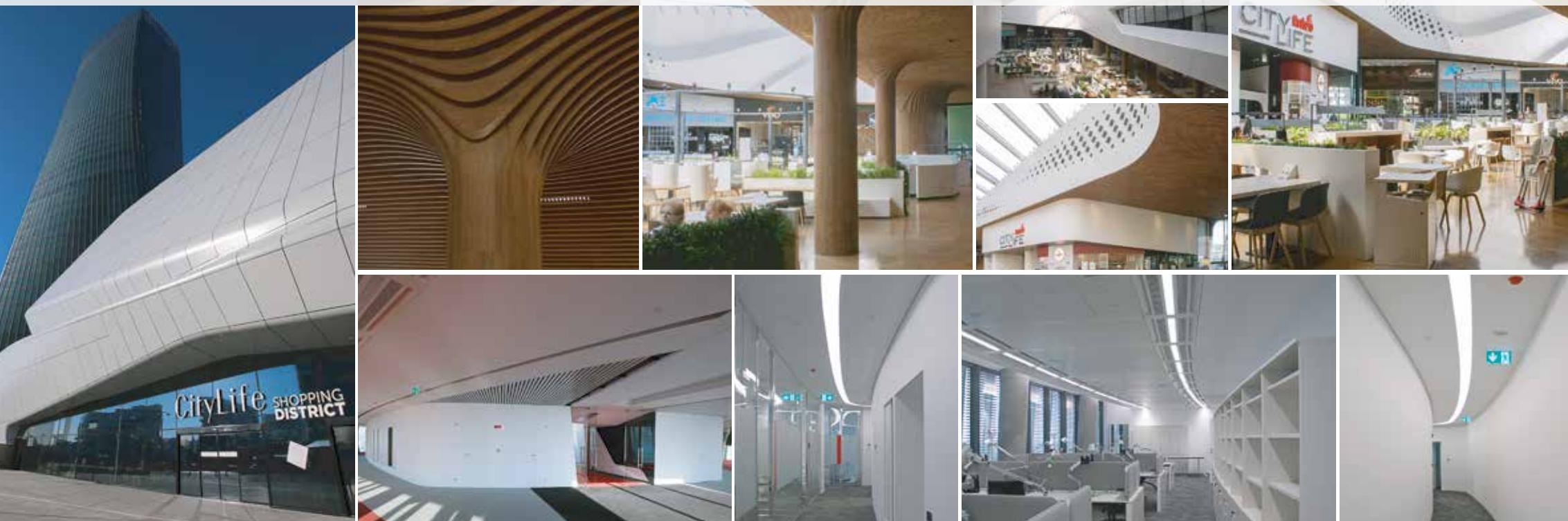


“cyclone-glazing and façade resilience” research. This latter work, evolved into a second stage of the research with the same title, but investigating the specific design issues of façades in four selected countries: Australia, the Philippines, Hong Kong and Japan.

The “design possibilities of rope-less, non-vertical elevators” research, about to conclude, explores the design possibilities that the introduction of rope-less, linear induction driven elevators will have on the design of tall buildings, breaking the design conventions that have developed over the past 160 years, ever since the first lifts were installed in buildings.

Research is now starting on additional topics, including an analysis of the performance of existing tall buildings and various topics regarding sustainability.

*Dario Trabucco  
Università Iuav di Venezia, Ctbuh Research Manager*



City Life Shopping District & Hadid Tower - Generali Assicurazioni Headquarters - Milan

# Architectural Achievements and Urban Renewal

**C**ityLife, Coima and UnipolSai represent three of the main private Italian developers who have most contributed in redefining the Milan city-skyline. In these years they have invested in technology and sustainability to build integrated and smart architectures. They are promoters of projects focusing on office space towers, that have filled empty city-blocks or reconverted existing buildings and unused areas, generating new urban and real estate values. The Generali Tower within the recently completed CityLife development, and the Gioia 22 and the UnipolSai headquarter projects in Porta Nuova, are a clear example of three stories of excellence, where main architecture practices have been involved, along with engineering and consulting expertise.

## Generali Tower

**J**ust about two years after her death, the city of Milan grants the opening of Zaha Hadid tower as part of the maxi-plan of CityLife: 177 meters high with



45 floors above ground hosting the Generali headquarter. Second in height amongst the three planned in the ex-Fiera area, distinguished by a gentle twist, the building rises from Piazza Tre Torri connected, closely with the homonymous M5 underground station and the new shopping center. "The concept and the development of its structures is the perfect example of a holistic approach and integration with architecture: from the early stages of the design - says structural engineer Mauro Eugenio Giuliani - we had to understand how to solve the tower's torsion generated by the inclination of the columns around the concrete central core, choosing the most efficient materials, shapes and construction methods. Redesco, my company - continues Giuliani - has decided to use reinforced concrete maximizing the costs/benefits ratio". A more

efficient structure but far more complex to design and calculate than any steel solution. "Concrete means the use of not linear material: structure deformations - the engineer specifies - evolve during and after construction. Key to success it is to be able to control and accurately predict the evolutionary behavior of the structure, above all because it is possible to design and build facades, internal elements, MEP system with reduced tolerances and without waste".

## Gioia 22

**C**oima Sgr, leader in the asset management of real estate investment funds on behalf of institutional investors, in November 2017 has presented Gioia 22, a project of Pelli Clarke Pelli Architects, also thanks to the valuable experience gained with the UniCredit Tower, a new executive skyscraper on the other side of the Porta Nuova complex. The Pelli Clarke Pelli tower will replace the ex-Inps building in via Melchiorre Gioia, dated 1961 and fallen into disuse since 2012. Following the removal of more than 200 tons of asbestos and demolition, the construction programme will commence in summer 2018 presumably ending in 2020. Coima Sgr will coordinate the project as the investment and asset manager on behalf of the investor, a company of Abu Dhabi Investment Authority, while Coima srl is appointed as development manager for the technical administration of the urban and construction development. The building height reaches 120 meters, with 26 floors above ground and 4 under-

ground levels for a total gross area of 68 thousand square meters. "The original shape of the tower is the result of the confluence of two distinctive urban fabric-plots and, at the same time, the answer to a need for optimization of light and solar energy. The combination of these two factors - according to Gregg Jones, principal at Pelli Clarke Pelli Architects - gives uniqueness to the dynamic shape of the building able to express, in an authentic way, its particular location within the Milan skyline".

## UnipolSai Headquarter

**S**igned by Mario Cucinella Architects (and by Massimo Majowiecki for the structures) another skyscraper ready to grow in Porta Nuova, in an awkward and constrained lot, it is destined to host



the headquarters of the fourth Italian insurance group. The main characteristic of this tower will be the double skin facade with the outer single glazed pane completely translucent, that will enhance the geometry of the wooden cladded structural diagrid, a metaphoric theme for a building which considers relationships and resembling nature. Steel,

wood and glass for a structure conceived as a "breathing lung", investing in the definition of an effective bioclimatic plan, a building capable of working in "free running" mode for about 40% of the time necessary for all its activities, without active MEP strategies in place. The tower will be 125 meters high and will host on a total area of about 35 thousand square meters offices, an auditorium and a small commercial space of 200 square meters on the ground floor. At the top floors a sky restaurant will be the main attraction within a unique bioclimatic greenhouse. A second restaurant will also be available at the 22nd level. The tower is also characterized by an important 17-storey atrium, 70 meters high, onto which the office space at each level will overlook.

Architectural quality can no longer be separated from environmental sustainability. This is the distinctive theme of Mario Cucinella's design, but not only. In fact, the Generali Tower by Zaha Hadid Architects, has already secured LEED Gold certification and in the future it could also achieve Platinum. Gioia 22 will also obtain similar certifications and will adopt a "Cradle to Cradle" approach in the choice of materials. The energy produced by the photovoltaic system of this tower would be sufficient to meet the energy needs of three hundred homes. Not only that, but, comparing with the previous Inps building with 2,260 tons of carbon dioxide emissions, the annual reduction of the Pelli Clarke Pelli tower is equivalent to the absorption of CO<sub>2</sub> attributable to about 10 hectares of forest (4,500 trees) ".

Finally: Milan, laboratory. According to Coima, in the last five years, 18% of the total office space in Milan has been concentrated in the Porta Nuova area; 300,000 square meters are already rented; 75,000 square meters are in a stage of undergoing consolidation; 120,000 square meters of space are under development and/or renovation. "Milan confirms itself as a European innovation laboratory - comments Manfredi Catella, Coima founder and CEO of Coima Sgr - regenerating the city with sustainable buildings that combine economic and social performance".



Paola Pierotti  
Founder PPAN

# High, hybrid and flexible planning

**D**esigning tower-style office blocks is as “conventional” as it gets, even though office work actually has horizontal (and residential) origins: the “noble premises” of aristocratic buildings converted into workplaces with all the limitations this entails in terms of both spatial and financial non-uniformity. The historical transition to the so-called speculative office building involved projecting these premises upwards to make the entire building equally appetising to the market through absolute vertical isotropy.<sup>1</sup> The easy availability of lifts allowed this isotropy to be endless and, once acquired, sublimated into iconic power in the form of modern-day tall buildings.

**T**aking space as a mere container, this principle still makes sense, although nowadays the content needs to be totally anisotropic: generating differences. Businesses are increasingly looking for flexible spaces where the inflexible ratio of people/square metres gives way to variations in occupation density over time, unexpected mobility, the coexistence of separate flows, and malleable inter-functional aggregations.

The studies we have been carrying out for decades into the realm of workplaces have analysed all this from an organisation and consultancy viewpoint: modern-day electronic and “smart” workplaces are increasingly hyper-specialised and, at the same time, smooth-flowing, cooperative and contaminated calling for custom-designed (but flexible) work settings, unexpected “collisions” between people, and increasingly popular horizontal communication.

**T**his scenario clearly poses questions concerning the verticality of a tower block: what can be relatively fluid on a horizontal level needs to be negotiated differently on a vertical level through careful management of the flows and stacking plan. The facilities are set out differently: located on the lower floors, they form a (possibly hybrid and permeable) interface with the city (the crucial issue of how a skyscraper relates to street level); if open to the public, the top floor spaces are “handed over” to the community (and no longer accommodate



the conventional hierarchically-ordered executive floor); communal “plazas” are set over the various intermediate levels, breaking up the circulation for functional purposes, connecting floors on different levels, and providing three-dimensional circulation loops and internal voids of different heights to create communal areas offering panoramic views.



**S**pace planning here becomes a kind of “vertical urbanism” organising work, entertainment and homeliness; interior design and technology come together to transform the workplace into a sophisticated experiential location. This speeding-up process also constitutes a return to the “residential” origins of labour, a homeliness (associated with noble premises?) which, in the case of Italian design, has always had two main features: “a sense of continuity with craft, artistic and noble tradition and an evolutionary/futuristic overall vision of the building-scape”<sup>2</sup>.

Alessandro Adamo  
Partner Lombardini22, Director DECW

1. Edward I'Anson, "Some notice of office buildings in the City of London", *Transactions of the Riba*, London, 1864-85

2. Andrea Branzi, *Introduzione al design italiano*, 1999, pg. 134

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# The Italians Who Envisioned Skyscrapers

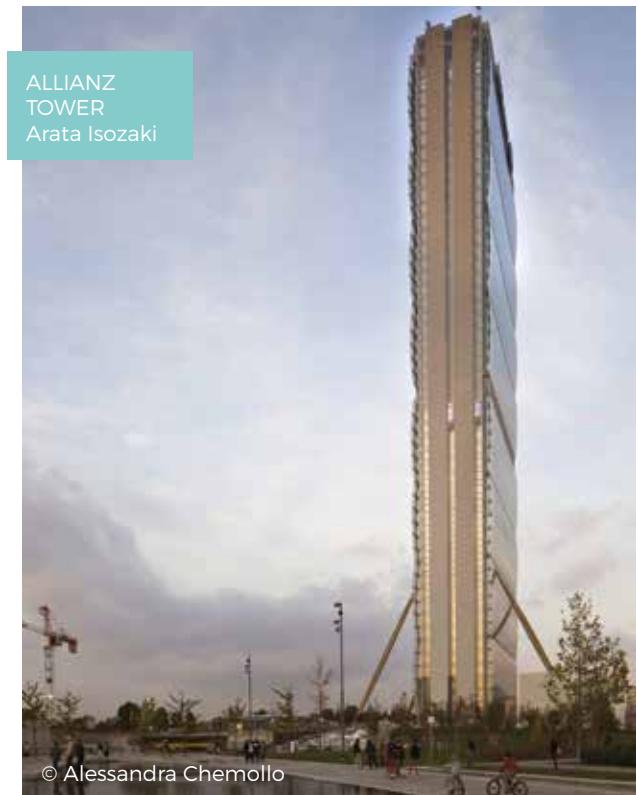
In the gigantic wave of information on architecture flowing on social media, you might recently find some hyperrealistic renderings of Antonio Sant'Elia's futurist drawings of the "Città Nuova" tall buildings, transformed into a vibrant virtual reality resembling the likes of Fritz Lang's Metropolis and other images of future in distant distopias. And still they look memories of the Future, as we should consider skyscrapers now as living dinosaurs of architectural Anthropocene, at least for their rarity in Italy.

But besides our just pride of an Italian architect having been the futurist pioneer of tall buildings' cities, is there anything - today - that can be called *Italianness* of towers designed by Italian architects and engineers? You could try and start a definition from Gio Ponti's Pirelli Tower (120 m high), "il Pirellone", the first office skyscraper built in Milan and Italy. For the *domus* magazine founder and editor, the very chance to build it activated his DNA poetry of the "closed form" (nothing to add, nothing to remove) whose perfection, at least in his intentions, should dominate over the existing surroundings. However it is actually this perfect, "closed" form which is hard to spot in the new landscape of Milan, or Turin, the only two cities in Italy where actual skyscrapers have been recently built. It is a paradox that the best, recent achievement of this kind is the "Diamond Tower" of Paribas BNL by the US firm Kohn Pedersen Fox, a solid, multifaceted tower which stands as an imposing landmark on the borders of Porta Nuova area.

We must admit though that since when globalization took command, the actual location of tall buildings in the borderless context of the Worldwide Capitalist City hardly corresponds to the cultural/geographical identity of their designers. In these terms the Twin Towers (138/142 m high) that Massimiliano Fuksas built in Vienna at Wienerberg City are actually more Italian (with the elegant dialogue of their two shapes) than his Regione Piemonte skyscraper in Turin. The luckiest of all Italian architects could still be Renzo Piano and his Building Workshop: they already accomplished the brilliant New York Times tower 10 years ago - itself a truly "Pianesque" small town (319 m high) as it shows proudly a visual layering of functions and elements. Then Piano was so fortunate again to get the commission for the Intesa San Paolo Bank Headquarters, one the tallest Italian towers so far, in Turin. The aesthetic impact of the Intesa Tower (166 m high) may remind the historical Beabourgeois origins of Piano, but the research and design of the interiors and workplace developed with Michele De Lucchi enriches the Turin skyscraper of that comfort that is the reason of Italian design's fame and success worldwide.

The "Italian design" concept in the research and development of new buildings could be indeed another criterion for possibly naming a tower "Italian" or "almost Italian". A good historical example of this kind is Torre Galfa where the genius of Melchiorre Bega succeeded in designing a full curtain wall façade

elegantly wrapping the concrete structure. And still someone has been able to enrich the new City Life area with a tower which not only resolves technological, climatic and aesthetics problems of tall buildings, but becomes a true landmark. It is the Arata Isozaki and Andrea Maffei team who managed to compose and build a *quattro mani* the Allianz Tower, a true skyscraper (209 m high) which puts together the essentiality of Japanese culture and the richness of an Italian utmost care in defining form and function up to the smallest detail.



ALLIANZ  
TOWER  
Arata Isozaki

© Alessandra Chemollo

Then it could be that in the Milan early summer, when on our way back home a glimpse of the setting sun shines on Zaha Hadid's bronze twisted tower close to Isozaki and Maffei's calm monument, for some seconds, we will realize that these buildings would like to be small cities, each one dedicated from their designers to the utopia of a larger, better, healthier *Urbis*. A "New City" like that one seen and drawn by Italian officer sapper Antonio Sant'Elia, silver medal of military valour, shot on battlefield in Monfalcone the 10<sup>th</sup> October 1916: just a bit more than 100 years ago.

Stefano Casciani  
*disegno* magazine Editor/Publisher

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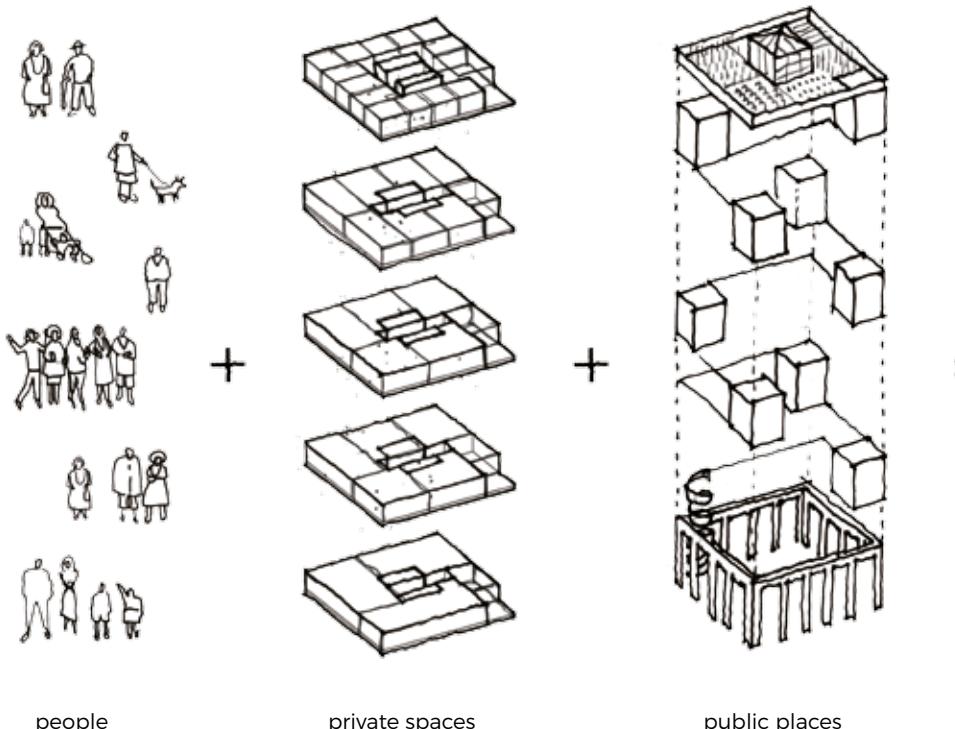
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# Elevated neighbourhood: a vertical strategy for an informal community

COMMUNITY : CONNECTING PEOPLE TO PLACE



Cibic Workshop and Lombardini22 prepared in June 2018 a graphic presentation on the many possibilities and opportunities that vertical constructions create for communities. Never having worked on the design and construction of a tall building himself, Aldo Cibic decided to consider with his team that our society needs to promote density in order for all to live together. What became the central and more interesting element of research presented is that in a tall building a very articulate life for people can exist. The basic idea is to understand how the designer and the architects can improve the sense of community through the creation of skyscrapers dedicated to residential living. The challenge in this sector is not only related to the best construction techniques, but also to make sure that the life of the people living in high-rising buildings needs to be good.



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# The cityLife Residences stand proud amongst the Towers

**T**he Three Towers are an iconic symbol of CityLife, one of the largest mixed urban development projects in Europe.

Milan is changing and is headed skywards. This could be the motto for the two most significant urban and real-estate developments Milan has seen in the last 15 years: Porta Nuova and CityLife. In fact, during this period, the Milan skyline has been transformed and seems to be pursuing the upward trend of other international metropoles. One small aside: just to show the city is still a "beauty with a soul", in Milan everything is compared, first and foremost, with the height of the Madonnina, the statue on the highest spire on the Milan Cathedral! And the true stars of this pursuit could only be the skyscrapers: taller and taller with an aura of glamour, chosen by leading banking and insurance groups looking to establish their head offices right in the heart of the city.

As far as CityLife is concerned, it all started back in 2004 when an area of land right next to the city centre was freed up after transferring the old exhibition centre. Apart from the overall quality that characterised the winning project, the proposal includes a mix of public and

private areas, parkland, services and commercial, business and residential spaces extending over an area of 366,000 m<sup>2</sup>. And as a point of reference for the urban and landscape significance of the intervention, design work on the Three Towers included in the regeneration project was started straight away by three internationally acclaimed architects: Arata Isozaki, Zaha Hadid and Daniel Libeskind.

## Diversity within the urban fabric

CityLife has been designed according to a concept characterised by sustainability and the quality of life and services it offers. As far as the actual buildings are concerned, they are divided into three high-rise business towers, which act as the focal point of the entire project, and two residential complexes. The Allianz Tower, designed by Arata Isozaki in collaboration with Andrea Maffei, has already been completed. Standing 209 metres tall with 50 storeys, it is currently the second tallest building in Italy (second only to the Unicredit Tower in Milan) and, in 2017, became the head office of Allianz. This skyscraper is also known as "The straight one" and is made up of a module with six storeys of curved facades,

which is then repeated eight times. Designed by the architect Zaha Hadid, the Generali Tower (170 metres tall with 44 storeys), also known as "The twisted one", is set to become home of the offices of Generali later this year. The particular characteristic of this tower is that it has a twisted form and is made entirely from concrete.

As far as the third tower designed by Daniel Libeskind is concerned, the concrete for the foundations has been poured, now that the accountancy and fiscal consultants PwC (PricewaterhouseCoopers) have signed an 18-year rental agreement, construction work is underway. Known as "The curved one", it will be 175 metres tall with 28 storeys and will have a lobby spread over two levels connecting it to the shopping centre below (see *Realtà Mapei International* no. 69)

## The Zaha Hadid and Daniel Libeskind Residences

A s far as the residential complexes are concerned, standing on one side in Via Senofonte are the Residences designed by Hadid, while opposite, in Via Spinola, are the Residences designed by Libeskind. The two residential lots differ in terms of architectural style, but in common they both include high quality environmental and safety features; all the residences, for example, are certified class A (the highest rating according to Italian current standards) and will be supplied with renewable energy.

The seven buildings by Zaha Hadid (with a curved plan section and in varying heights from 5 to 13 storeys) have a total of 230 individual living units, while the eight structures by Daniel Libeskind vary in height from 4 to 13 storeys and have a total of 355 living units. Even though the two complexes are different the two designers have adopted similar solutions, such as the use of corner terraces and panelled facades, as well as carefully choosing the direction they face to make the most of the sunlight and to provide residents with views of the surrounding parkland. The buildings by Zaha Hadid, however, stand out for their curvilinear volumes broken by the positioning of balconies and terraces, with a horizontal flow and rounded edges that evoke the topographical layout of the city park. The Libeskind Residences are a succession of buildings with multi-faceted surfaces which tend to favour a more vertical development. The facades of the Hadid Residences are made from fibre-cement panels with wooden inserts to partially cover the balconies. The American architect, on the other hand, has preferred to dress his buildings with self-cleaning, reinforced porcelain tiles with a finish similar to Travertine stone and large, undulating Persian blinds made from bamboo fibre polymer.

## Mapei intervention

Mapei also took part in this challenging undertaking right from the very start of the CityLife project, collaborating with the installation of the foundation slab back in 2012 by supplying a series of bespoke admixtures for the concrete mix. The company was also involved in the construction of both the Allianz Tower and then the PwC Tower. For the phases of the project after the foundation slab, the main contractor worked closely with Mapei Technical Services, a





constant presence on site with their mobile laboratory, assisting the contractor's engineers and proposing the most appropriate solutions and systems.

Cutting-edge technology that respects the environment is a priority for Mapei and this is also reflected in the various solutions employed to install internal floor and wall coverings and the use of internal and external coatings for the CityLife Residences.

Both of the complexes designed by Zaha Hadid and Daniel Libeskind had new screeds from 4 to 8 cm thick installed made from TOPCEM, a special hydraulic binder for normal-setting, quick-drying (4 days), controlled-shrinkage screeds.

The wooden floorings were bonded in place with ULTRABOND P913 2K. This product is a two-component adhesive and, once the two components are carefully mixed together, they form a smooth paste which is easy to apply with a notched trowel. When the adhesive hardens, it forms a strong film with high bonding strength to all types of substrates, including ceramic.

For the coloured coating on the walls around the lifts, it was recommended to use ELASTOCOLOR PAINT, a one-component acrylic resin-based paint in water dispersion.

Once completely dry, this product forms a flexible finishing coat which is impermeable to water and aggressive agents in the atmosphere, while remaining permeable to vapour.

The finishing coat chosen for the internal spaces was DURSILITE modified acryl resin-based washable paint. This paint has good covering properties, a matt finish, a high whiteness level and low dirt pick-up properties, a very important characteristic for public areas, and may be applied by brush, roller or spray. The cycle comprises the application of at least two coats of DURSILITE with a re-coat time of 6-12 hours. DURSILITE is available in a wide range of colours, created using the ColorMap® automatic colouring system.

For the stairways between each floor, ceramic tiles were installed using KERAFLEX MAXI S1, a high performance, deformable, slip-resistant cementitious adhesive with extended open time and Low Dust technology, classified as C2TES1 according to EN 12004 standards. ULTRATOP LOFT, one-component trowelable cementitious paste, was also used to create the landings and stairs.

For the balconies in the Hadid Residences, Mapei rec-

ommended skimming their underside with PLANITOP 100, a one-component mortar based on special cement binders, selected fine grain aggregates, additives and polymers, while for the balconies in the Libeskind Residences, the ceramic tiles were bonded with KERABOND cementitious adhesive mixed with ISOLASTIC elasticising latex instead of water. Mixing KERABOND with ISOLASTIC improves the characteristics to meet the requirements of class C2ES2 (improved highly deformable cementitious adhesive with extended open time) according to EN 12004 standards.

The external surfaces were smoothed over with a 1 to 3 mm thick layer of MAPEFINISH two-component mortar, with MAPENET 150 alkali-resistant glass fibre mesh embedded between the first and second layer, and then porcelain tiles were bonded to the facades using KERABOND adhesive mixed with ISOLASTIC latex.

The walkways of the residences (about 5.500 m<sup>2</sup>) have been realized with MAPEFLOOR BINDER 930, one-component transparent, aliphatic, polyurethane binder for decorative flooring mixed with coloured natural aggregates.

Last but not least, Mapei intervened also in the parking area (about 7.000 m<sup>2</sup>) with MAPEFLOOR SYSTEM 31, non-slip, multi-layer epoxy system for floors subject to light and medium traffic and where high chemical resistance is required.



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# CityLife and the Domodossola's axis



**A**rata Isozaki decided to cancel the construction of his portion of residential units at the moment in which the skyscraper designed by him was soon to be completed and the residential projects by Daniel Libeskind and Zaha Hadid were concluded. As a consequence the board of CityLife decided to invite ten architects to suggest new residential buildings to replace the original Isozaki project. We were among the invited firms and we decided to go against the initial requests of the client of a conspicuous new development including a new tower. We decided instead to propose a system of six buildings, simple and repetitive, which would not represent a competition for the three main towers located in the central area of Piazza Tre Torri. Each apartment would have overlooked the park, without barriers between the development and the green area.

Our project was selected by the client and used as the new masterplan to redefine the angle of the old Milan Fair adjacent to Via Domodossola.

During the further development of the project we collaborated with Antón García-Abril and Eduardo Souto de Moura to develop the urban solutions of the project. We reduced the number of buildings from six to four slender constructions, two couples of twin towers, designed and located in order to avoid blocking the road axis converging in that point. The repetition of the buildings was aimed at excluding unicity and therefore the conflict with the three protagonists, the three main towers (Libeskind, Hadid and Isozaki). Within our project, the two North towers were

designed by the Iberian colleagues, while the other two by our group. The project was developed until the definitive stage, only to be completely changed at the end.

The new management of CityLife opted for increasing the quota dedicated to commercial activities, linking directly the city with the shopping district. The idea was also originally suggested during the competition stage by ourselves, but was at that time discarded.

As a result the new residential tower were suspended and we were given the task to design a door connecting the centre of the city from Via Monti-Quattro Febbraio, through a commercial gallery. The new solution would also have to include a unique residential tower as the



sole design and formal element. Everything would have been developed in two phases: first the commercial part and then the residential unit. Nevertheless the difficulty lied specifically in creating a system formally coherent but to be developed in two separate phases.

**T**he project of the gallery, due to its location and the links with Piazza Tre Torri, connects the city with the commercial activities located on the podium by descending two meters. It uses the top of the shops to create rooftop gardens and moving up the public space by five meters in order to naturally reach the entrances of the towers. With the solution we designed the seven thousand employees working in the three skyscrapers can see their space for relax extended and have as a result a public garden at the same level of the entrances to their offices.

On the main avenue a large urban loggia allows the new project to be juxtaposed to the Padiglione Scintille and to create an open, but protected, space, from where the public can move toward the shopping centre.

**F**inally a specifically designed construction functions as bridge and connexion between the different levels of the city, accessible from the ground level as well as the gardens level. A large "Brunelleschiana" staircase connects, on the other hand, directly the urban loggia to the rooftop garden.

*Mauro Galantino Architetto  
and DBA Progetti SpA*



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# Focal Alignment: CityLife and the Generali Tower

The tower typology has traditionally been considered as a static and unchangeable building setup: an engineering and technocratic solution, governed exclusively by economic factors. Architects have been left with the design of the outer shell and the lobby. In 2004, for Milano Fiera, Zaha Hadid Architects have developed the project starting from the role that the new tower should play in the district and the town of Milan. The plot - a focal point of the main neighbouring roads (Viale Scarampo, Via Domenichino, Via Michelangelo Buonar-

roti, Via G. Rossetti and Via Angelo Poliziano) - does not align exactly with the mathematical rectilinear geometries of the neighbouring *Fiera* yet is slightly tangent to urban axes. ZHA used this characteristic as the inspiration for formal investigations - and this is the origin of the dynamic movement underlying the design of the whole project. The small misalignments of the urban design and the resulting tensions have been absorbed by the design and formally resolved into a twisting motion, a vortex.

The retail pavilion, located at the base of the office tower, is an integral part of the project. The flow lines of the city - turned into pedestrian paths through the park of CityLife - structure the geometry of the Masterplan with a more organic manner. This large and sinuous promenade becomes the natural connection of the main parts of this new urban centre. The flows, both tangent and convergent, create the torsional tension that propagates to the tower. The horizontal energy, arising from the urban form, is resolved in vertical force: from the base the spiral vector winds around reaching the top. Two deep cuts in the double skin, from the outside, mark the entrances of the tower, while, when seen from the inside, frame the preferential views of the city and the landscape. These grooves, visible at a great distance, underline the rotation and reveal the relationships established by the tower with the context. While the upper

part of the tower connects with the centre, the Duomo, the Castello Sforzesco and aligning with the important urban axis that ends on Santa Maria delle Grazie, the lower part of the tower dialogues with the square, the park and the commercial pavilion. Just as the masterplan is rooted in the city by conforming the park to the fabric of Milan, so the building is rooted in the CityLife area, taking inspiration from the context.



© Hufton+Crow

The efficient symmetrical plan of the tower is uniformly repeated on each floor by rotating around the central core. The rotation is not linear and the growth is controlled by a parametric function, determining the dynamic design of the tower.

The outcome is the result of a sophisticated coordination. The excellent result has been possible only thanks to a far-sighted client, a collaborative GC and the highly specialized support of world-class engineering companies. Among these we want to mention REDESCO for the structures from the preliminary to the testing, AKT for the structural concept, MAX FORDHAM & MANENS-TIFS for the M&E, ARUP for the façades engineering and BUILDING CONSULTING for specifications and cost control.

Paolo Zilli

Senior Associate, Zaha Hadid Architects

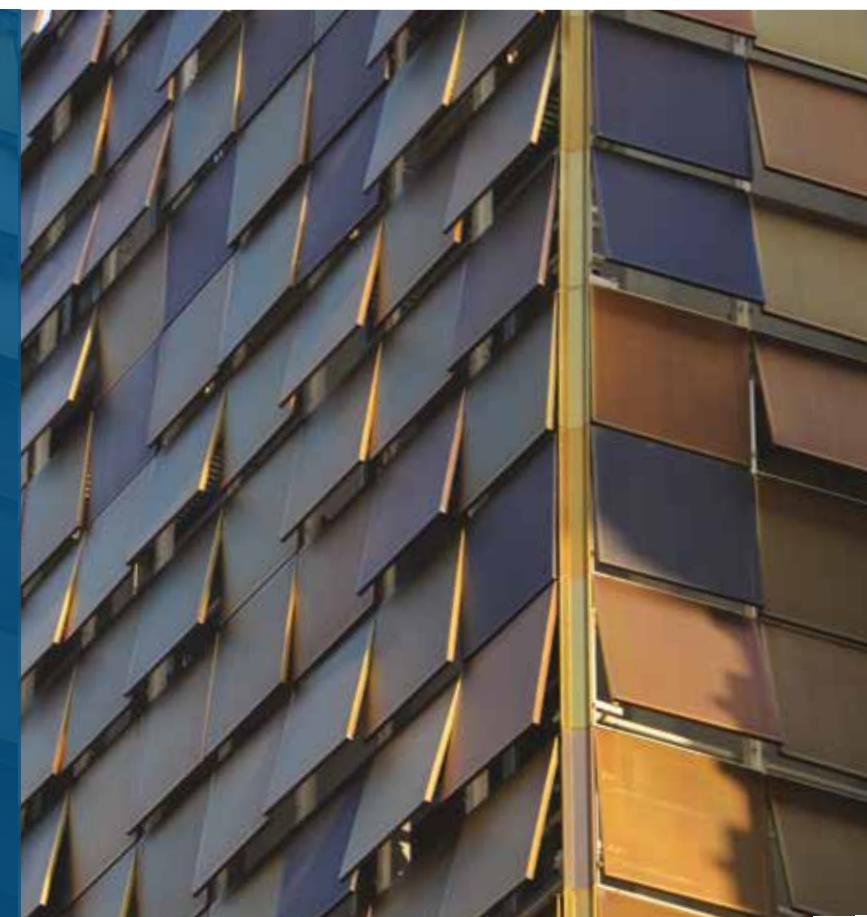


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# Connecting tall buildings to the city: plaza and retail district

While the CityLife area in Milan is still awaiting the conclusion of the construction of its third tower, designed by Daniel Libeskind, last year in November it was officially opened the new retail district and plaza connecting the towers to the people. The conversion of the area has proved to be a big success among milanese and visitors, becoming the largest shopping district and pedestrian area of the city. Overall the new area has been developed by Zaha Hadid Architects, One Works and Mauro Galantino, we have asked architect Leonardo Cavalli from One Works to talk about their approach.

*The official inauguration of the new CityLife retail district and plaza created by your demonstrated the importance of the creation of a necessary connection between the towers, the park and the urban fabric of Milan. Can you please tell us a little more about how you worked on the creation of such links?*

Prior to being appointed for the design of Piazza Tre Torri we were part of the winning team for the park competition. I guess this helped us understanding the potential of such place and the need to establish strong relationships with the context.

These relationships not only work horizontally, connecting the central plaza and the towers to the park and the city around. They also define the relationship between



PIAZZA TRE TORRI  
designed  
by One Works

the towers, the public ground at their feet and the public transport underground. Contemporary complexity suggests public spaces to be thought tri-dimensionally. While the three towers redefine the iconic character of the town, the plaza and the park work together to generate the urban public space of the 21<sup>st</sup> century. North-south routes across the park and the link between piazza 6 febbraio come together in the main central plaza connecting the towers to the existing city fabric.



PIAZZA TRE TORRI  
designed  
by One Works

*The open spaces have been managed in a very impressive way within Piazza Tre Torri. What would you say are the main highlights in your approach?*

Our main effort was to establish simple and effortless relationships between the different parts. The plaza is a very artificial soil; it is actually the roof of a sunken building carrying retail spaces, a metro station and an underground car park. Topography was the main tool we worked with, gently connecting the differences in levels between the surrounding park and town, the two levels of the plaza and the entrances to the premises around.

While sitting among three iconic buildings we decided to work with a more familiar language for the definition of the public space. Cobblestones were used for the upper plaza, yet slightly twisting the typical layering system, and lighting fixtures were borrowed from the Milanese



PIAZZA TRE TORRI  
designed  
by One Works

streets. Familiarity was the tool to bring the character of the city within such an iconic development.

*How were the retail functions introduced within the plaza's structure?*

The very first thing we discussed with the client when starting the project was the retail diagram. Within a space made of single elements, the towers, continuity with the urban fabric and within the new development was essential to build a proper urban public space where retail was to have a significant role. Having addressed the retail one should not forget the real vocation of public spaces. Social sustainability goes beyond the specific use of spaces. It needs places for people to interact.

*What was the use of green areas within the project?*

The main plaza sits in the middle of a public park. The use of green features in this case helps addressing the character of the different areas of the public realm carrying a more formal approach than the park. Green areas



Giulio De Carli  
Leonardo Cavalli  
Managing Partner  
One Works

and canopies were also used to generate tension in such a vast open space introducing elements at human scale for the need of the pedestrian. While the towers establish a dialog with the wider city, the public realm is talking to the everyday citizen.

# Vegetative technologies in sustainable construction strategies

**Construction of the most performing tall buildings from the point of view of environment, resilience and sustainability.**

In recent years vegetative technologies – i.e. green roofs/façades, roof/vertical gardens, green living envelope – have taken advantage of the newest technical advances in the field of agronomy and have applied them to architecture. Their applications to buildings have also become more popular, due to the appreciation by the occupants and the marketability for developers. Moreover, the positive reception from the general public and city governments have encouraged designers to incorporate the most advanced vegetative elements inside and around new buildings.

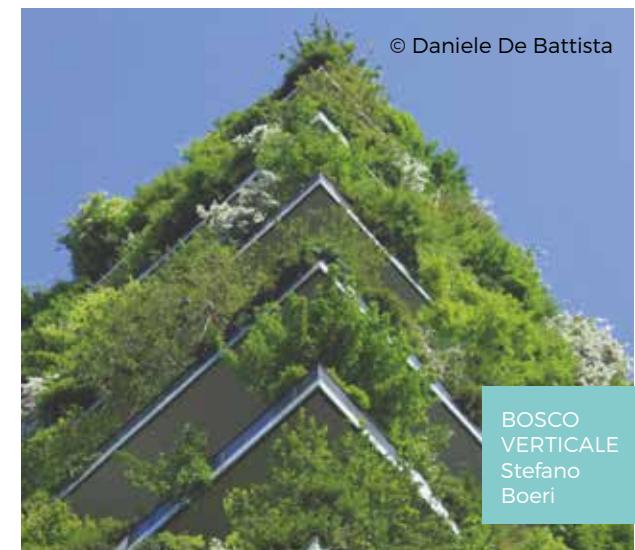
A common question on these technologies is: are vegetative systems for building envelope safe, economically feasible and performing?

Italy in particular has played an important role in improving the expertise in green systems.

In 2008 an Italian standard on vegetative roofs was published and then refined in 2015 with UNI 11235. This is



a comprehensive document, that significantly pushes a safer market, empowering producers, nurserymen, and rising the quality of the technology.



BOSCO VERTICALE  
Stefano Boeri

The effort made for producing this Italian standard paved the way for experimentation which led to a recognised masterpiece. To the point that the Bosco Verticale – the two residential towers that brought in the center of Milan 710 trees and more other 20.000 plants for a total of 94 plant species – received the “Ct-buh 2015 Best Tall Building Worldwide Award”. The Bosco Verticale is a new type of vertical garden (there are previous examples of trees applied on building envelope, but not so extensively): achieving a sophisticated landscape design, studied in every single botanic and aesthetic aspect, fully integrated to the architecture and the interiors, as well as to the surrounding and the city. The terraces hosting the vegetation are comfortable extensions of the flats and ensure external spectacular spaces, besides contributing to the overall performance of the façades. At the same time, the plants, dense and lush, bring high level of biodiversity into the city, being a model for important green corridors crossing the urban land.

Considering the increase in the amount of vegetative systems and the level of new technologies involved, development of research and standards is imperative to the continued improvement in new systems, but we can definitely say that with Bosco Verticale Italy has innovated at the global scale, as demonstrated by the number of orders for similar solutions that are flowing from several parts of the world.

Elena Giacomello  
Università Iuav di Venezia



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# Podium Hadid Milan: Enclosure systems technology

The IALC's production of the enclosure system for The Podium Hadid in Milan has been a real challenge for exhibiting the avant-garde and the competence of the group, nowadays one of the most well-known in Italy for what concerns aluminium façades and cladding systems.

The structure has a variable height that swings from about 12 to 20 meters: at the basement there is a commercial gallery, whereas upstairs can be found many

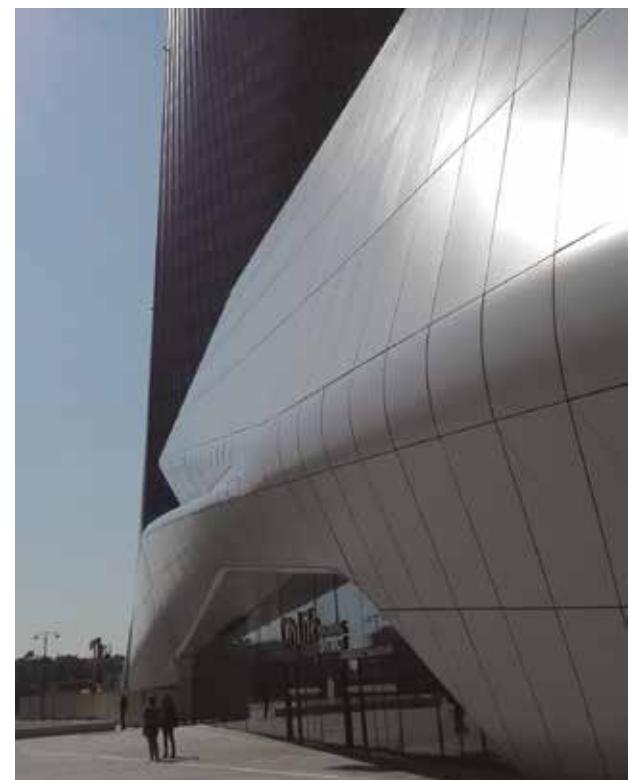
sorts of restaurants, offices, shops, and also a cinema. The external enclosure system is mainly designed in aluminum and glass and it covers approximately 14.080 mq. The area is divided into three types of façades:

- an aluminum enclosure, including spandrel panels and perforated panels;
- a unitized curtain wall with insulating glazing;
- a curtain wall with laminated glass.

The opaque aluminum enclosure is made of two different systems which shape the complex geometry of the building, ensuring the ideal thermal condition. The rainscreen system is completed with an aluminum substructure supporting the external open jointed panels.

In order to create the sinuous shape of the building, the IALC team has realized warp designed panels, both single and double curvature, in addition to the most common flat ones.

The design with 3D and BIM software's support has been essential for the coordination of the design, devel-



opment, production and installation of the system and has allowed to create panels characterized by a unique geometric shape.

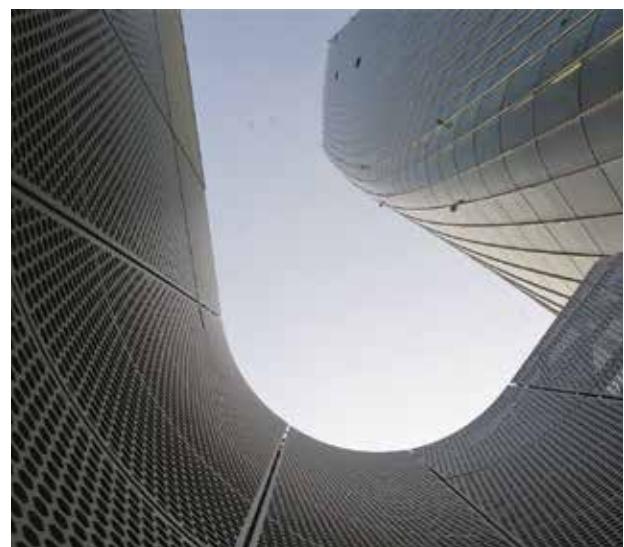
The basement is mainly transparent and is made of unitized glazing curtain walls with double glazing and laminated glass, both flat and curved, utilized all around the building.

Here the two different curtain walls face each other, a layer of patterned insulating glass creates the separation between the environments: in those areas of interface between systems, the double-glazed curtain wall is characterized by a soft transition serigraph.

Considering the variety of panels and design dimensions, no screen printing frames have been used, instead it has been identified an alternative technology for moulding: the digital printing on glazed plate.

The coordination of the many phases of the project has given life to an exclusive design giving shape to the architectural design.

*Cav. Carlo Orso  
President IALC*



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# Focchi Group: from the tallest tower in Italy to the New York skyline

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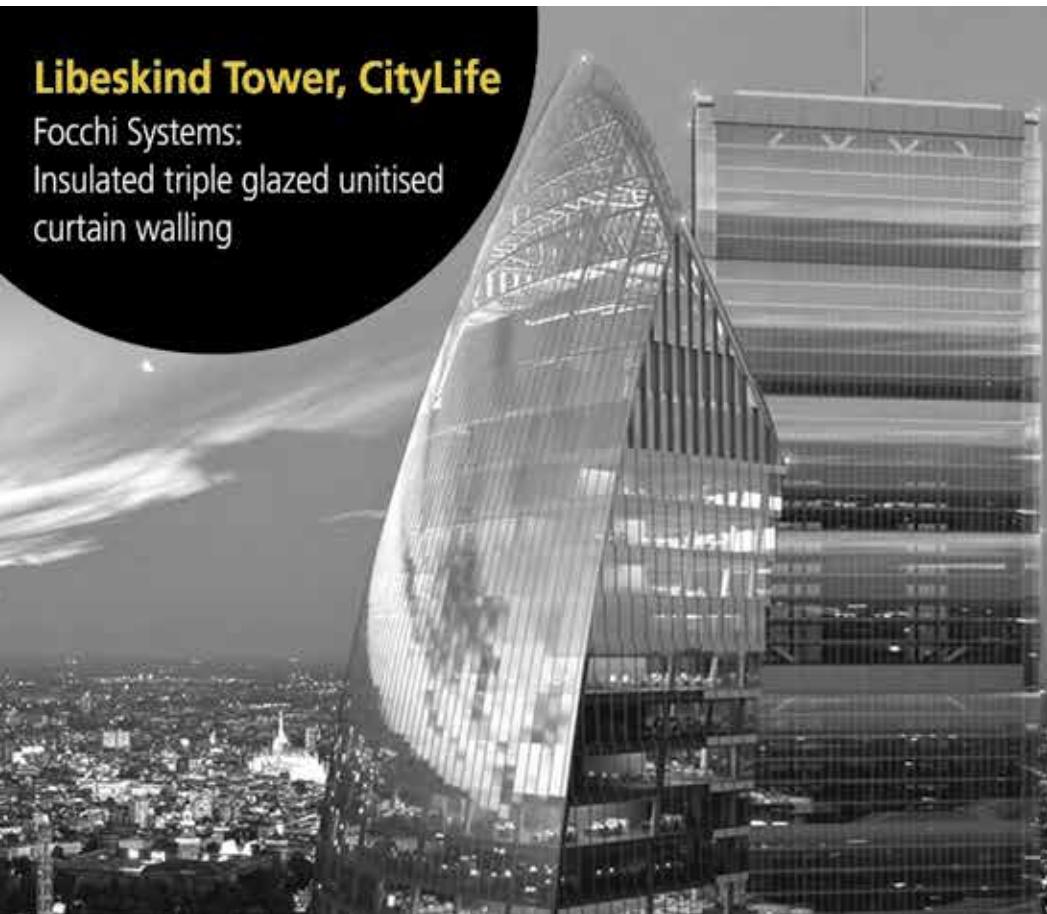
Redeveloping the existing real estate assets through energy efficiency criteria, in order to achieve a more sustainable future: this is the mission of "FBP – Future is a Better Place", the latest Energy Service Company of Focchi Group, the well-known Italian family business specialized in design, manufacture and installation of bespoke architectural envelopes. FBP will operate within the large buildings energy and environmental sustainability sector.

"High-rise buildings is where people will live and connect each other, showing different habits and attitudes. It is important to create this better place for the future generations. We can carry this out just working the only way we know: with ethics and professionalism, but also with humility and bravery," said Maurizio Focchi, CEO.

Born in Rimini in 1914, Focchi Group has today branches in Rovereto, Milan, London and New York. It is involved in research activities for housing energy efficiency and in designing tall buildings envelopes. In Italy, the company has been contract awarded for the curtain walling of the upcoming Libeskind Tower in Milan (CityLife district), while involved in several projects in UK and in the innovative Solar Carve Tower on the New York's High Line.

The future of architectural envelopes is the technological present of Focchi Group. Unique works stem from the synergy between architectural creativity and the technological ability to mould different materials. Every project is a bespoke solution and a way to redevelop urban spaces in the name of social and environmental sustainability.

"Changes require the courage to make decisions which inevitably lead to some risks. It is necessary to be ambitious even if it can be frightening". Underlined the architect Daniel Libeskind, the mind behind the namesake tower, working with Focchi Group to complete the "Three Towers" of the redevelopment project of the former Milan Fair.



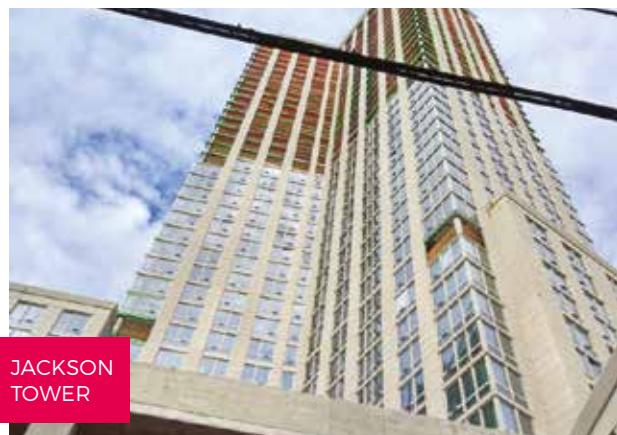
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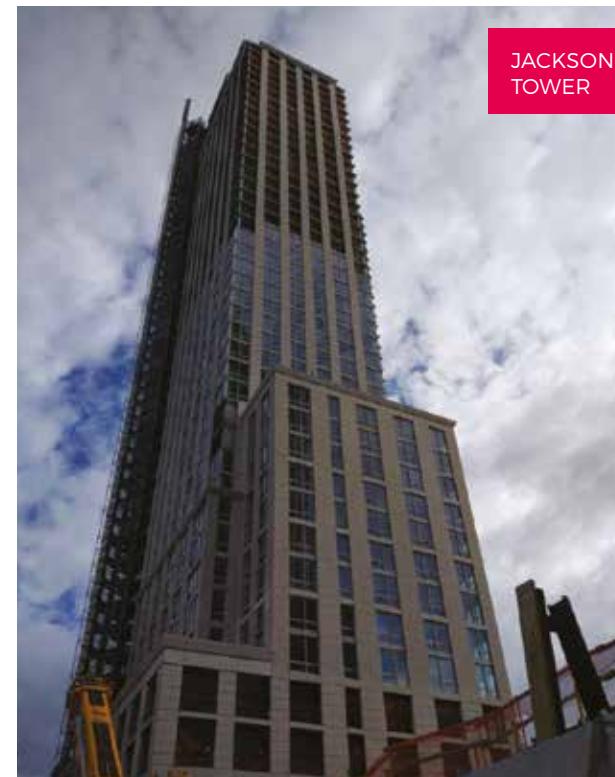


# Gualini: “A great challenge for curtain walling”

“**T**all buildings are one of the great challenges of these days for the curtain walling design and realization. More than in the past we contend with requests of buildings that considerably develop in height and this has determined an increase in studies and research of our technical department, now capable of offering to our clients a customized design and an ever improved quality along with the higher standards of security”. Ruggero Gualini, CEO of the firm Gualini, explains with these words the engagement of the industry located near Bergamo that in the last years has been asked as a partner by prestigious international architectural



JACKSON  
TOWER



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firms for realizing the envelope of skyscrapers, mainly abroad, but not only. Among the most important realizations stand out the two Jackson Towers, in Queens (NYC), at the moment in construction. This project

consists of two buildings of 52 and 45 stories respectively, for which Gualini designs and realizes aluminum curtain walls, units and windows.

**A**nother important project has been the realization of one of the most sophisticated control tower in the world so far: at Ben Gurion airport in Tel Aviv, 120 meters high. In this case Gualini has designed and realized curtain walls, ventilated façades and windows.



BEN GURION  
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“**F**rom the perspective of design and execution, the realization of tall buildings involves an array of problems that engage the whole company to find a solution. This is due – the CEO explains – to the high soliciting loads, for the difficulties in the installation phase, but also to the maintenance system that needs to be forecast. Especially, the building height induces a conspicuous increment of two important load types: the wind pressure, normal to the façade plan, and the seismic action parallel to the façades. Consequently, connection systems must be accurately studied, such as the profiles, these latter pretty always customized and designed on the base of every single project in order to withstand loads and at the same time insure stability and lightness. For the New York Jackson Towers for example, we had to perform several tests on curtain walling systems, concerning security under wind loads, air and water tightness. These tests followed strict security parameters and standards that also required the use of an airplane engine”.

John Sereni



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Palazzo Lombardia	Milan	161	40	2011	Pei Cobb Freed	Best Tall Building Europe 2012
CTUBH ITALIAN ANNUAL AWARDS FINALISTS						
						NOMINATION
Allianz Tower	Milan	209	50	2015	Arata Isozaki / Andrea Maffei	Best Tall Building Europe 2016
Grattacielo Intesa Sanpaolo	Turin	166	38	2015	Renzo Piano Building Workshop	Best Tall Building Europe 2016
Garibaldi Complex – Tower B*	Milan	98	26	2010	Progetto Cmr	Best Tall Building Europe 2012
Net Center	Padua	80	20	2010	Lvl Architettura	Best Tall Building Europe 2011

Source: Guamari based on Ctuh (Council on Tall Buildings and Urban Habitat) data

\* Tower B (as the smaller Tower A) is the refurbishment of a tower designed by Laura Lazzari and built in 1992

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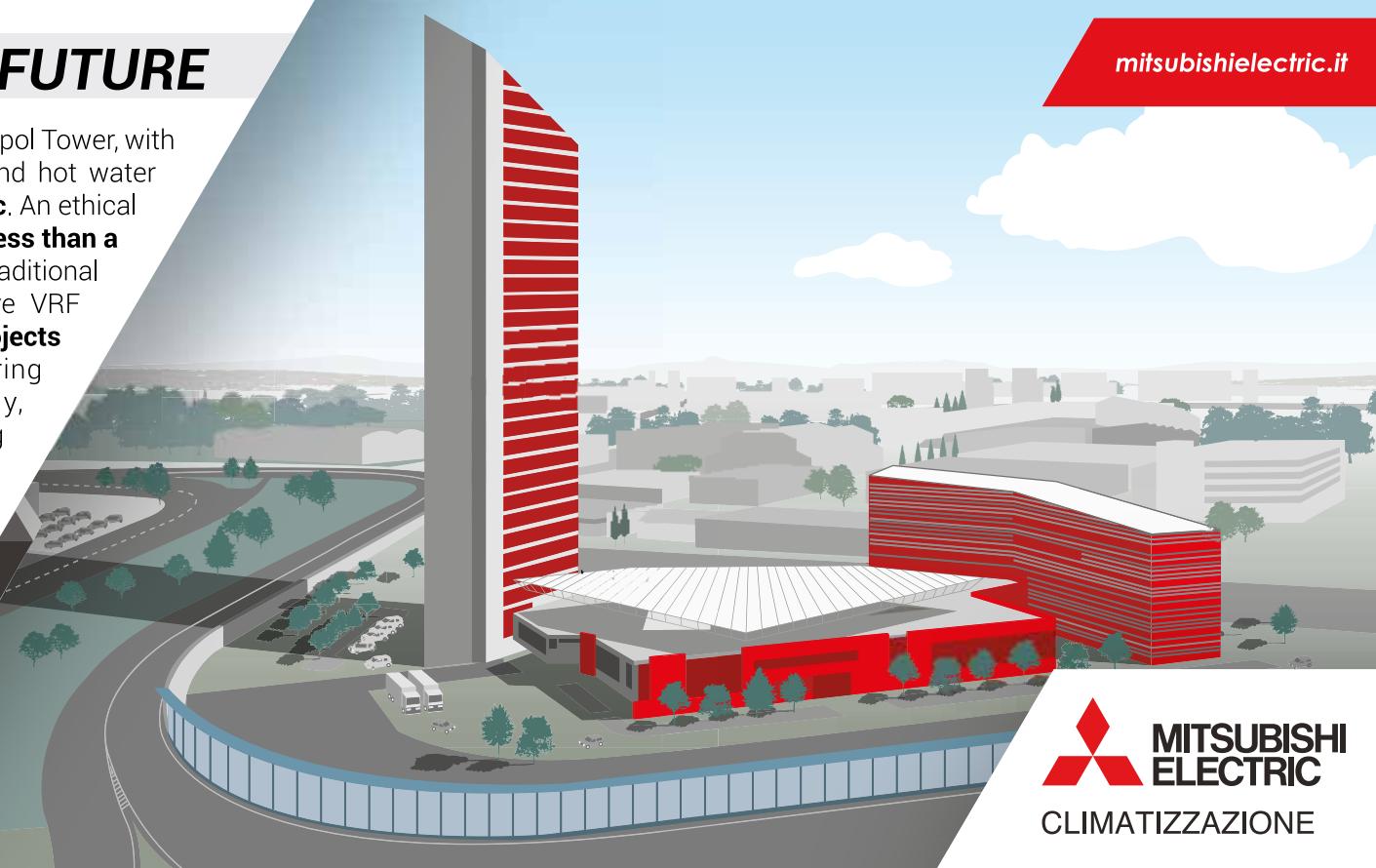
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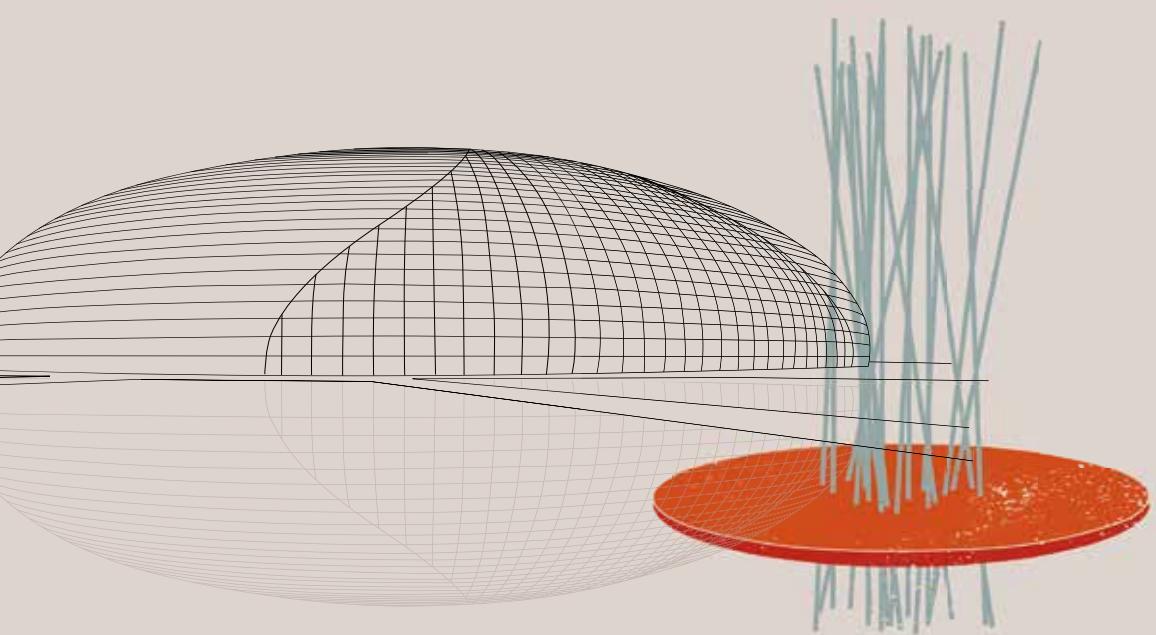
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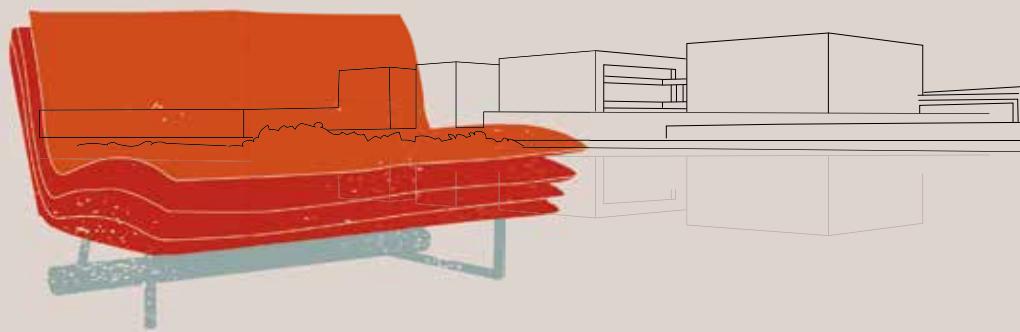
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