

**TECNOFIN GROUP**  
*Building the future*  
*Industry & Real Estate*



• **Company Profile**

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# EXECUTIVE SUMMARY

## BUSINESS IDEA

- **INDUSTRY + REAL ESTATE:** Tecnofin proposes a unique model of industrialized building; it is not just a finished product or a real estate transaction, but must be seen as a contribution of valences, among them synergetic, interactive and they are combined to create added value and justify, for the client, the investment.
- **SOCIAL, CULTURAL AND ECONOMICAL VALENCES :** A growing number of governments are attracted to Tecnofin system for social housing operations because their aim is to improve the quality of life saving significantly on construction and management costs. The Tecnofin system is also the natural connection between technological innovation and cultural growth of the community.

## MARKET OPPORTUNITY

- **AFRICA:** It is estimated that in 2100 the 40% of the world population will live in Africa cities and that in the coming years, the GDP of African countries will grow on annually average between 4% and 8%. Africa is no longer seen as a problem, but is becoming an opportunity.
- **REST OF THYE WORLD:** The global stock of institutional-grade real estate will expand by more than 55% from USD 29.0 trillion in 2012, to USD 45.3 trillion in 2020. It may then grow further to USD 69.0 trillion in 2030. By 2025, over 60% of all construction activity is forecast to take place in emerging markets, up from just 35% in 2005.

## STRATEGY

- **TECHNOLOGICAL INNOVATION :** Presence of the most innovative technologies in the field and of production systems exclusive patents.
- **SOCIAL ASPECT:** Industrialized Real Estate, being able to guarantee accommodation to all, has a very important social impact to the community.
- **CUSTOMER ORIENTED:** A "tailor made" solutions to meet all the customers needs.
- **INTERNATIONALITY:** Presence of initiatives (agreements, JV, ongoing negotiations) in 12 countries worldwide.

## TECNOFIN TECHNOLOGY

- EASY HOME<sup>®</sup>
- 

## OUR GROUP

### History

- Ever since our inception we have dealt with the design of buildings for industrial, quickly becoming a point of reference for the sector nationally.
- We have created many new qualitatively advanced and cutting edge prefabrication systems that satisfy the needs of our customers both in Italy and abroad.
- Several of ours patented systems have had great technological and commercial success.
- In fifty years we have designed and produced millions of square meters of buildings for industry.

### In Italy

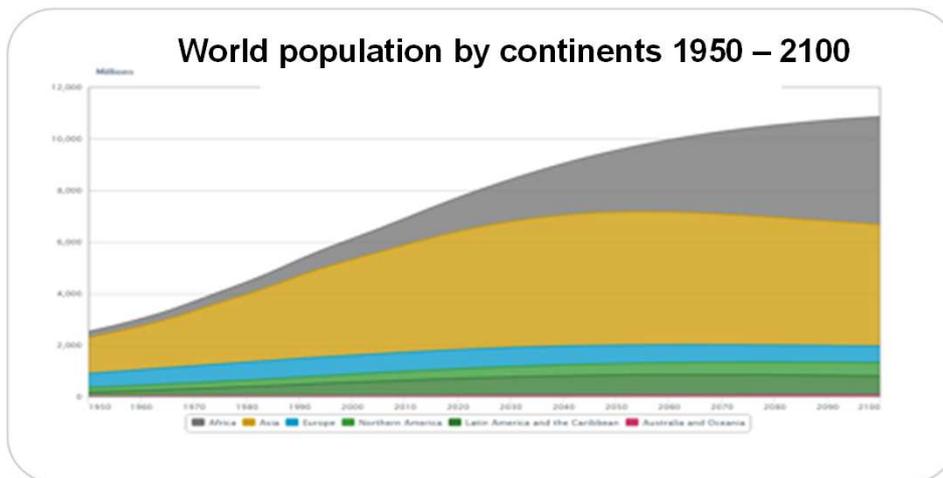
- In Italy our technologies are the benchmark of the precast industry. 20 millions m2 of single-storey industrial buildings.
- 1 million m2 of multi-storey commercial and tertiary buildings.
- 10.000 accommodations single and multi storey.

### Our Group

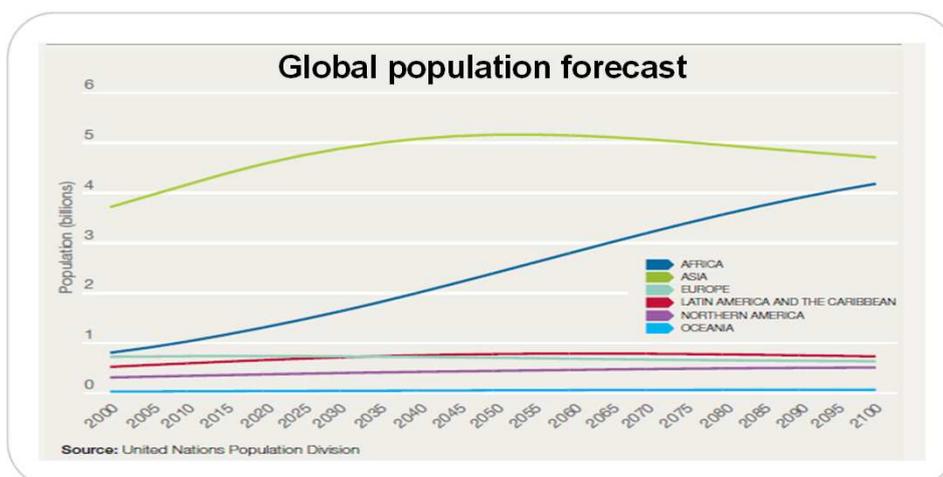
- It is composed of specialists in the field of Real Estate and prefabrication:
- “Tecnofin” for the developing of foreign operations
- Its exclusive patent “**REP® SYSTEM**”
- We produce elements for precast buildings for residential, commercial and industrial and we also build factories for the production of the same. We can provide all building products that make new large urban complexes.

# MARKET OPPORTUNITY

## Market Opportunity – Africa (1 / 5)



- It is estimated that by **2100** the world population will reach about **12 billion** people.
- The demographic boom of the expansion will be led by the African continent whose population is expected to quadruple by 2100.
- **In fact it is estimated that in 2100 the 40% of the world population will live in cities in Africa.**
- It is therefore expected a significant increase in demand for residential real estate, commercial and of any kind.
- The **time factor** is the true element of scarcity for this continent that is experiencing the most important demographic trend in human history.



*...Africa is no longer seen as a problem, but is becoming an opportunity...*



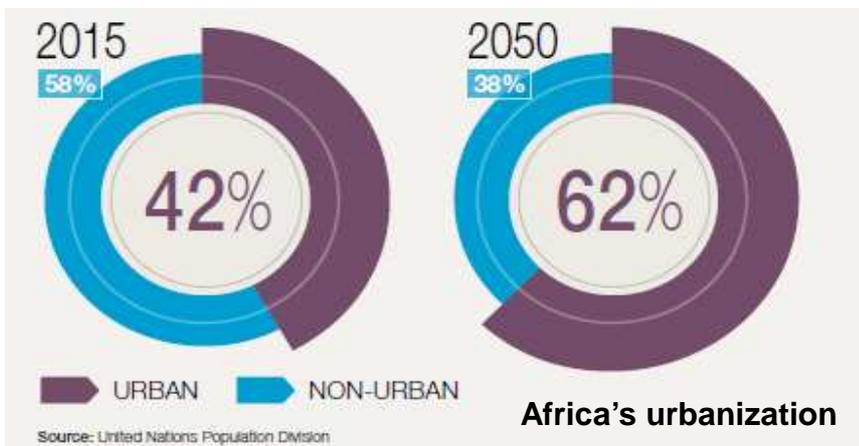
## Africa's biggest economies, 2014 GDP estimates



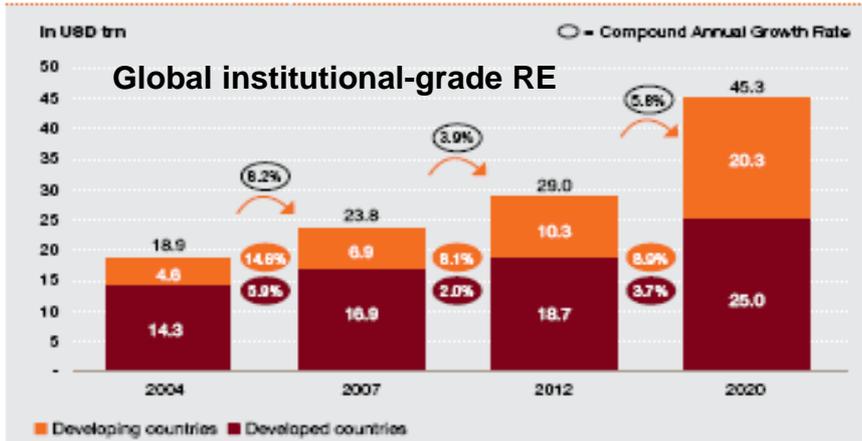
- According to estimates of the International Monetary Fund over the next five years, 13 economies that grow faster will be in Africa.
- It is estimated that in the coming years, the GDP of African countries will grow on annually average between 4% and 8%.

## GDP growth forecasts, 2015-19, average growth p.a.

- To date, the largest economy in Africa is represented by Nigeria which produced \$ 594 billion GDP and it is estimated that Lagos has passed Cairo in terms of number of inhabitants.



- This growth process has certainly been helped and encouraged by the recent improvements in governance, telecommunications, financial services and infrastructure of the Country.

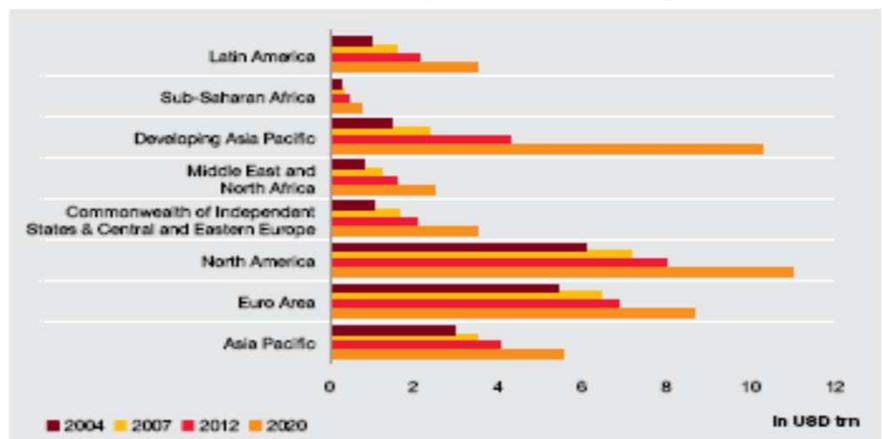


- It is estimated that to 2020 and beyond, is the beginning of a time of unprecedented opportunity for real estate investors and asset managers.
- The global stock of institutional-grade real estate will expand by more than 55% from USD 29.0 trillion in 2012, to USD 45.3 trillion in 2020. It may then grow further to **USD 69.0 trillion in 2030**.

- This huge expansion in investable real estate will be greatest in the emerging economies.
- Cities will present opportunities ranging from low risk/low yield in advanced economy core real estate, to high risk/high reward in emerging economies. The greatest social migration of all time - chiefly in emerging economies - will drive the biggest ever construction surge.

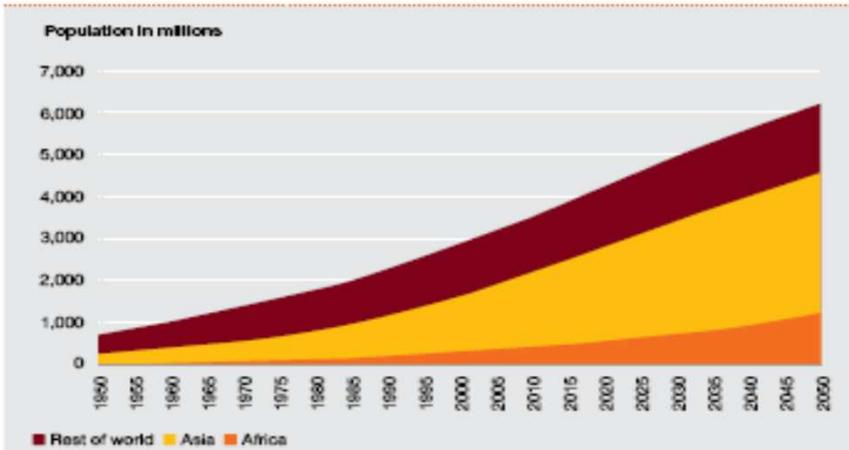
### Trends in institutional-grade RE per region

- All buildings will need to have sustainability ratings, while new developments will need to be sustainable in the broadest sense, providing their residents with pleasant places to live (**social valence**).



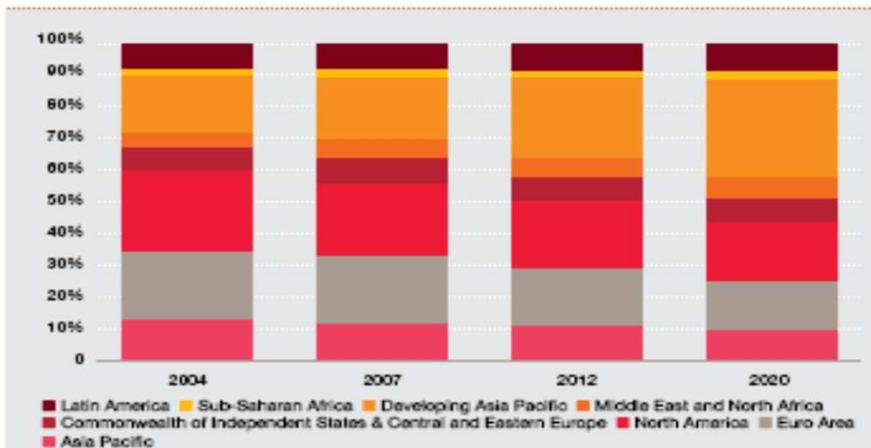
- Real estate managers, the investment community and developers will need to partner with government to mitigate risks of schemes that might otherwise be uneconomic. In many emerging economies, governments will take the lead in developing urban real estate and infrastructure.
- New wealth from the emerging economies will intensify competition for prime assets; the investment community will need to think laterally to earn attractive returns.

### World urban population from 1950 to 2050



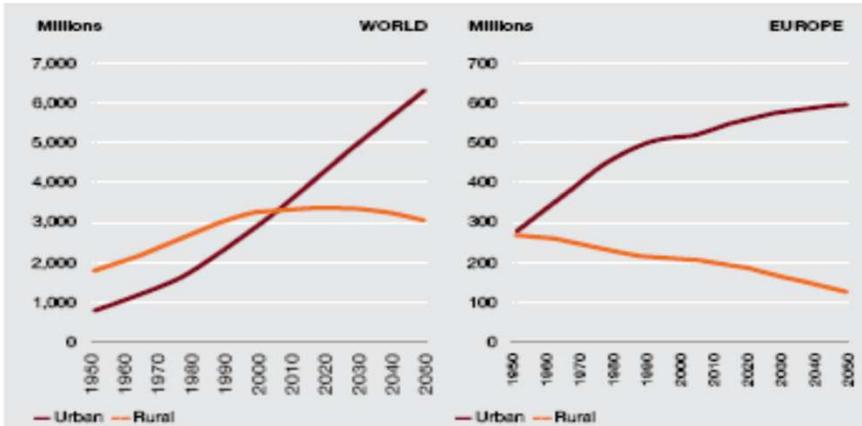
- By 2050, the urban population will increase by 75% to 6.3 billion, from 3.6 billion in 2010.
- By 2025, there will be 37 'megacities', up from 23 today, and 12 of these will be in emerging markets.
- 1.5 million residents a month will move to Chinese cities for the rest of this decade.
- By 2020, emerging markets will dominate the world's top five economies.

### Relative GDP per region



- By 2025, over 60% of all construction activity is forecast to take place in emerging markets, up from just 35% in 2005.
- Looked at another way, the following nations will account for 72% of expected construction activity: China, the US, India, Indonesia, Russia, Canada and Mexico.
- Emerging Asia is expected to be the fastest growing region for construction between now and 2025, followed by sub-Saharan Africa.
- Nigeria alone will need almost 20 million new homes compared to 2012.

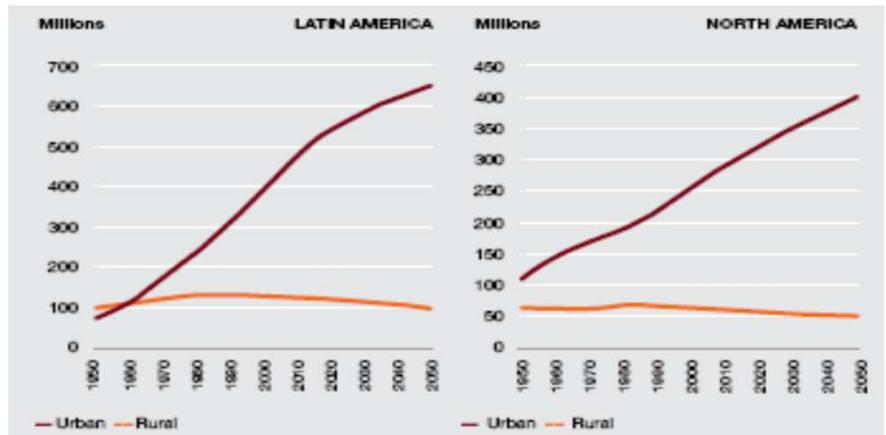
## Urban and rural population trends



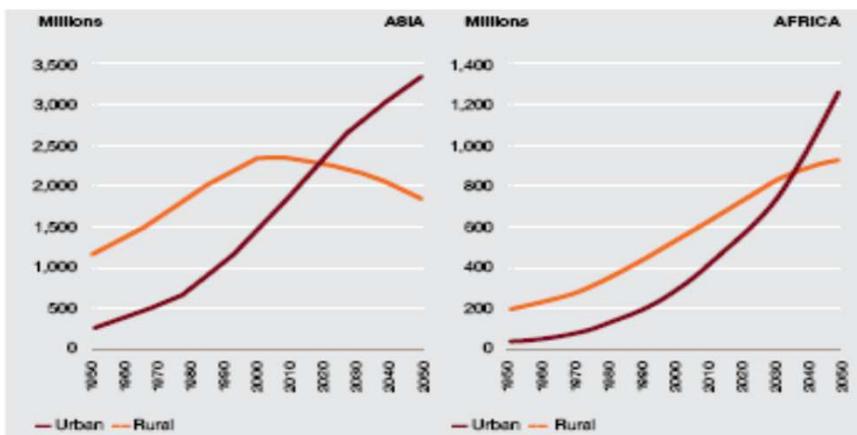
- In China, India and the Middle East, entire new cities will be built, using eco-efficient technologies to reduce their environmental impact.
- China, the world's most populous nation, will see the biggest migration of all. Millions of people every month will live the new 'Chinese dream', moving to the cities in search of a prosperous middleclass existence.

## Urban and rural population trends

- Across Africa, the Middle East and Latin America, too, the cities will swell as people move in search of a better life.

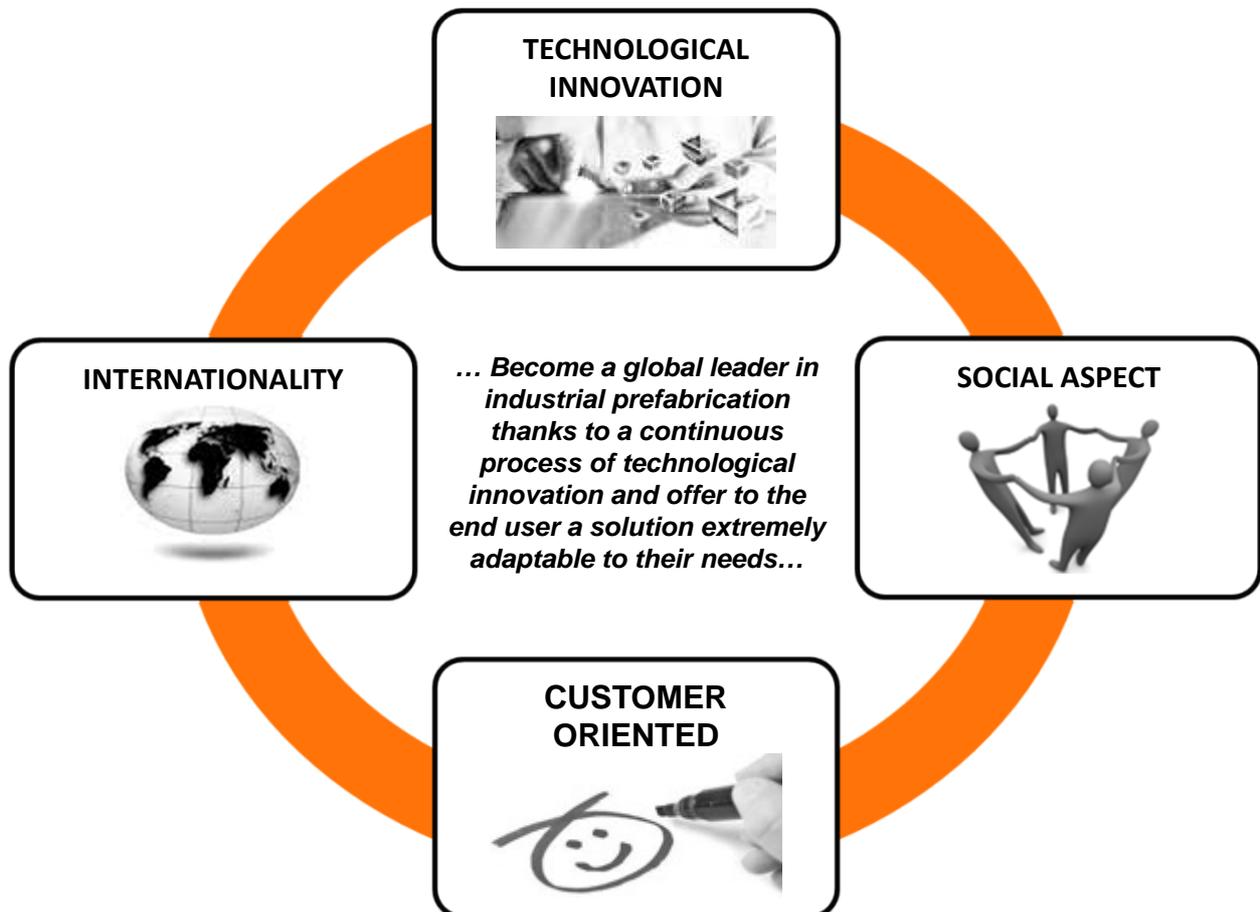


## Urban and rural population trends

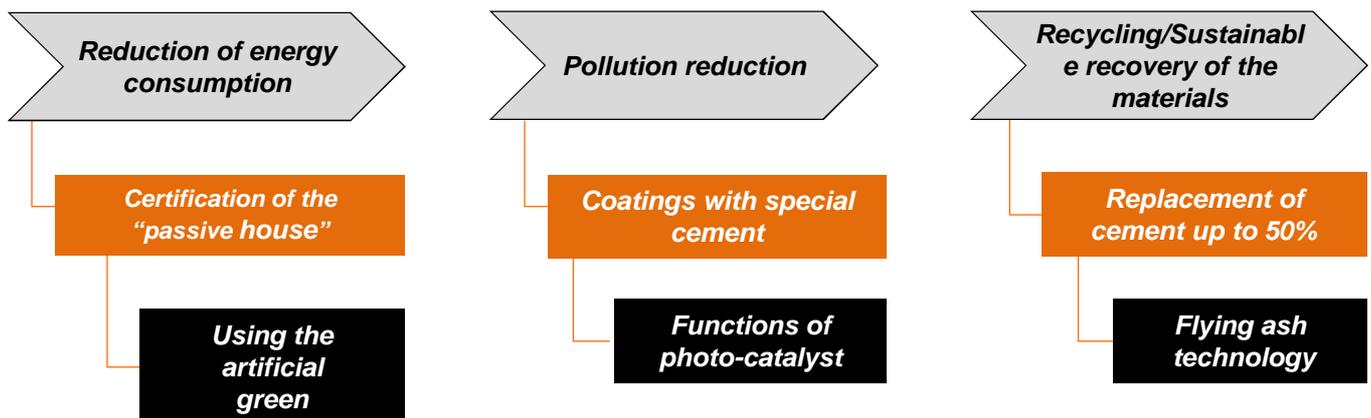


- But urbanisation is not just an emerging markets' phenomenon. The developed world's cities are growing at a huge rate as well. London's population, for example, is forecast to rise to 10 million by 2031, up from 8.3 million today.

# THE STRATEGY



- The group uses the most innovative technologies in the industry, allowing us to answer to any building.
- Exclusive patents of production systems like **REP SYSTEM**® for the construction of high performance and versatile beams, columns and slabs with **SISTEMA rep**
- **PRECAST AND PRESTRESSED SYSTEM**: is a totally precast building technology covering all kinds of concrete elements starting from isolated foundation elements towards columns, beams and different types of slabs.
- **EASY HOME**®: the **EASY-HOME**® system allows the use and integration of the different elements of the PRECAST and REP® systems for creating buildings, even of considerable height, totally laid in dry way and completed, where needed, with mechanical structural joints, wet and mixed, along with casting finishing of composite floor slabs according to the performance required by the structures-
- New products, technology and processes have all evolved together into the systems and this is the result of a continuous investment program in R&D carried on with great success for 50 years-



### «A floor per day»

- A “Just-in-Time” production process: reduction stock between one phase and the next, optimizing logistics and considerably increasing productivity levels that allowing us to build a floor per day



### Numbers

- **Residential:** production capacity from 150,000 to 600,000 sqm per year



## SOCIAL

*A home for everyone*

- High production capacity
- Durable goods
- Perceived as traditional method
- Safety at work
- Intense training program
- Clean construction site, waste reduction

## CULTURAL

*Design motivation*

- The importance to live in a lovely homes
- High quality
- Repeatability of structures
- Modular buildings
- Flexible in the time
- Constant technological innovation

## ECONOMICAL

*Cost reduction*

- Execution speed
- Improve and develop concrete industry
- Lighter buildings with less components per square meter of surface
- Saving in the construction costs
- Low energy consumption
- Low management and maintenance costs

### Our goal

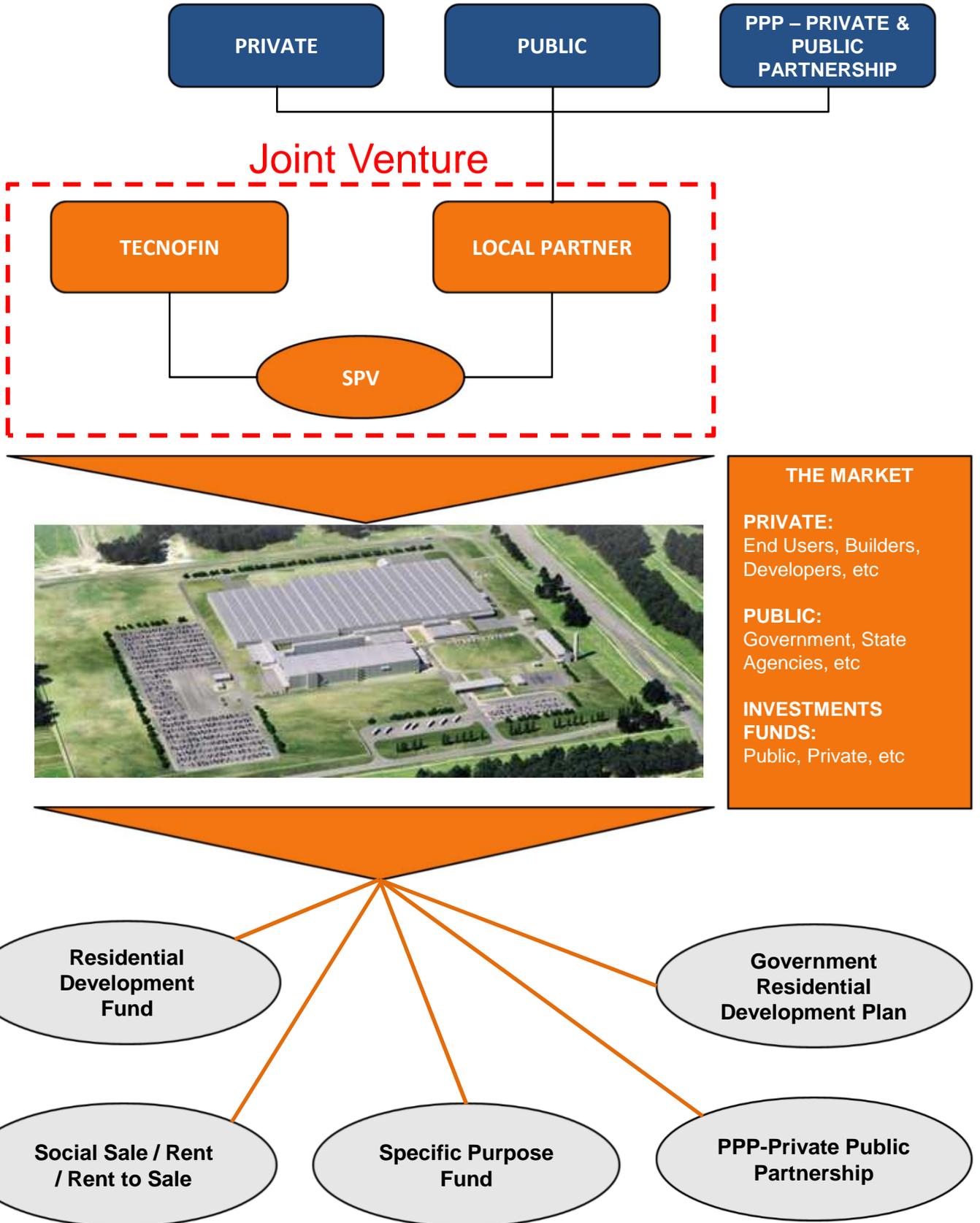
- Offer our finest technologies and spread our know-how making it available to the Country, for a development that is for all
- Fully functional buildings finished in a very short time with quality and maximum product functionality
- Maximum simplification of the construction phases
- Specialized staff training

### Our proposal

- Contributing to the growth of the country by providing new jobs, new technologies and housing for all
- Construction of a factory equipped with cutting-edge installations, equipment and patents for the production of prefabricated elements together with design, technological development, innovation and transfer of know-how
- We can supply all building products that makes new large urban complexes and study and implement the infrastructure of neighborhoods
- We pay great attention in the definition of the types of buildings that better meet the needs of the Customer
- We also offer a wide range of constructive details with different finishing levels

### Business Model

- The 80% of the work takes place inside the factory, only 20% in the dockyard
- A clean and comfortable working environment with great attention to worker safety
- Operation that no longer depends on climatic factors with the opportunity then to work in Countries with difficult climatic conditions without having to stop production
- Internal Research & Development laboratories with a software designed ad hoc
- We propose two business models: as industrial developers for the construction of real estate projects in JV with a local partner or turnkey factory at its full capacity



## TECNOFIN TECHNOLOGY





Technological Sponsor

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- ✓ In Italy there is a great tradition in precast technology development.
- ✓ Precast buildings satisfy most of the construction needs faster and better than traditional building technology.
- ✓ High quality materials, engineering of all the production process, and concrete versatility can achieve the best results in every building realization.
- ✓ The great flexibility of concrete permits to build every architectural project in an industrial, faster and simple way than traditional construction systems.
- ✓ Many kind of buildings couldn't be build without the precast techniques development.
- ✓ Tecnofin follows the European Technical Standards (EUROCODES) for structural design.

# EASY-HOME

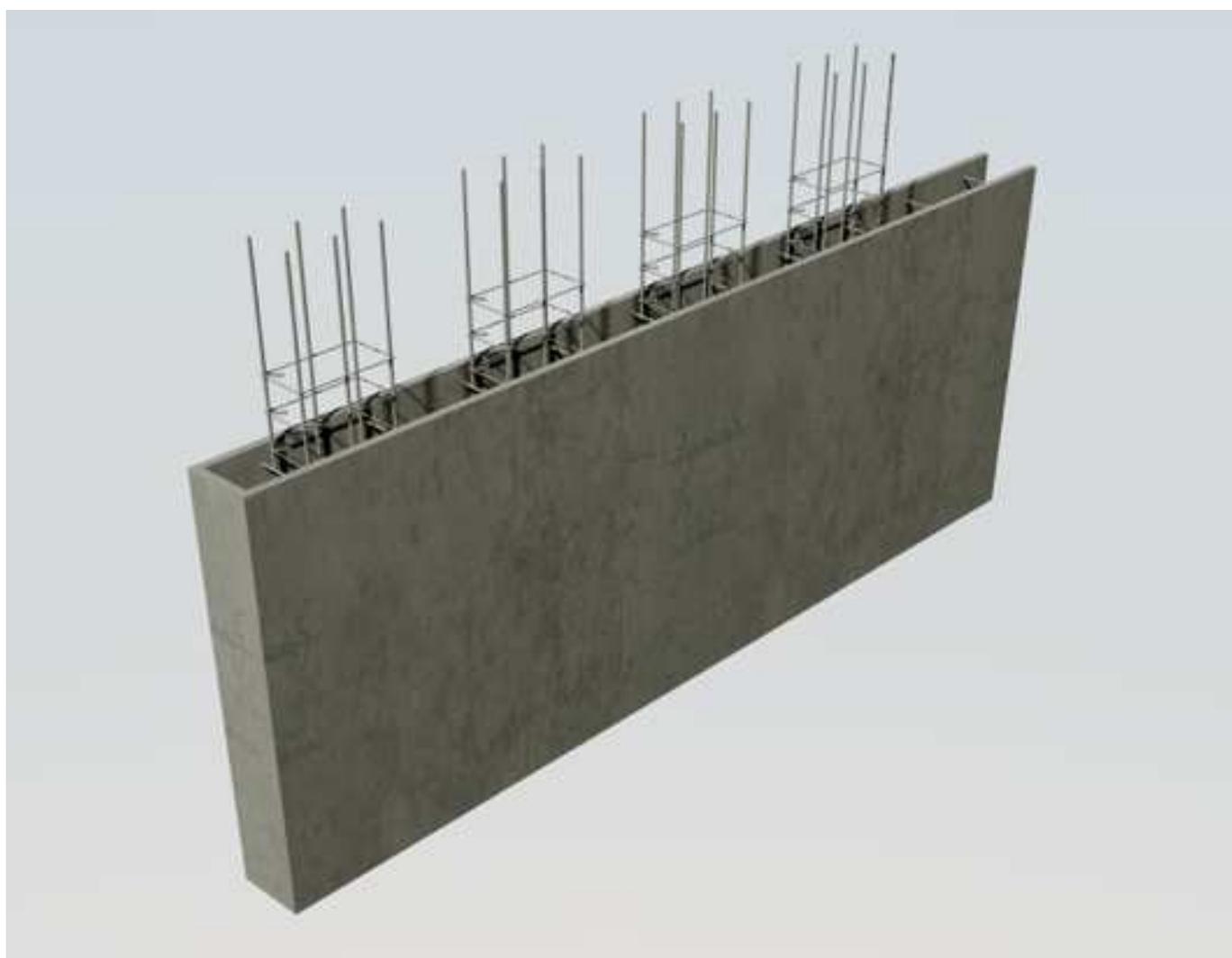


- ✓ By merging the technology of loadbearing panels and all the integrated technologies of CSP comes a unique and versatile system for civil and residential construction
- ✓ The EASY-HOME® system allows the use and integration of the different elements of the PRECAST and REP® SYSTEM for creating buildings, even of considerable height, totally laid in dry way and completed, where needed, with mechanical structural joints, wet and mixed, along with casting finishing of composite floor slabs according to the performance required by the structures
- ✓ Additional typical features of the EASY-HOME® system are loadbearing panels, non-loadbearing panels, precast stairs and insulating balconies



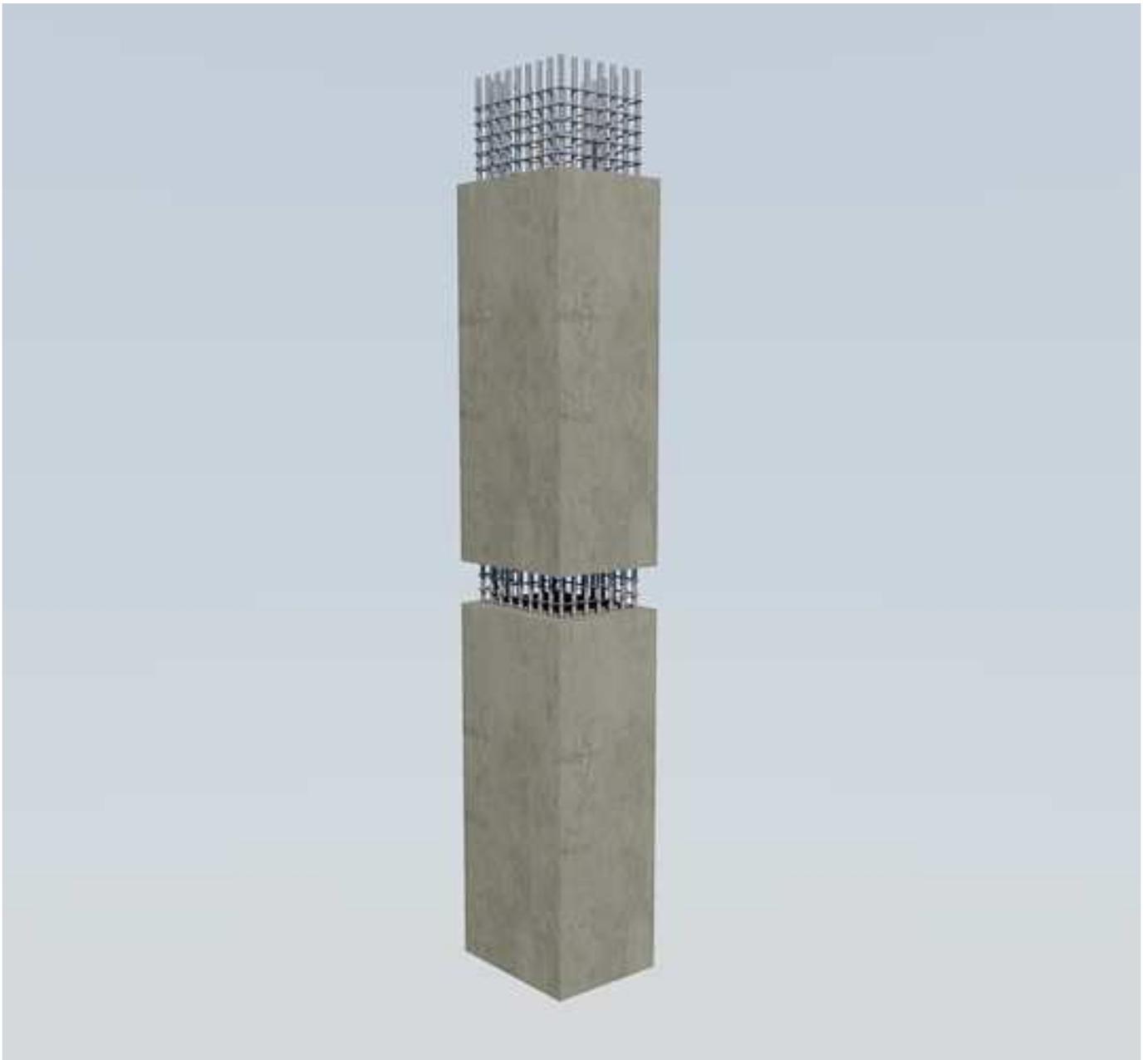
## COMPOSITE PANELS

- ✓ Finished surface in concrete
- ✓ Great flexibility for the realization of supporting partitions
- ✓ Dry mounting with appropriate reinforcements and supplementary casting



## WET JOINT CONCRETE COLUMNS

- ✓ Precast multi-storey columns with openings, at the level of the planes, for the insertion of the reinforcement connection of prefabricated beams and any support brackets.
- ✓ Possibility to produce multi-storey columns, up to 4 floors for each single column.



### REP® BEAMS WITH CONCRETE CASE BACK

- ✓ Self-supporting welded steel section
- ✓ Concrete lower case back around steel reinforcement used as support for slabs, frameworks and lower fire protection
- ✓ Steel rebars for structural continuity
- ✓ Possible camber made during welding operations
- ✓ Eventual preset side banks made of steel or concrete



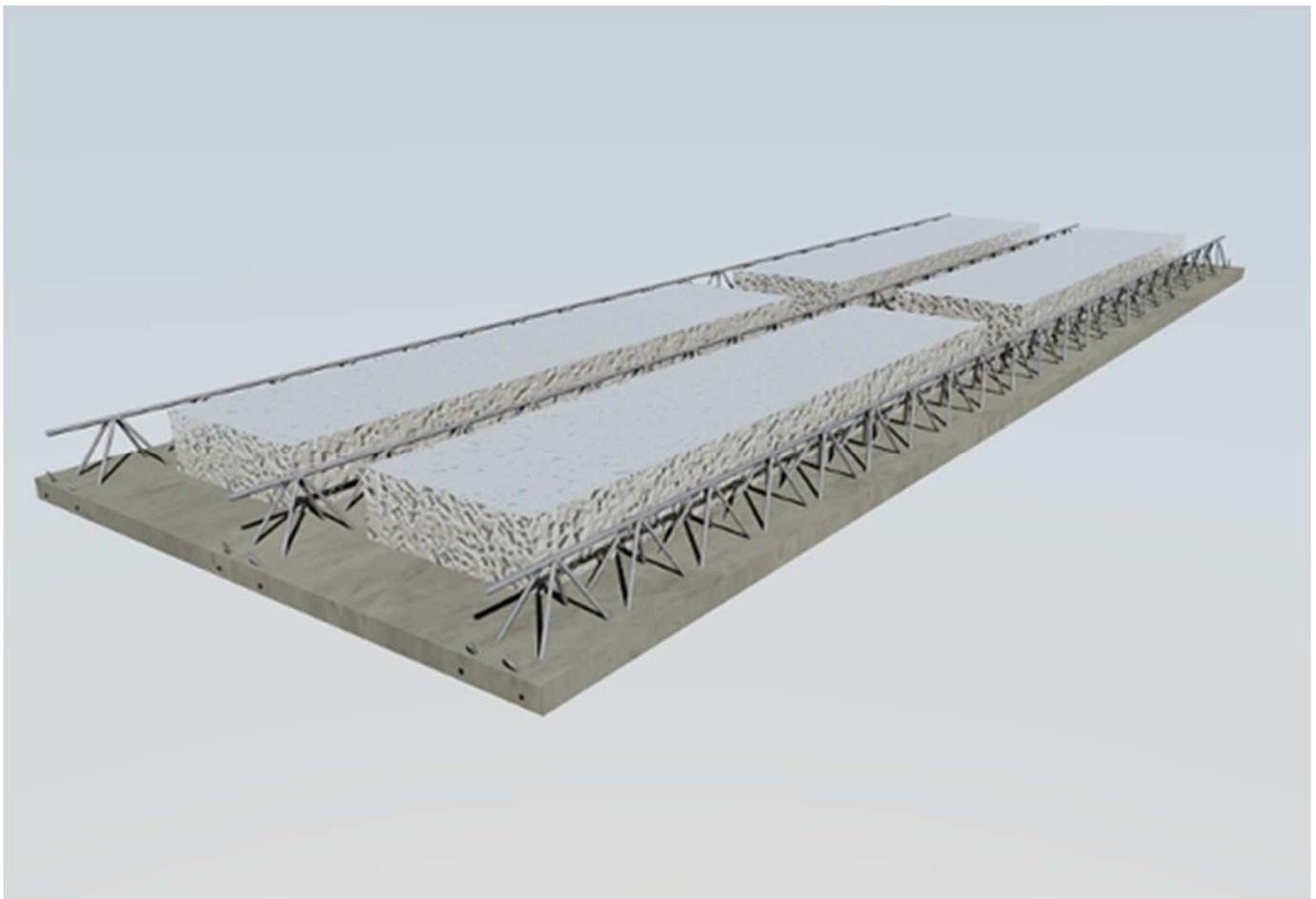
## REP® BEAMS WITH STEEL PLATE CASE BACK

- ✓ Self-supporting welded steel section
- ✓ Lower steel plate case back used as support for slabs, frameworks and lower strained reinforcement
- ✓ Lower steel paintable for fire protection
- ✓ Steel rebars for structural continuity
- ✓ Possible camber construction
- ✓ Eventual preset side banks made of steel



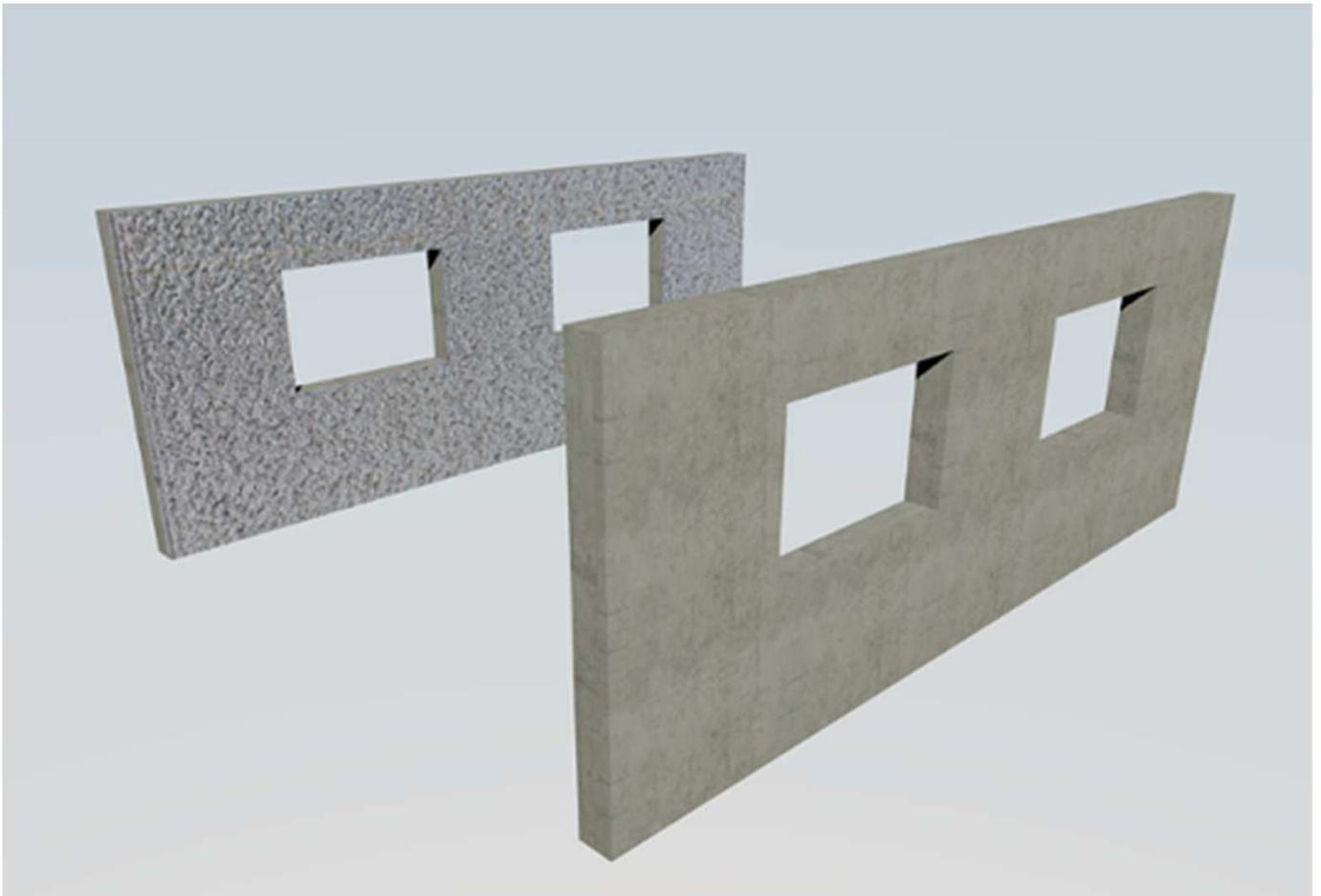
## FLOOR PLATE WITH LATTICE GIRDERS

- ✓ Floor slabs with lattice girders elements and EPS blocks used to reduce slab structural weight
- ✓ Completed in situ with steel bars and meshes reinforcement for structural continuity and cast in situ



## PRECAST CONCRETE PANELS

- ✓ Solid reinforced concrete panels
- ✓ External finished surface in concrete (smooth grey / white or other colours, or in marble / granite washed finishing)
- ✓ Great flexibility for openings and integration of insulating windows



## LOADBEARING PANELS

- ✓ Panels with solid concrete structure from 16 up to 24 cm of thickness
- ✓ Layer of EPS or rock-wool insulation connected to the structural layer used for continuous insulation of coat facades or as an intermediate layer for panels with external concrete finishing
- ✓ Eventual outer concrete layer 5-6 cm thickness
- ✓ Possible finishes with concrete facings , marble / granite washed or matrix
- ✓ Integration with factory fixtures and any place for plants
- ✓ Vertical connections with wet joint armed with steel loops overlapped
- ✓ Horizontal connections with wet joints, wall shoes and metal sheaths

The loadbearing panels in their various configurations are used for stairwells and elevator cases, as well as for structural building walls.

At the same time they can fulfill the function of vertical support in substitution of columns and insulated facade for the outer perimeter of the building.

The solution with external coat is recommended for buildings up to 8 - 12 floors since it must then be completed in situ.

Above this height it is advisable to use insulating panels and external concrete coating.

## NON – LOADBEARING PANELS

- ✓ Self-supporting panels with solid concrete structure from 8 up to 12 cm of thickness
- ✓ Layer of EPS or rock-wool insulation connected to the structural layer used as bases for continuous insulation of coat facades or as an intermediate layer for panels with external concrete finishing
- ✓ Eventual outer concrete layer 5-6 cm thickness
- ✓ Possible finishing with concrete facings, marble / granite washed or matrix
- ✓ Integration with factory fixtures and any place for plants
- ✓ Suspending mechanical connections to columns and structural elements

Non-loadbearing panels in their various configurations are used for internal partitions placed on continuous slabs, as well as external facing of facades in punctual structures through mechanical support connections.

## CONSTRUCTIVE PHASES

Realization in situ of the foundation structures with the bars of recovery arranged for the vertical bearing elements.

This phase is similar to what happens for the above ground subsequent scaffolding.

Placement of the precast elements for the construction of vertical structures.

Placement of the steel reinforcement, concrete cast in situ for vertical structures.

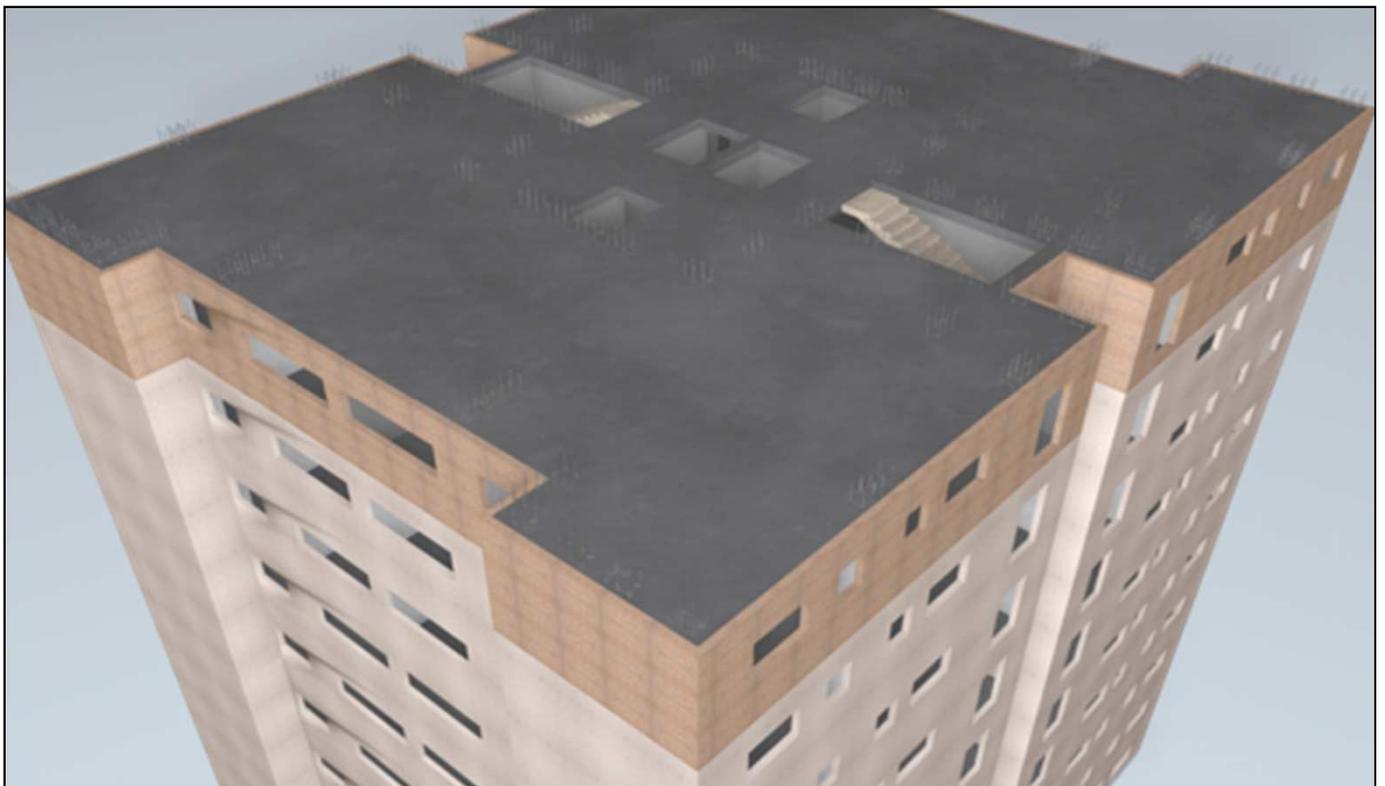
Installation of lattice girders beams.

Installation of perimeter panels and casting of any layer of flooring finish.

Installation of lattice girders plates of slab.

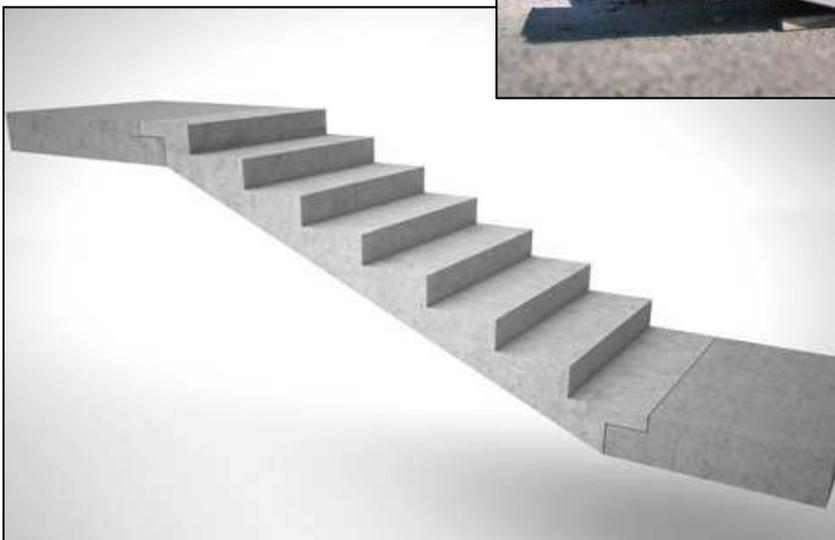
Steel reinforcement and casting of the scaffolding horizontal structures.

Assembling of precast stairs.

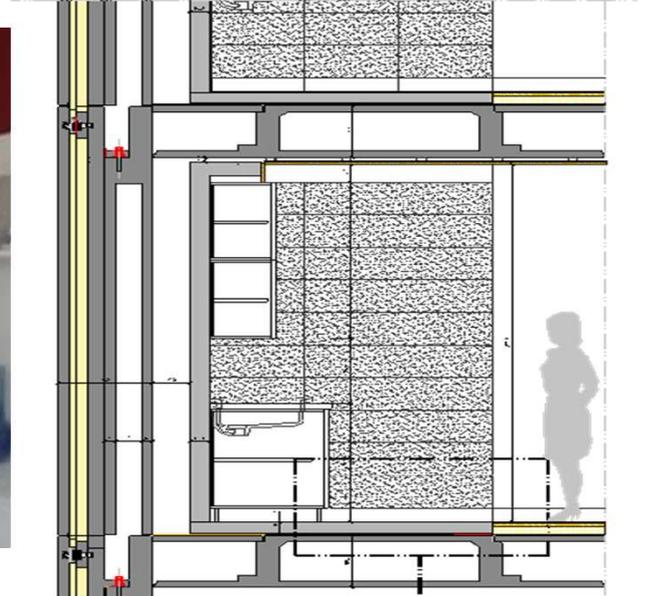


## STAIRCASES

- ✓ Single or with slab stairs
- ✓ Finishing in concrete coating or completed in factory with marble, granite and tile
- ✓ Total variability of riser and tread
- ✓ Immediate use in the construction phase to reach the floors in elevation



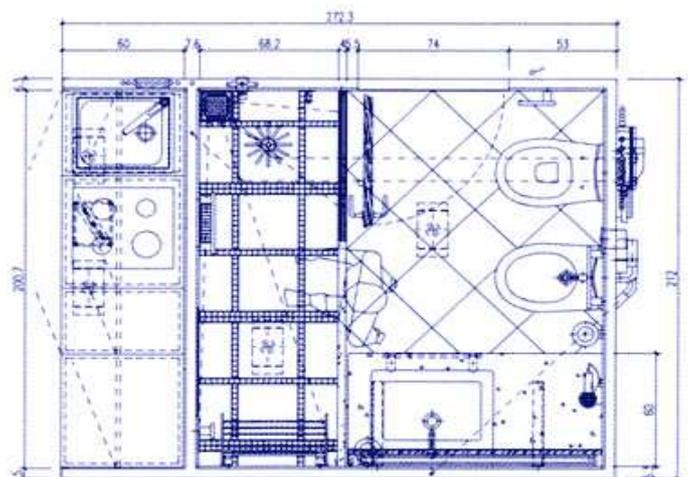
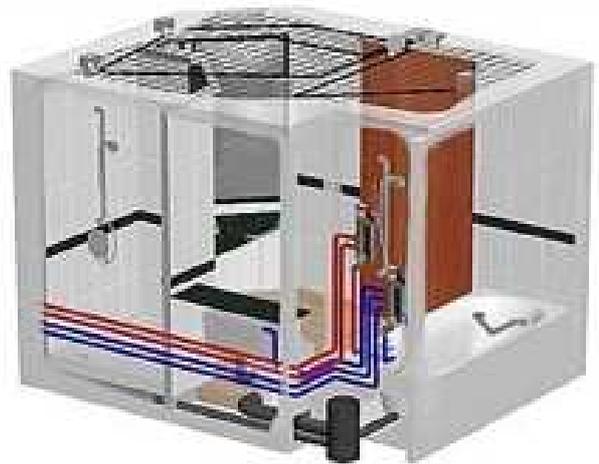
## PRECAST KITCHEN BLOCKS



## PRECAST BATHROOM BLOCKS



## PRECAST BLOCKS



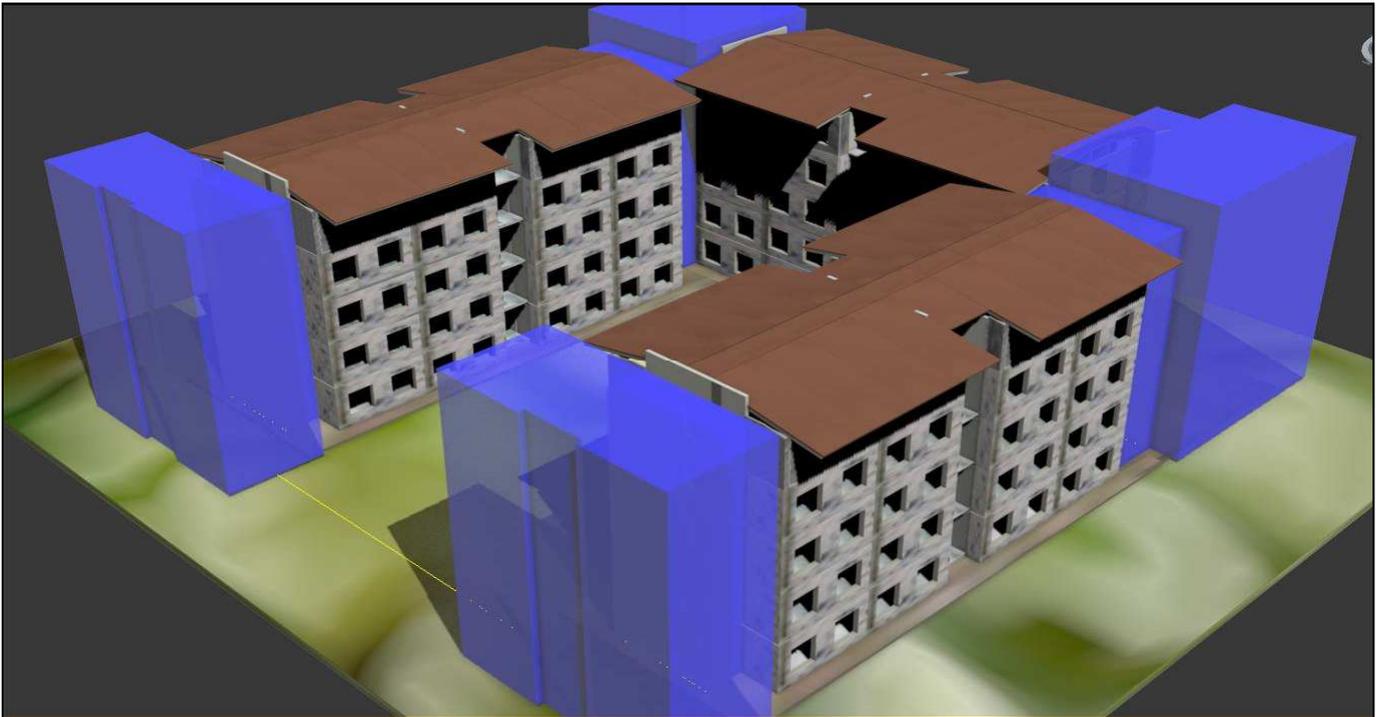
## BALCONIES

- ✓ Solid or lightened cast concrete elements with thickness from 12 to 20 cm equipped with patented thermal break systems for connection to the floor slabs and integrated downspout
- ✓ They can be used as a balcony or as a loggia, with cantilever or with steel or concrete pillars for perimeter support



### RESIDENTIAL COMPLEX FOR UNIVERSITY STUDENTS

Example of a 5 floors building used as a residence for university students with structure loadbearing panels and floors slabs



### RESIDENTIAL COMPLEX FOR UNIVERSITY STUDENTS



**RESIDENTIAL TOWER**  
**25 FLOORS**  
**960 sq.m. per FLOOR**

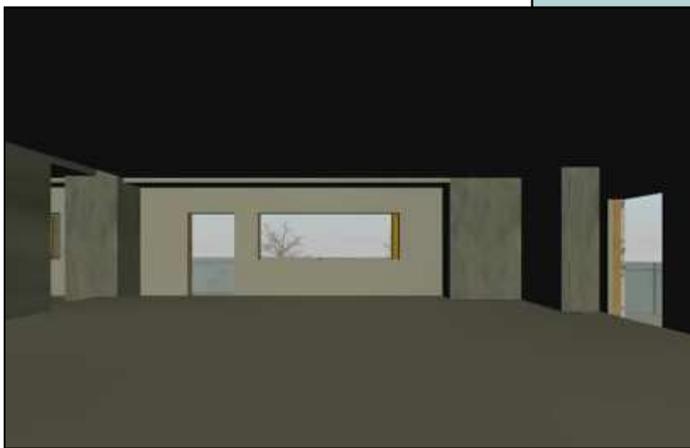
Example of a 25 floors building at the design stage with a structural framework consists of walls and columns with wet joint, REP® beams for borders and antiseismic stiffening hidden in the slabs, floors slabs and hanged non-loadbearing panels thermally insulated with rock-wool stratigraphy 10 + 14 + 6 cm



RESIDENTIAL TOWER – 25 FLOORS – 960 sq.m. per FLOOR



RESIDENTIAL TOWER – 25 FLOORS – 960 sq.m. per FLOOR





Easy Home®

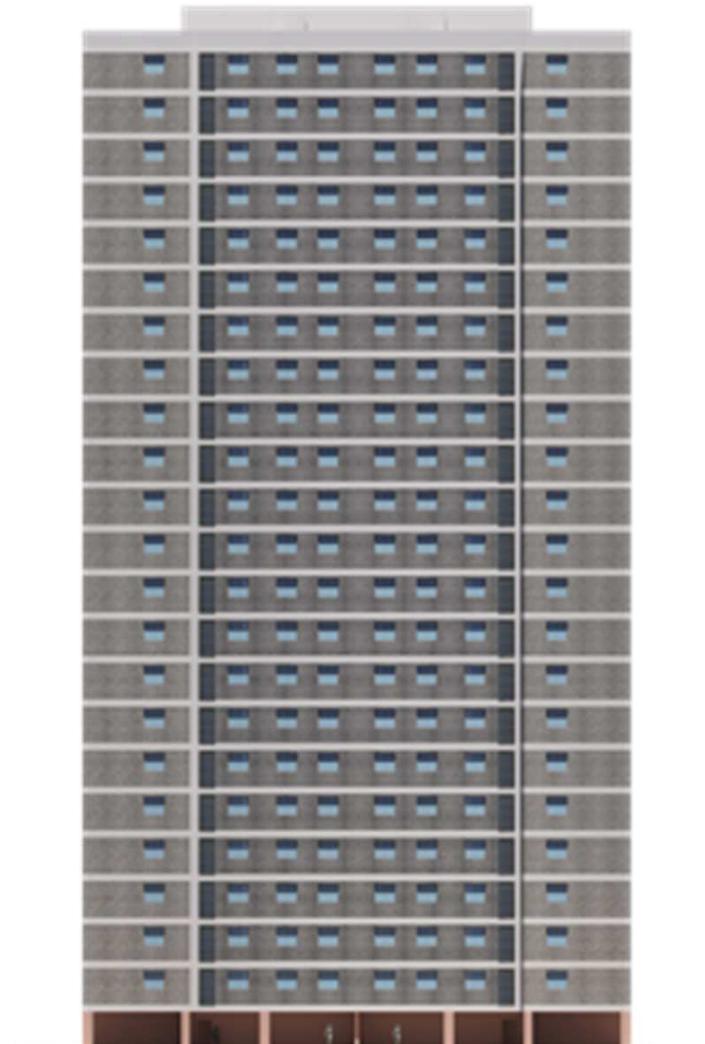
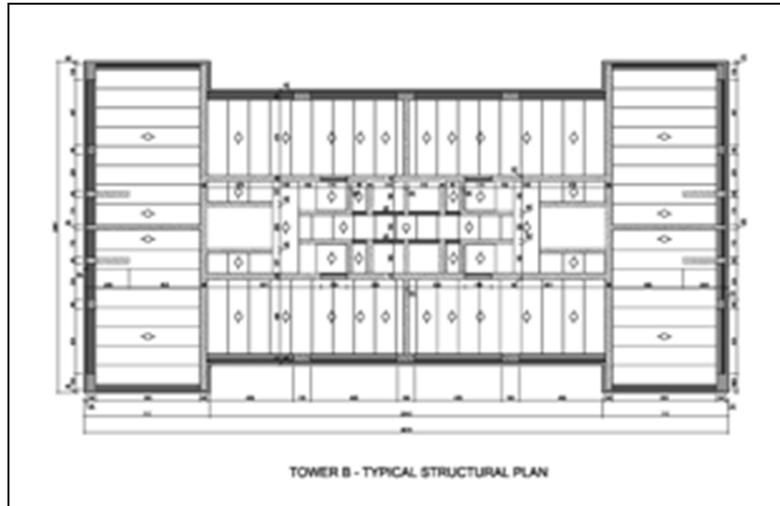
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RESIDENTIAL TOWER  
25 FLOORS  
960 sq.m. per FLOOR



**RESIDENTIAL TOWER – 24 FLOORS - 3680 sq.m. per FLOOR**



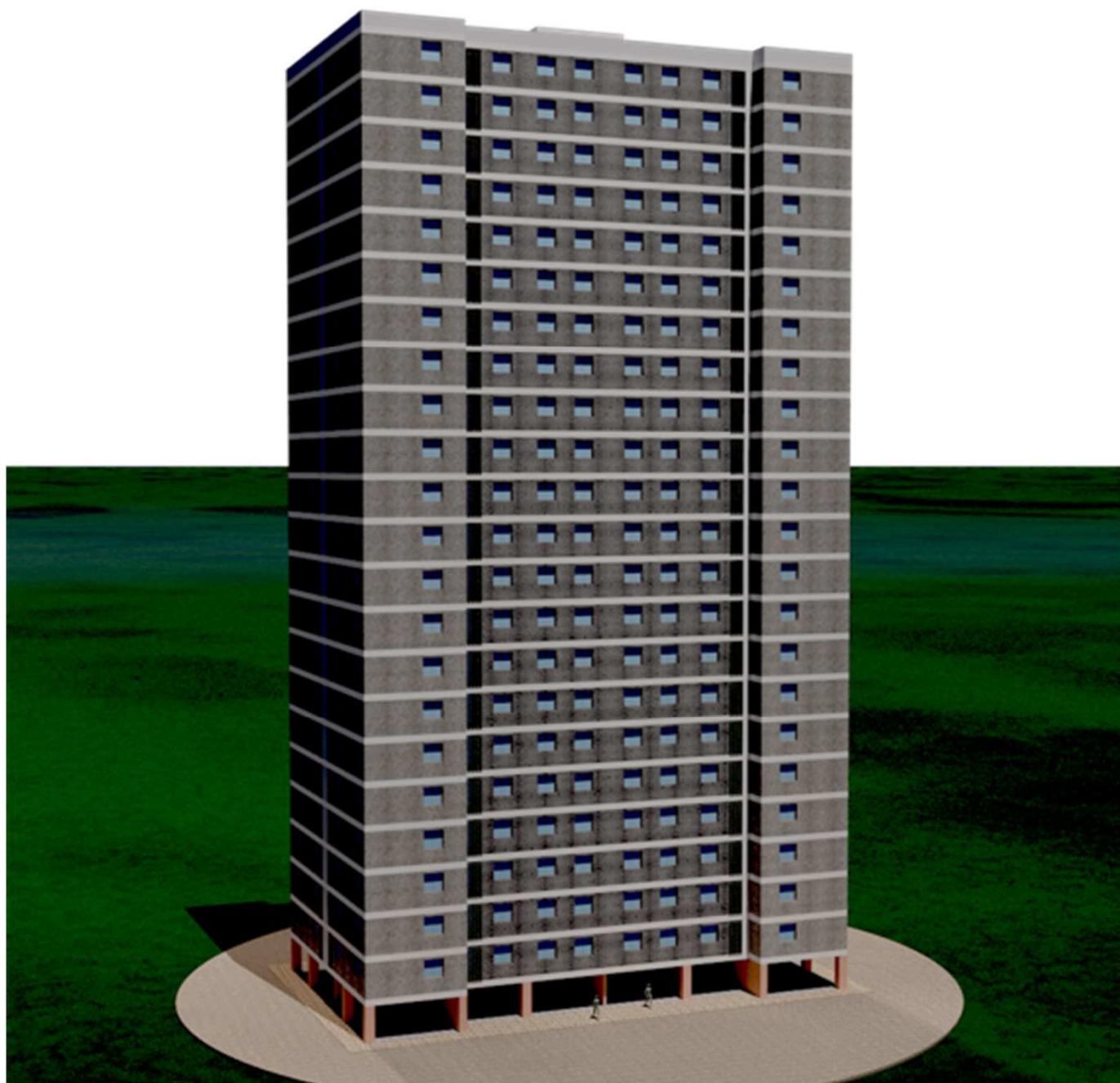


Easy Home®

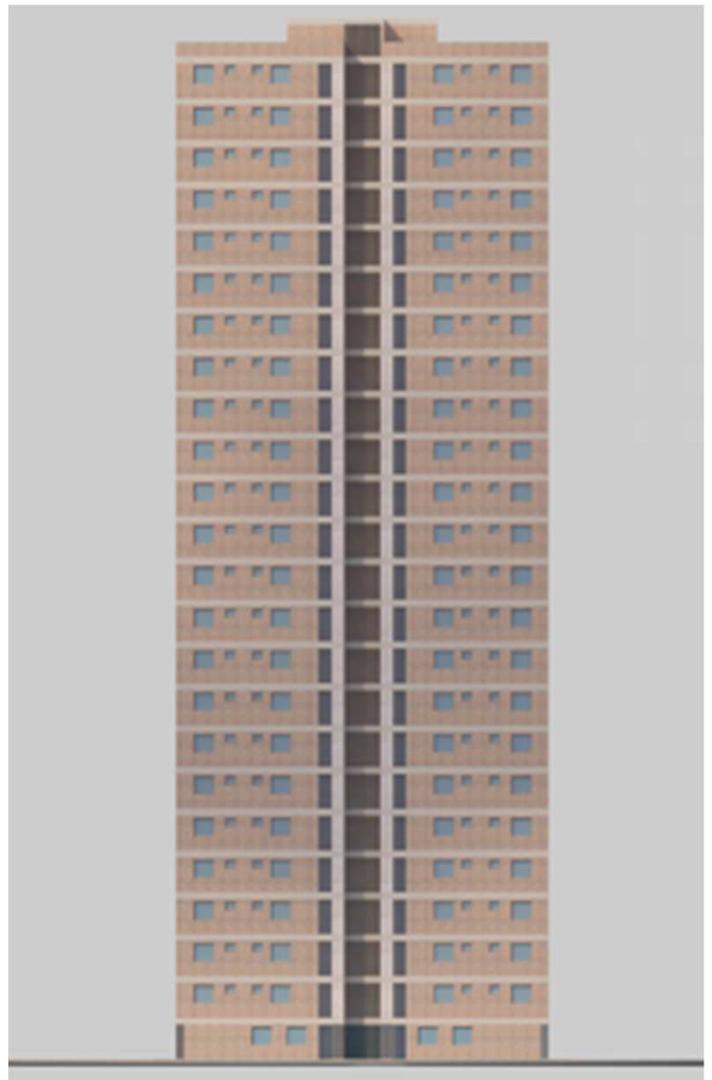
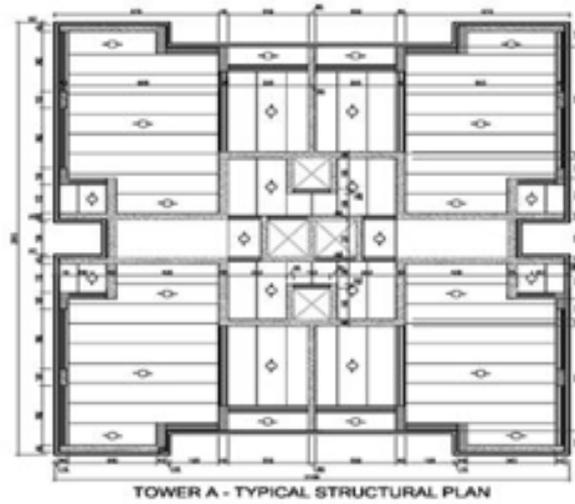
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RESIDENTIAL TOWER – 24 FLOORS - 3680 sq.m. per FLOOR



**RESIDENTIAL TOWER – 24 FLOORS – 520 sq.m. per FLOOR**





Easy Home®

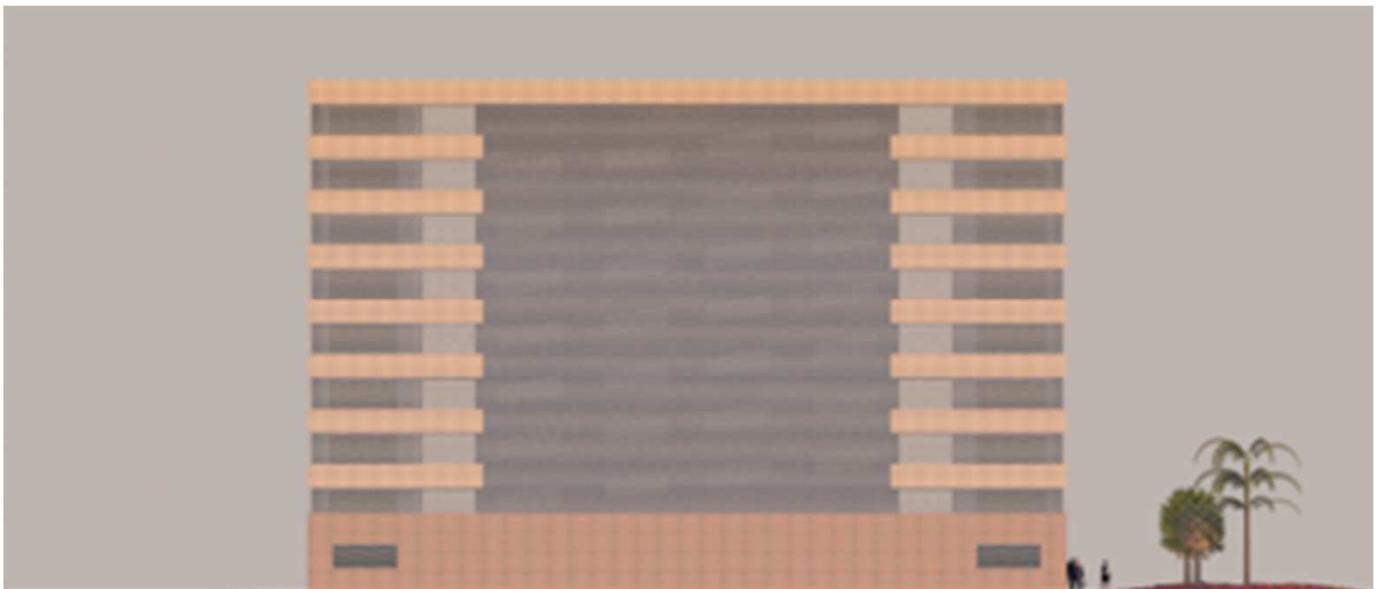
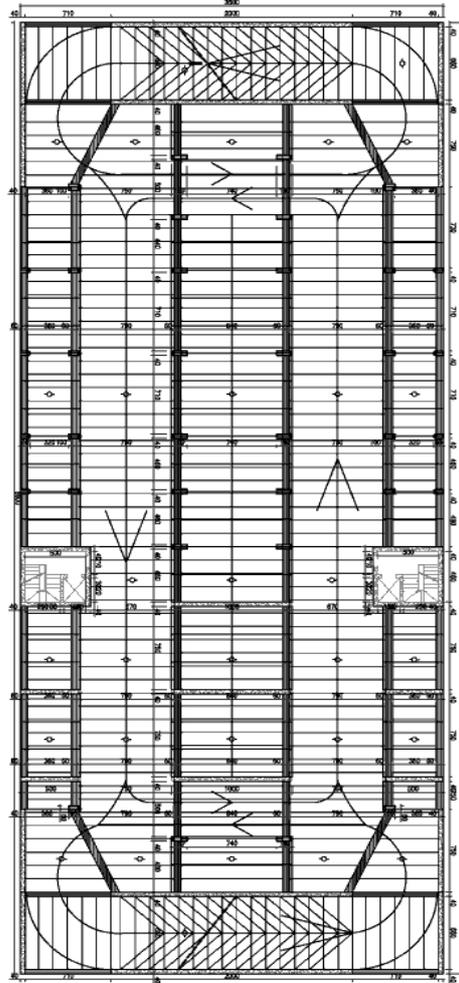
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RESIDENTIAL TOWER – 24 FLOORS – 520 sq.m. per FLOOR



**MULTISTOREY PARKING – 3,030 sq.m. per FLOOR**





Easy Home®



**MULTISTOREY PARKING – 3,030 sq.m. per FLOOR**





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# REP® SYSTEM



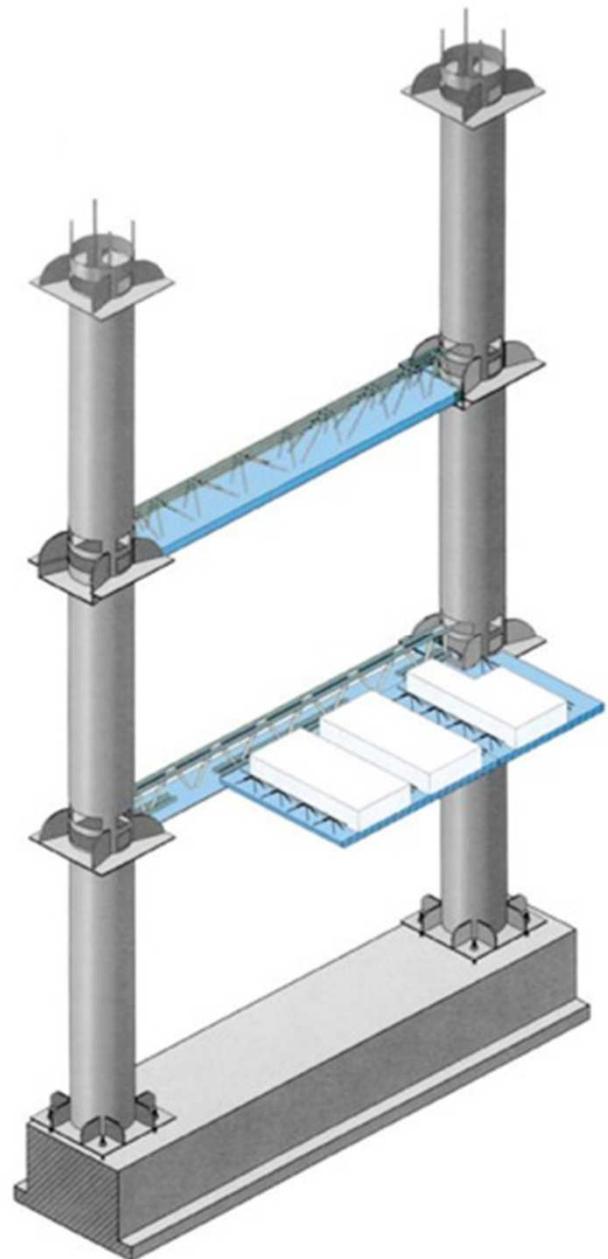
**REP® SYSTEM** matches the typical fast assembly of steels structures to the strength and affordability of concrete to reach the effectiveness of monolithic structures

Typical elements of **REP® SYSTEM** are first of all the **REP® BEAMS**, then the **REP® COLUMNS** in steel or concrete and **REP® SLABS**.

The peculiar features of this system are the self-supporting properties during the construction phase and the monolithic final structure resulting after the cast in situ operations

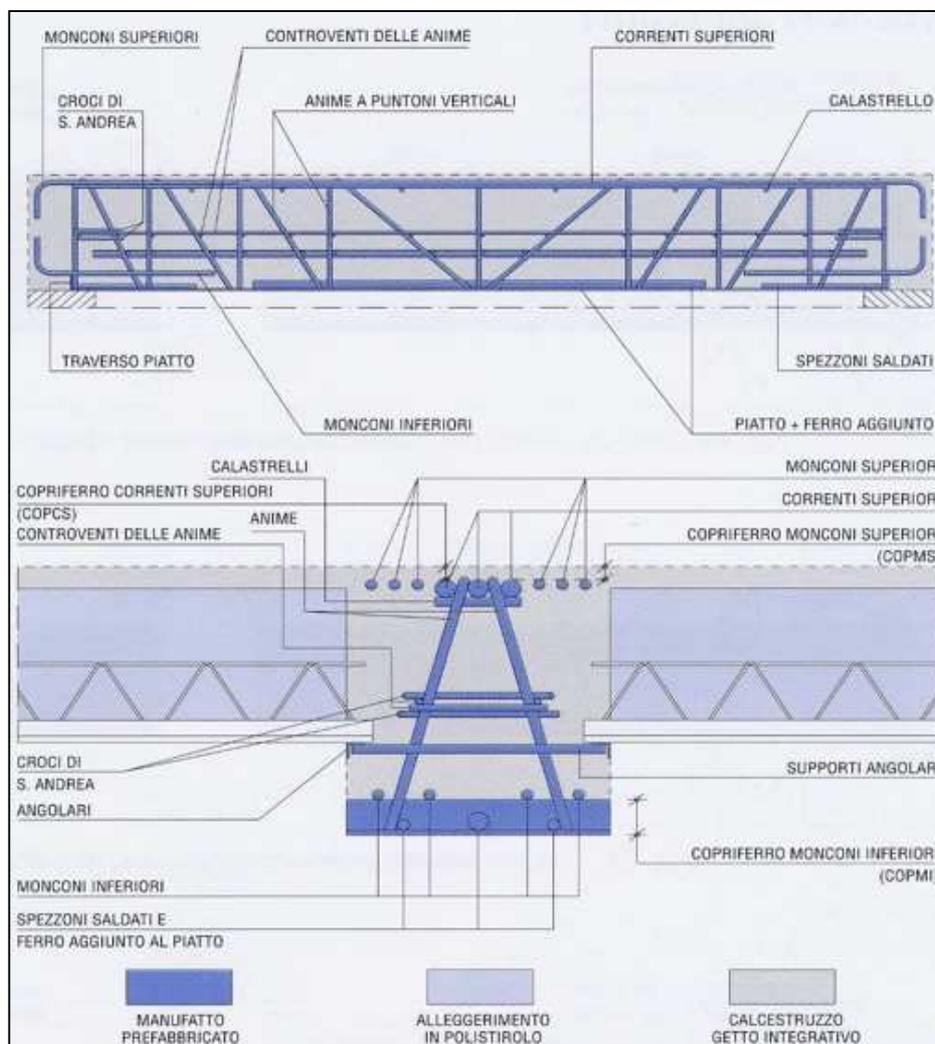
Main features:

- ✓ Flexibility and adaptability to many applications
- ✓ Monolithic final structure
- ✓ Light elements
- ✓ Beams and columns made by a steel welded element completed with cast in situ concrete



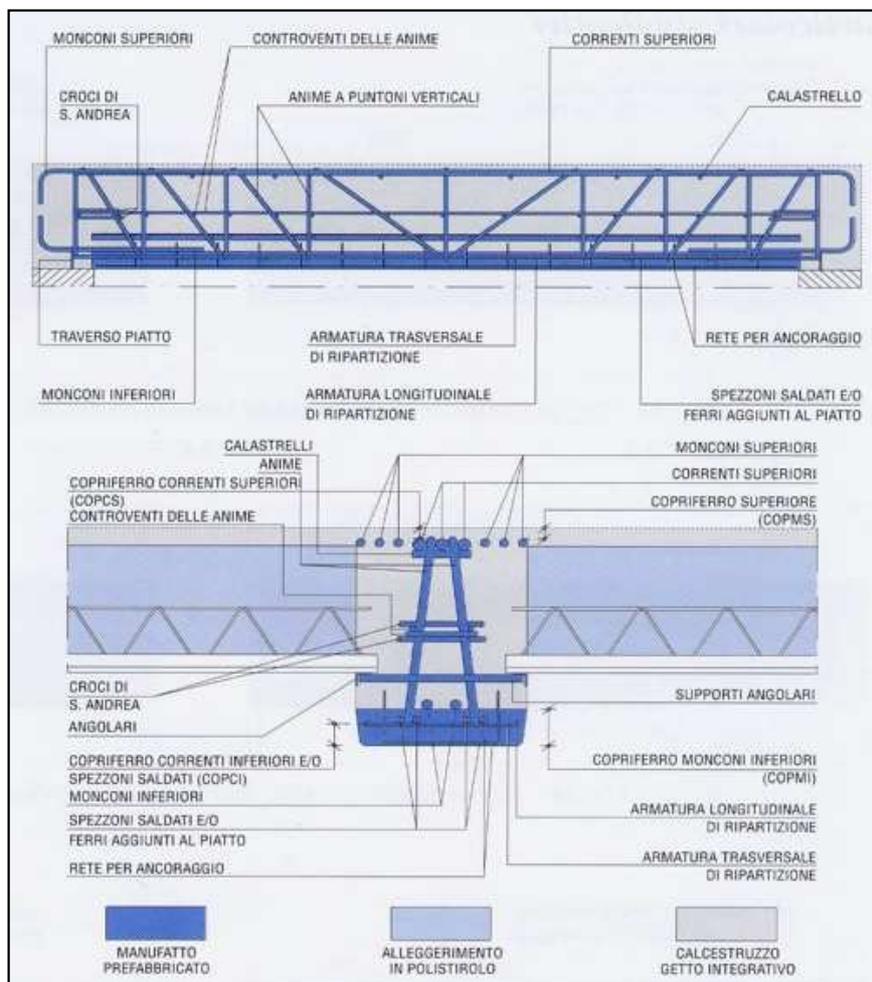
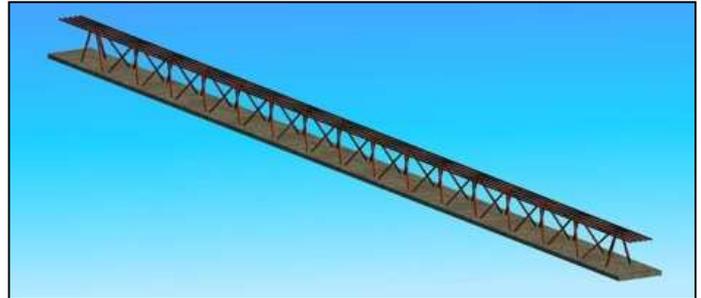
## REP® BEAM WITH STEEL PLATE

- ✓ Composite beams calculated in structural continuity
- ✓ Self-supporting welded steel section
- ✓ Lower steel plate case back used as support for slabs, frameworks and lower strained reinforcement
- ✓ Lower steel paintable for fire protection
- ✓ Angular steel support linked to steel webs for supporting slabs and temporary banks for casting
- ✓ Steel rebars for structural continuity
- ✓ Possible adjustable camber made during welding operations
- ✓ Preset side banks made of steel



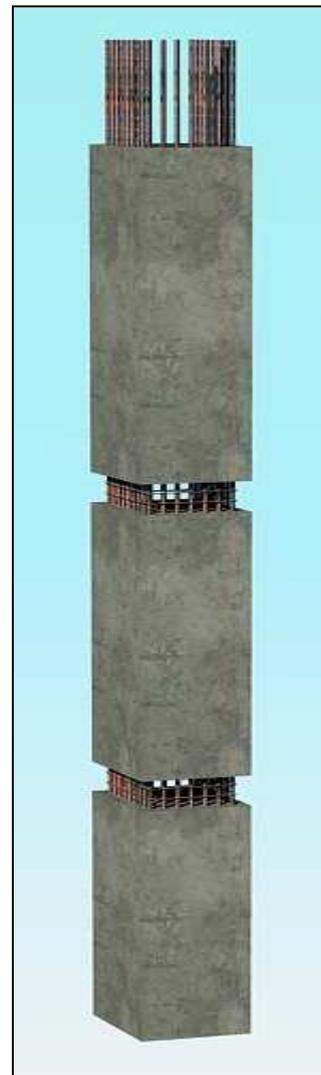
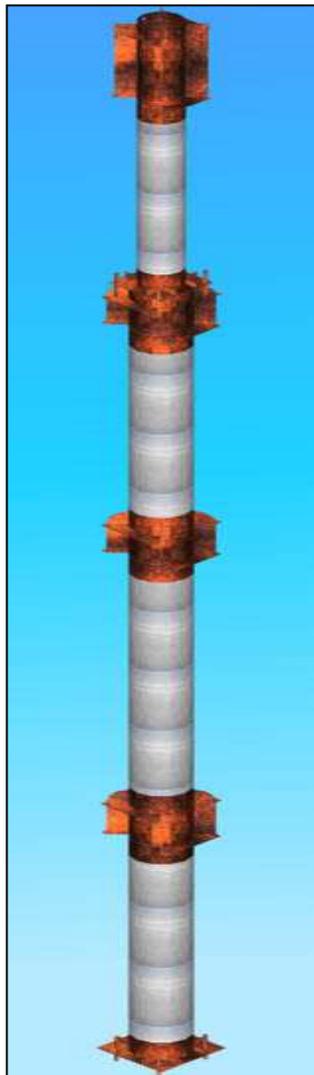
## REP® BEAM WITH CONCRETE CASE BACK

- ✓ Composite beams calculated in structural continuity
- ✓ Self-supporting welded steel section
- ✓ Concrete lower case back around steel reinforcement used as support for slabs, frameworks and lower fire protection
- ✓ Angular steel support linked to steel webs for supporting slabs and temporary banks for casting
- ✓ Steel rebars for structural continuity
- ✓ Possible camber made during welding operations
- ✓ Cast on plane or curved frameworks
- ✓ Preset side banks made of steel or concrete



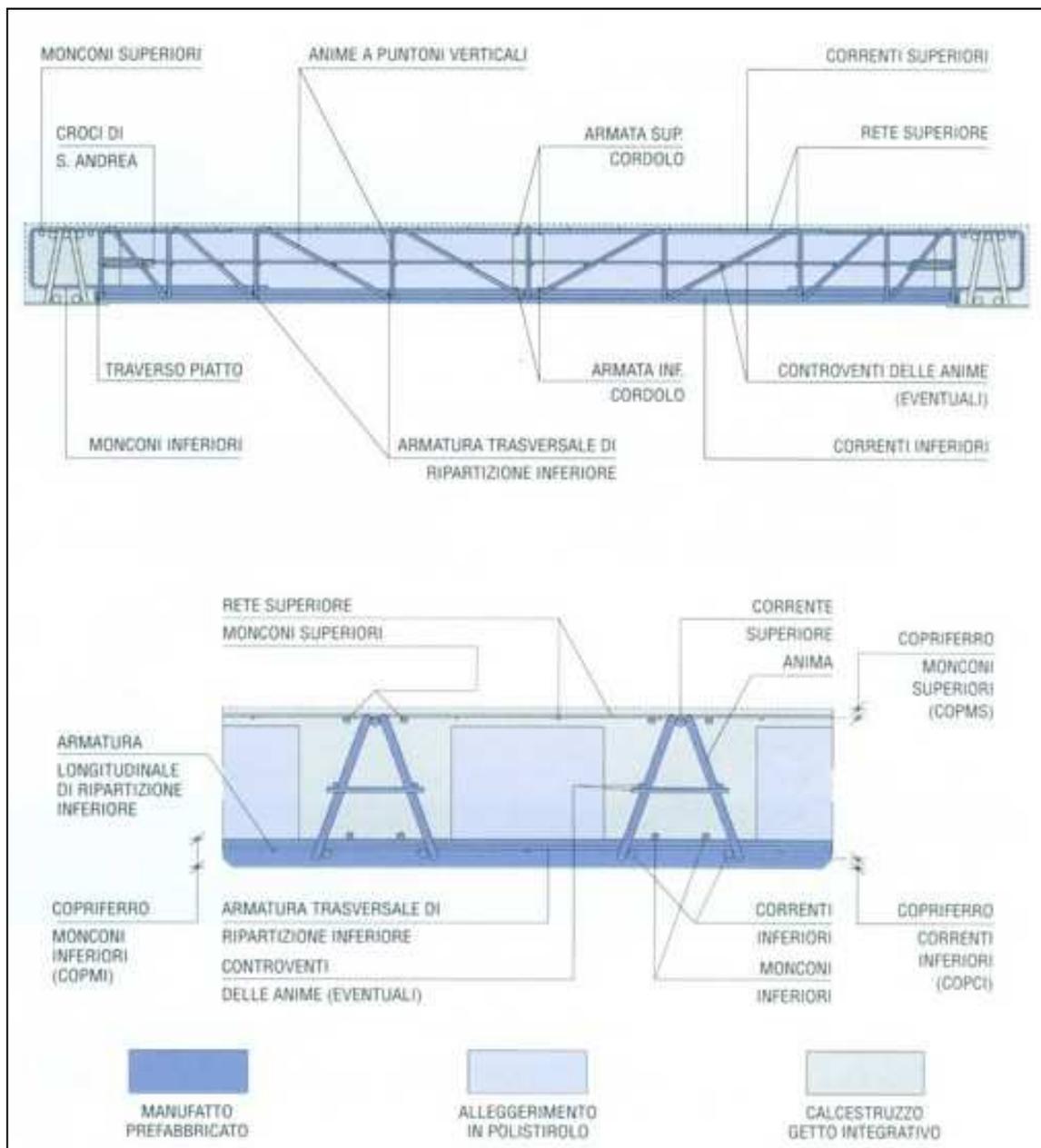
## REP® COLUMN IN STEEL OR CONCRETE WITH WET JOINT

- ✓ Steel welded tube of circular or rectangular section used for beams supporting during the construction phase and as framework for casting concrete
- ✓ Free total height
- ✓ Single multi-storey element stackable ensuring structural continuity
- ✓ Concealing or understating inter-storey shelves
- ✓ Cut-outs for rebars and fulfilling concrete
- ✓ Steel reinforcement welded inside directly during the production process and properly distanced
- ✓ Integrated downspout
- ✓ Precast multi-storey column, with or without concrete or steel support shelves, used for monolithic connection
- ✓ Rectangular, circular or polygonal section
- ✓ Base or floor connection with corrugated metal sheaths or wall shoes
- ✓ Possibility to produce multi-storey columns, up to 4 floors for each single column.



## REP® SLAB

- ✓ Composite slab calculated in structural continuity
- ✓ Self-supporting welded steel section
- ✓ Concrete lower case back around steel reinforcement used as frameworks and lower fire protection
- ✓ Steel rebars for structural continuity
- ✓ Standard width of 120 cm and maximum width up to 250 cm
- ✓ EPS blocks used to reduce structural weight
- ✓ Completed in situ with steel bars and meshes reinforcement for structural continuity
- ✓ Concrete casting for monolithic slab







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