

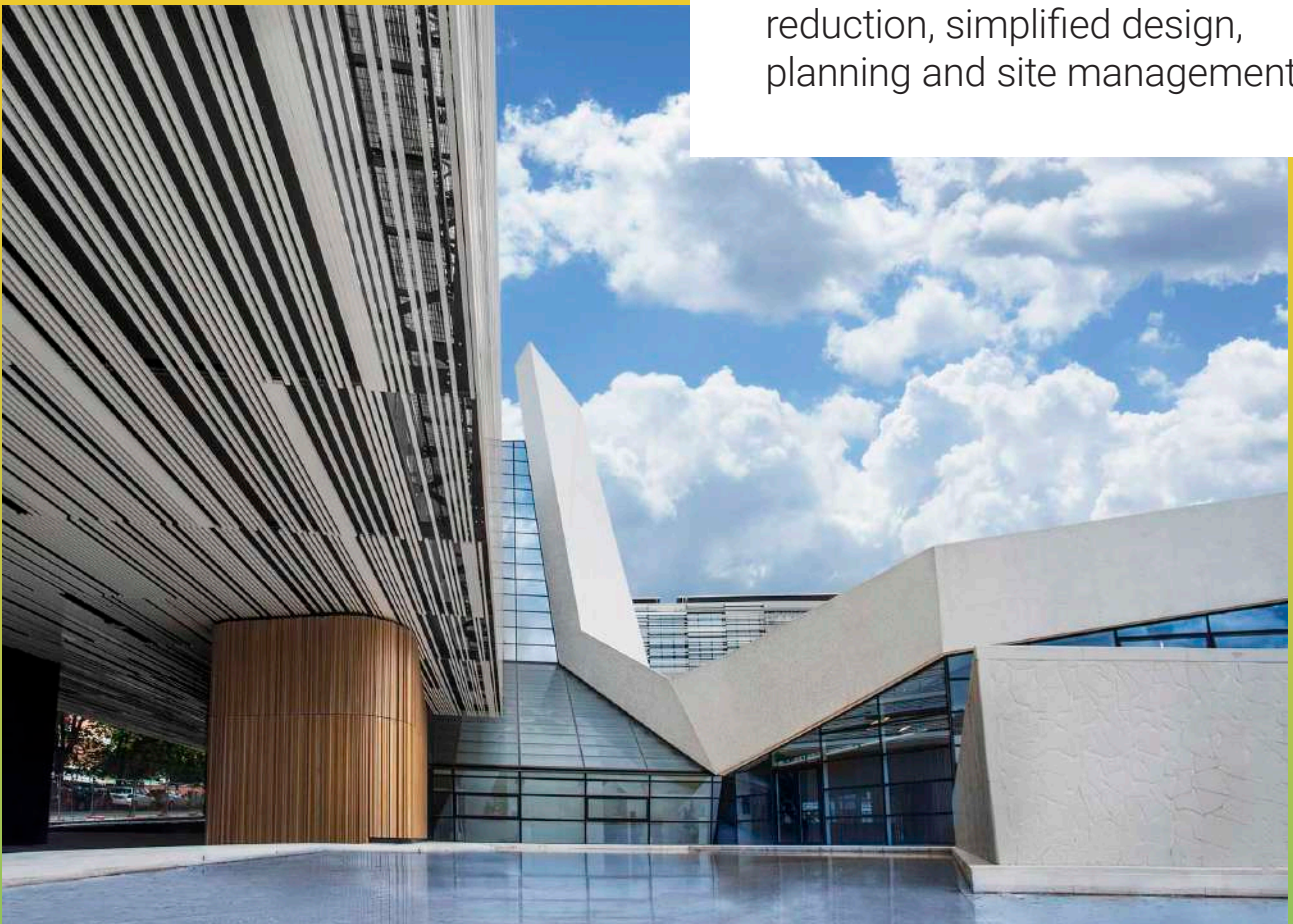
NPS[®] SYSTEM

by Tecnostrutture

The beauty of efficiency. Sustainability and design.

NPS[®] New Performance Slim-System

Innovative structural solution:
more space, time and costs
reduction, simplified design,
planning and site management.



Index

Editorial	1
To sum up	2
NPS® System, a clear and straightforward choice	4
Everything becomes possible	6
Construction system compared	8
Application areas of the NPS® System	9
References	10
The NPS® System product range	19

Editorial

“If one has the courage to offer something new as a company, this must bring a real added value to the market and to people. *Otherwise, don't do it!*”

I have always acted following my principles, demonstrating this with concrete actions. What are people's needs? What is required when the market shifts and new solutions are urgently needed?

Since founding Tecnostrutture in 1983, its success has been anything but accidental. The demand for lean, timesaving, and, above all, cost-effective load-bearing structures has consistently been a key market requirement.

Over the past 40 years, we have employed our composite steel-concrete structures in thousands of successful international projects. Now, through Tecnostrutture Deutschland GmbH, we are further expanding our global

presence in the market for sustainable, slim structural solutions.

Our growth reflects our ongoing commitment to innovation and quality, as we share our expertise and cutting-edge technologies with an ever-expanding audience. We believe that with our New Performance Slim-System (NPS®), we are offering a range of products and solutions that were previously unavailable. Given the sustainability goals and financial challenges facing the European market, it is crucial to explore alternative building methods that save time and resources.

On the following pages, we have outlined the concrete advantages of the NPS® System, which is the result of our know-how,



extensive scientific research, and numerous discussions with investors, structural engineers, architects, construction companies, and other key players in the construction industry. We sincerely thank you for your interest in our solutions and wish you an enjoyable read.

A handwritten signature in black ink, appearing to read 'Franco Daniele', written over a horizontal line.

Franco Daniele
Founder and President
Tecnostrutture srl

Founded over 40 years ago, Tecnostrutture srl has become a leader in the Italian market for the design and construction of steel-concrete composite structures, primarily beams and columns. In 2013, the company developed the NPS® (New Performance Slim-System), a complete structural system that today represents the heart of the company. Tecnostrutture supports EUCENTRE (European Centre for Training and Research in Earthquake Engineering), and it is a member of the Green Building Council Italia, AIS (Association for Sustainable Infrastructure), (UNI – Italian Standards Body) and Confindustria.



Life Cycle Thinking

The NPS® New Performance Slim-System by Tecnostrutture contributes to a sustainable solution at every stage of its life cycle, according to the principles of circular economy.

To sum up

What does NPS® mean?

The **New Performance Slim-System** is a low CO₂-emitting, self-supporting composite system **made from up to 93% of recycled steel**, allowing beams and columns to be combined with any type of slab.

What makes the NPS® System special is its technology, which offers **structural solutions that are light and easy to transport**. **Cost certainty and a reduction in construction time by up to 40%** are its key benefits. The structural elements are manufactured in the factory and assembled on the building site. The self-supporting nature of NPS® structures reduces the use of formwork by 90%.

For all NPS® products Environmental Product Declarations (EPDs), including the CO₂ value per kg of product, are available. This document is necessary to obtain LEED or DGNB certification credits.



Beams

Columns

Slabs

Optional and other products

Top-Down

Services *Included*

Services *Optional*

What does the NPS® composite system consist of?

What advantages does the NPS® System offer in every phase of its life cycle?

Over the years Tecnostrutture has demonstrated its strong commitment to sustainability by voluntarily preparing a sustainability report in accordance with GRI standards. This report

details the company's activities related to environmental, social, and governance (ESG) aspects. Additionally, the report is certified by an independent body to ensure transparency and credibility.



◀ Scan the QR code to read the latest sustainability report.

Raw materials

- Recycled materials
- Resource saving
- Traceability of materials

Production

- Use of 100% renewable and partially self-generated energy
- Zero waste
- Automated processes

Transport

- Fewer transports
- Sustainable transport solutions
- No packaging

Assembly

- Reduced construction time
- 90% reduction in provisional materials
- 90% reduction in personnel



Reuse

- Recyclable raw materials
- Elements can be disassembled
- Possible reuse in new projects

Use

- Increased usable height / reduced overall building height
- Easy MEP installation
- Flexible space layout

Source: European Parliament Research Service



NPS® System, a clear and straightforward choice

Certified sustainability

Due to the structural efficiency of NPS® composite beams and columns, only a **minimal amount of raw materials are used, essentially recycled steel.**

The entire production process is **powered by 100% mostly self-generated renewable energy.** Transport can be carried out by

truck or rail, and NPS® products are delivered without packaging. With NPS®, there is no construction waste at site since the products arrive ready for assembly, reducing provisional materials by up to 90%. **This results in lower CO₂ emissions and energy consumption.** All NPS® products

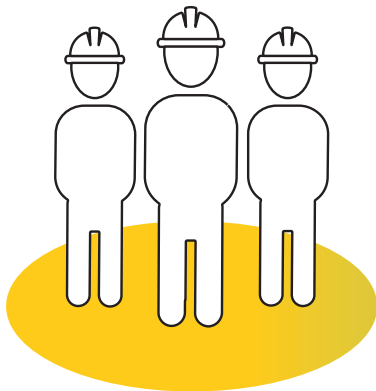
Up to

93%

of recycled steel

have an Environmental Product Declaration (EPD), which serves as an information basis for obtaining credits for environmental building certification under various protocols, such as LEED and DGNB.

Efficiency through time and manpower savings



The **assembly speed** is impressive: it takes only 8 minutes to install a multi-storey column and 5 minutes for a beam, with just 3 workers and one crane operator. Moreover, NPS® structures **are not affected by weather conditions.** Since NPS® structures are self-supporting, there is no need to wait for the 28-day curing period of the traditional casting to access

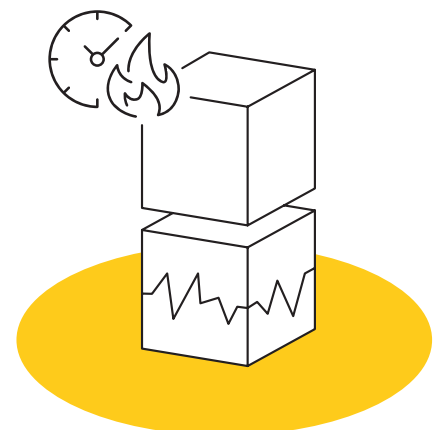
the floor below. This allows work, such as the installation of systems or bathroom cells, to continue immediately after the beams and slab have been installed.

This **overlap of construction phases** significantly **accelerates the overall timeline.** The NPS® System requires **90% less manpower** at site compared to conventional systems, equating to a 1:10 labor ratio. **The integrated NPS® Safety System** enhances safety and simplifies the process. **On-time delivery** also eliminates the need for on-site storage.

Seismic resistance and integrated fire resistance

The NPS® System offers excellent **strength, stiffness, and ductility**, allowing for the construction of **seismic-resistant** frame structures without the need for bracing walls. If needed, it can be effectively combined with other

bracing systems. Additionally, it provides **integrated fire resistance** up to R180, thus making additional fire protection measures on site and years later unnecessary. A forever solution.



Reliable costs and efficiency

With the NPS® System, the quotation price matches the actual price, **ensuring cost certainty**. **Technical support during both design and implementation** provides project designers and customers with confidence in the technical solution. Construction times are also well-managed. The fast assembly and potential **overlapping of construction phases**, due to the self-supporting nature of NPS® structures, can reduce construction time by up to 40%. Since NPS®

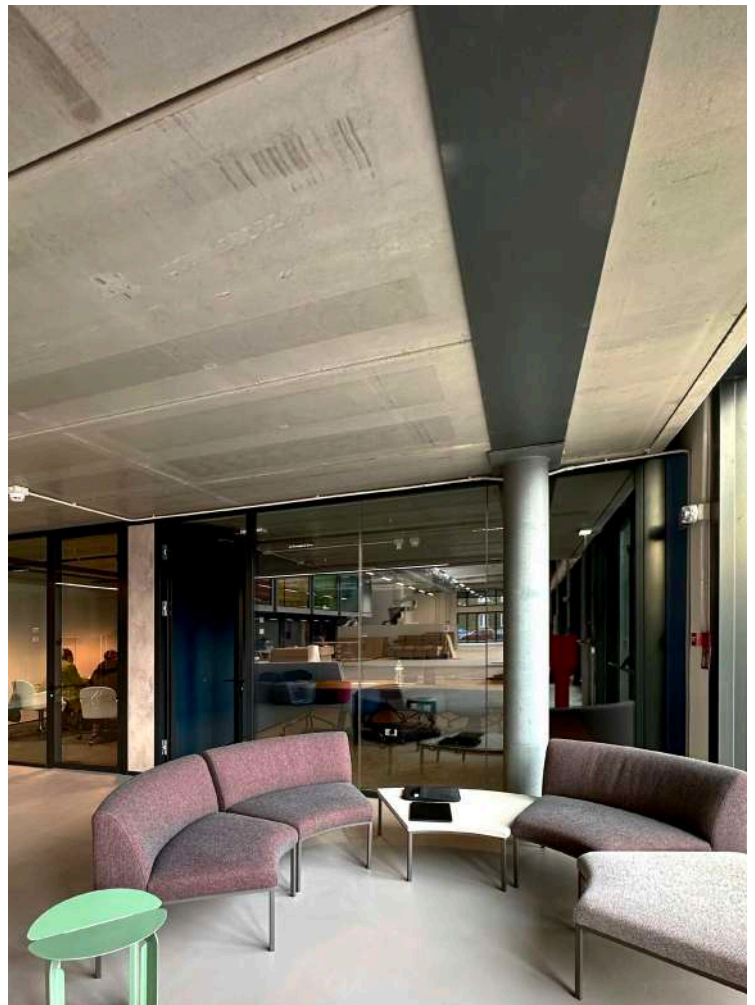
assembly is unaffected by weather conditions, it allows for **continuous construction work**. The lightweight nature of NPS® structures **reduces the depth of foundation excavation, thereby lowering costs**. The system enables slim-floor solutions with standard spans of up to 12 meters. Space is optimized: the slim-floor beam allows for an **increased floor height** or a **reduced overall building height** maintaining the same floor height. Along with this, **lower heating and cooling**

costs, combined with minimal maintenance requirements, make NPS® an extremely attractive choice for building contractors.

Up to
40%
time saving

Easy change of use and flexibility of interior spaces

NPS® System **maximizes space in both width and height** with its thinner columns and slim-floor beams. Floor layouts can be flexibly adapted to various architectural designs, allowing for **versatile utilization and conversion options**. The **visible surface of the columns** provides additional design freedom and aesthetic variety. Moreover, the NPS® slim-floor solution facilitates the MEB installation, further enhancing design flexibility and **efficient space use**. The NPS® System is an ideal solution for **multi-storey buildings**.



Everything becomes possible

NPS® structures for the Milan Cortina 2026 Olympic Village completed in just 8 months

Location In the center of Milan, where storage space is very limited.

Intervention 6 buildings | 8 floors per building | 46,000 m² in total | 1700 rooms.

Sustainability requirements

Il The Milan Cortina 2026 Olympic Village is designed to meet the requirements of a Nearly Zero Energy Building (NZEB). It will feature passive cooling strategies, photovoltaic systems, roof gardens, and sustainable materials. The possibility of conversion of the building is a fact. The complex will be carbon neutral, LEED certified, and will be repurposed as student accommodation after the Olympic Games.

Project of Skidmore, Owings & Merrill – SOM
Greenspaces's design: Elizabeth Diller.

Investor: Fondo Porta Romana, COIMA SGR with Covivio, Prada Holding and COIMA ESG City Impact Fund.

Completed 3 months in advance

Feb 2023 Signing of contract.
Jun 2023 Start of assembly on site.
Jan 2024 Completion of NPS® System assembly.
Completion 3 months ahead of schedule.

▷ NPS® System combined with wooden walls for the Milan Cortina 2026 Olympic Village.



△ © Project Scalo Porta Romana Skidmore, Owings & Merrill – SOM.

NPS[®] for Milan Cortina 2026 Olympic Village

The record-breaking construction schedule of the NPS[®] System are achievable due to two key factors:

Significant reduction at all levels

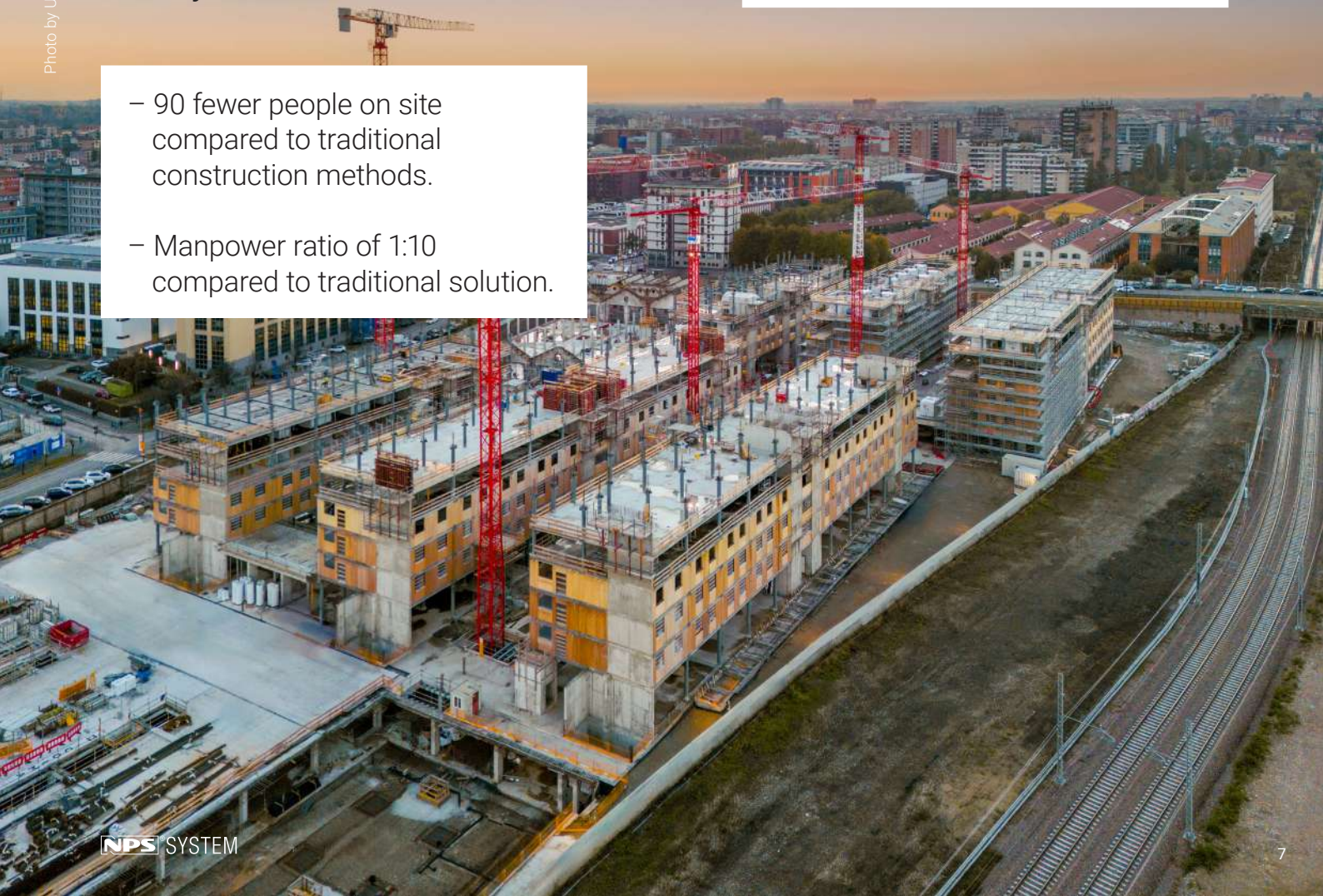
- Quick assembly with only 9 workers + 3 cranes × 6 buildings of 8 floors each.
- Overlapping construction phases, thanks to the self-supporting structures that allow spaces to be immediately available, with no need to wait for the 28-day concrete curing period.

- Less material to optimise costs and sustainability.
- Savings of approximately 160 return trips for provisional equipment.
- Delivery without storage.
- No packaging and no construction site waste.
- Drastic reduction in provisional materials.

Safety

- 90 fewer people on site compared to traditional construction methods.
- Manpower ratio of 1:10 compared to traditional solution.

Photo by UdB Studio



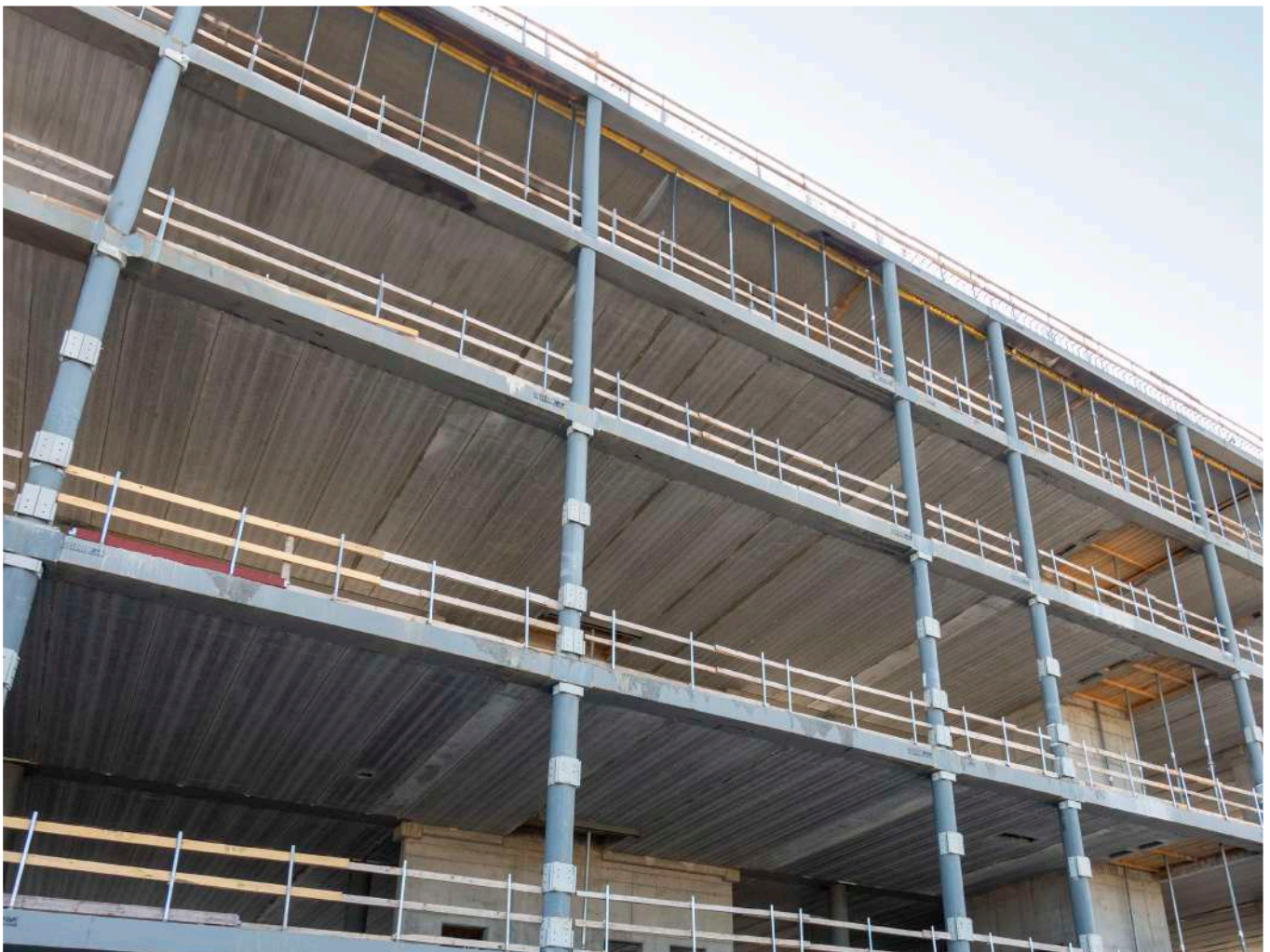
Construction system compared

Conventional system

Longer and more uncertain construction times result in increased expenses for materials, costs, resources, and labor. Additionally, they contribute to higher CO₂ emissions and greater environmental impact.



NPS® System





△ Scan the QR code to watch the video and see how we operate on site quickly and labour efficiently. This video shows our experience with both national and international projects.

Application fields of NPS[®] System



Office buildings



Parking



Healthcare
and social



Hospitality



Residential



Work on existing
structure



Cultural
and education



Infrastructure

References

Odense University Hospital, Denmark

Solutions

NPS® Basic beams
NPS® Slim columns
Hollow core slabs

Description With a surface of 250.000 m², it is the largest hospital in Denmark. NPS® provided a slim-floor solution with integrated fire resistance. 180.000 m² of beams, columns and slabs were installed in 18 months.



“Only an off-site system such as NPS® could guarantee the required high-quality standards, constructive speed and regularity of assembly despite the cold winter climate and snowfall”.

Franco Daniele

Founder and CEO of Tecnostrutture



Flixton Castle, UK

Solutions

NPS® Basic beams
Airfloor® slabs

Description The roof of Flixton Castle, constructed with NPS®

Basic beams and Airfloor® slabs, rests on ancient masonry without propping. The 5-8 meter beams and 4.5 meter slabs preserve historical arches and vaults, paying particular

attention to tolerances on the supports of the beams and slabs. The 40 cm NPS® beams prevent stress on the corbels, ensuring structural stability.

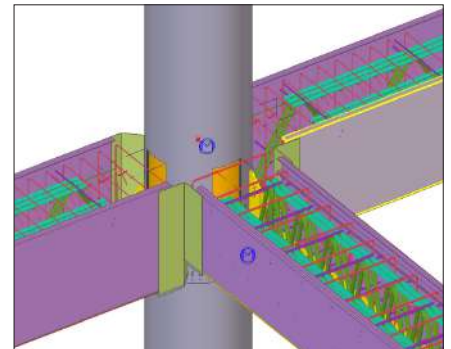


ITC Welcomhotel Dwarka

Solutions

NPS® Basic beams
NPS® Slim columns
Composite steel slab

Description The extension and upper elevation project for the ITC Hotel in Dwarka included the construction of 14 floors of 1000 m² each, with 8 cinema halls. Two transfer levels include a transfer structure supporting the suspended columns. The existing columns were reinforced and supported by new NPS® Slim columns. Seismic resistance was achieved using seismic isolators. The Basic beams are 70 cm wide, with heights ranging from 60 to 120 cm and spans up to 15 meters. NPS® Slim columns have diameters of 50 and 70 cm.



University of Medicine, Malta

Solutions

NPS® Air
NPS® Basic beams
NPS® Slim columns
Airfloor® slabs

Description For the Queen Mary University of London's Medicine School, Tecnostrutture designed, supplied, and installed the entire

structure in just four months. The 8,100 m² building, consisting of five floors above-ground, is part of the Victoria Hospital complex in Gozo. Logistics challenges imposed by the island location were overcome, as the site was on Gozo Island, about 100 km from the nearest Italian port, with no direct connections.



MareTerra, Principality of Monaco

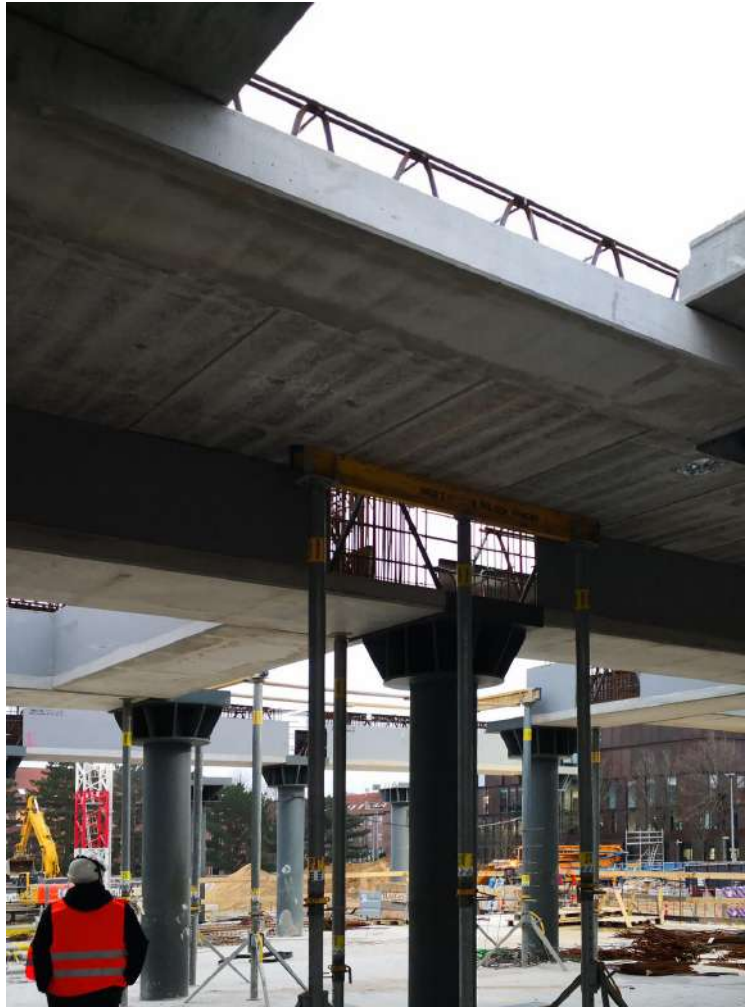
Solutions

NPS® Basic beams

NPS® Cls beams

NPS® Truss beams

Description The MareTerra project in Monte Carlo, the largest extension over the sea in Europe, was completed, 6 months ahead of schedule. Supported by 18 caissons, it includes 120 luxury residences and 3,000 m² of commercial space. Approximately 2,600 meters of NPS® beams were used in the construction.



Cable car building Idre Fjäll, Sweden

Solutions

NPS® Basic beams

NPS® Cls beams

NPS® Slim columns

Description In Sweden, the installation of the Garage Wiberg structures has been completed. The building is used for the maintenance of the new Idre Fjäll cable car. For the construction of the 1,500 m² building, structures composed of two-storey NPS® Slim columns, NPS® Basic and Cls beams, Predalles slabs, twin-walls, and prefabricated stairs were chosen.



“In Sweden, the installation of the Garage Wiberg structures has been completed in a short time to observe the opening”.



Bridge on Mandola river, Calceranica, Trento

Solutions

NPS® Basic beams

Description This 27.5 metre road bridge was built with NPS® composite steel-concrete beams, which were quickly installed in just three hours. BIM technology prevented potential interference at structural nodes, making site execution even faster. This solution ensured precision, speed and safety, reducing construction time and costs, without interfering with existing structures and respecting hydraulic clearance, i.e. leaving the necessary space above the water surface.



△ Construction of the single span bridge, Calceranica (TN).



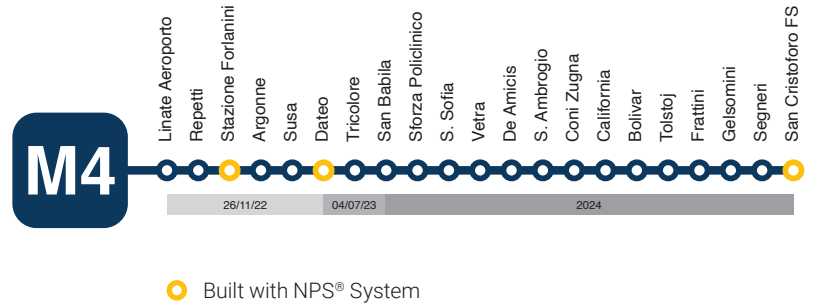
△ The new bridge with a single span of 25.6 metres and a width of 11 metres.

Line M4 – Blue Line

Solutions

- NPS® Basic beams
- NPS® Cls beams
- NPS® Slim columns
- Predalles slabs

Description Numerous works have been carried out for the M4 underground line in Milan. Notable among them are the Tricolore station, 80 meters long, whose mezzanine deck was completed 3 days ahead of schedule, and Linate station, where the installation of 16 meter long beams and NPS® Slim columns was completed entirely at night.

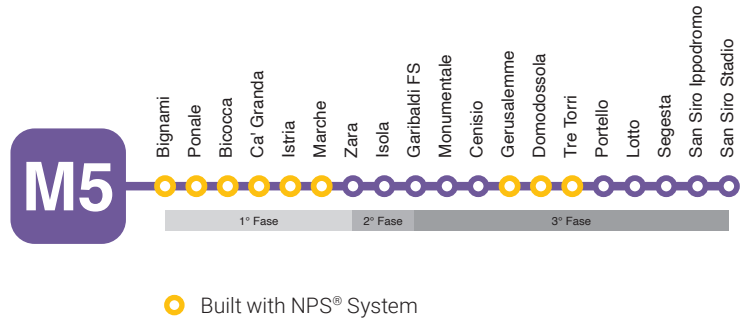


Line M5 – Garibaldi Metro Station

Solutions

NPS® Cls beams
NPS® Truss beams

Description The station was built using the innovative Top-Down method, constructing an underground structure down to a depth of 21 metres without resorting to temporary tie-rods, which cannot be used in such a dense urban context. Thanks to the NPS® beams, which were installed directly without the need for storage, it was possible to support the perimeter walls and advance quickly with the construction, using self-supporting elements and a waterproofing system that reduces time and costs.





NPS SYSTEM
TECNOSTRUTTURE ON

EUCENTRE
TECNOSTRUTTURE
5%
VALIGERIO - 01041 - RM

SYSTEM
Tecnostrutture

The NPS® System product range

Beams	NPS® Basic beam NPS® Cls beam NPS® Truss beam	20
Columns	NPS® Slim column NPS® Slim Sismi column NPS® X Slim column NPS® Style column NPS® Style+ column NPS® iStyle+ column	27
Slabs	Airfloor® slab Airfloor® Fire slab NPS® Strong slab	34
Optional and other products	NPS® Flex NPS® Base column head Pulvino NPS® Safety	37
Top-Down	NPS® Top-Down NPS® Zenith	40
Services <i>Included</i>	Preliminary technical consultation Project conversion BIM modelling of NPS® structures Calculation report Executive drawings Certificates	42
Services <i>Optional</i>	FEM modelling of the building BIM modelling of the building Coordination of the dry assembly of the structure Implementation of dry assembly of the structure	43

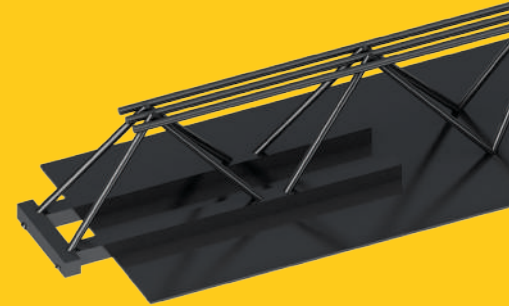
◀ Picture of the experimental campaign on NPS® structures at EUCENTRE, one of Tecnostrutture's prestigious scientific partners.

NPS® Basic beam

THIRD-PARTY VERIFIED EPD® CE

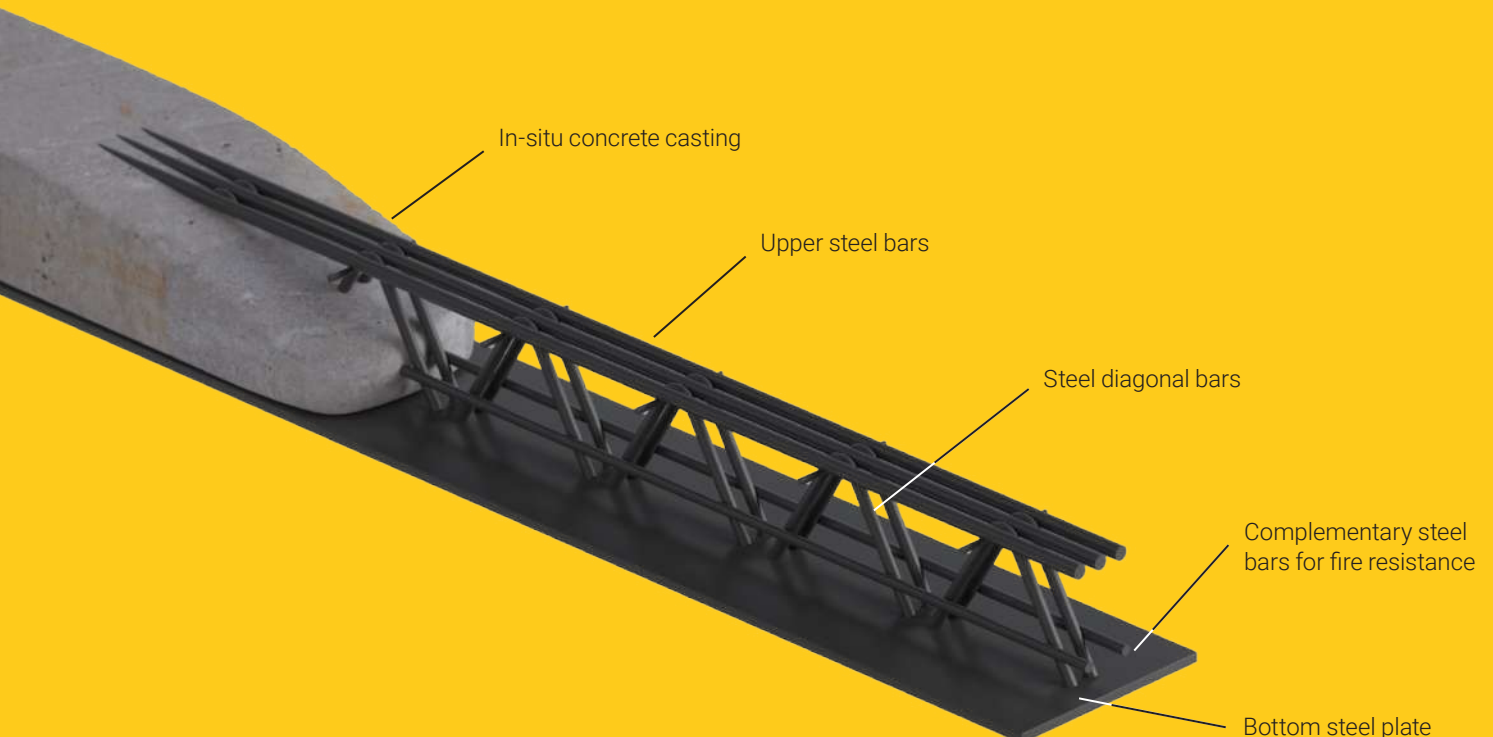
NPS® Basic beams are characterized by a compact slim-floor section, with an optional downstanding available. These beams **are ideal for various spans, depending on the required loads and geometry**, and can be **used with any type of slab**, including wooden slabs, pre-stressed reinforced concrete slabs, and composite slabs with corrugated sheet. NPS® Basic beams offer several advantages, **such as larger and more usable spaces, as well as greater flexibility for installations**. They also provide integrated fire resistance, eliminating the need for additional fire protection treatments. Critical connection zones to columns or shear walls can be designed to create seismic-

resistant structures, and the beams can be calculated and delivered as continuous beams. Each beam is manufactured in the factory and arrives on-site ready for installation. The process is straightforward: the crane lifts the beam from the truck and places it directly onto the support elements. After this, the concrete casting is carried out on-site, without the need for formwork or props. The construction is **self-supporting**, allowing the following works, such as installations and plasterboard work, to start immediately after the beams and slabs have been laid. This approach results in a more **organized construction site** and **accelerates the overall project timeline**.



◀ QR code for detailed information and technical data.

The **NPS® beam support end** is available in two versions to best accommodate the support on which it rests: either with a steel plate extending from the lower bars or with round steel bars.



NPS® beam's flexibility

NPS® beams can be combined with any type of slabs, such as wooden slabs, prestressed concrete slabs, or filigree slabs. Their open cross-section provides a **high degree of architectural and structural flexibility**, along with **simple and safe concrete casting**.



△ Example of the NPS® Basic beam combined with hollow core slab.

NPS® standard sections

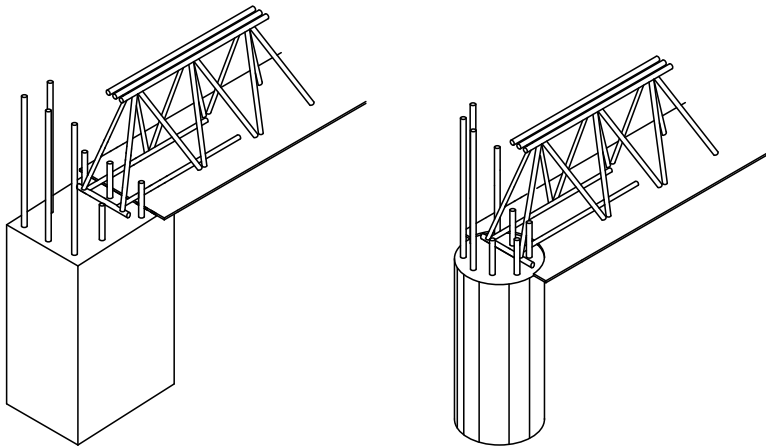
NPS® beam as slim-floor solution



NPS® beam with downstanding



Details of NPS® beams on concrete columns or walls



◁ Beam head can also be provided with continuous column reinforcement.

NPS® also available as continuous and cantilever beam

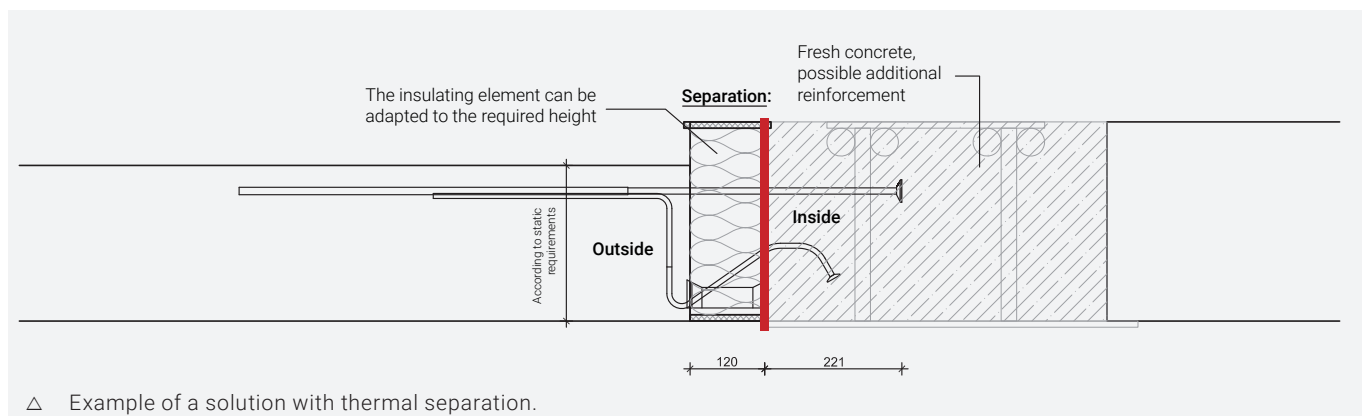
An effective solution to ensure the continuity of the NPS® beam is the use of **bolted joints**. These joints make it possible to **connect adjacent beams in different spans**, thus creating continuity in support, or to support cantilevered elements. In the first case, this allows the deformations of the individual elements to be reduced, while in the second case it allows the cantilevered parts of the building to be managed, minimising the amount of provisional work required at site.



Numerous customisation options

The flexibility of the NPS® beam enables **simple connections to facades** and to secondary

beams, height differences, and easy **integration of thermal separations**.

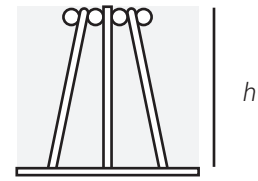
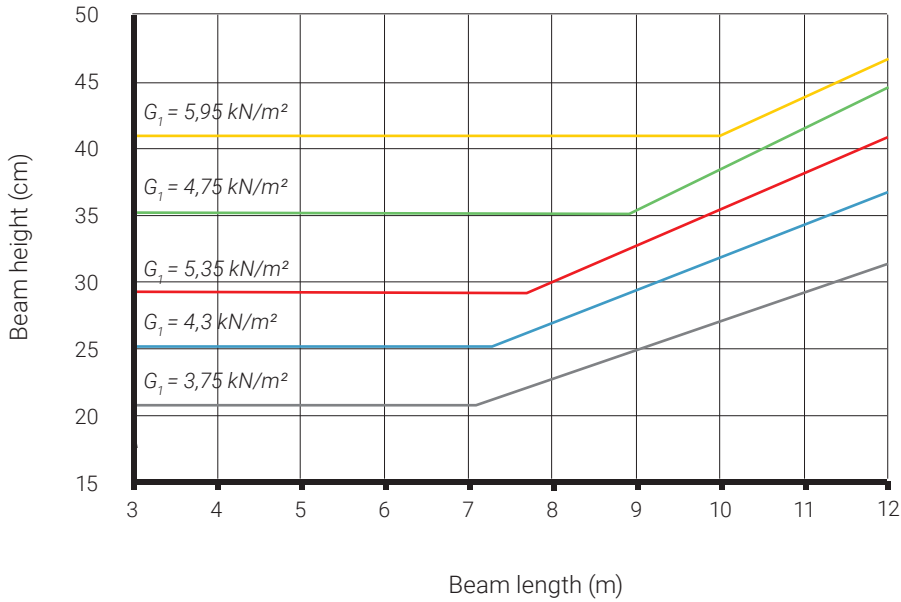


△ Example of a solution with thermal separation.

Graphic pre-dimensioning

Residential building

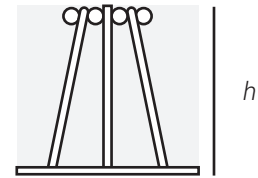
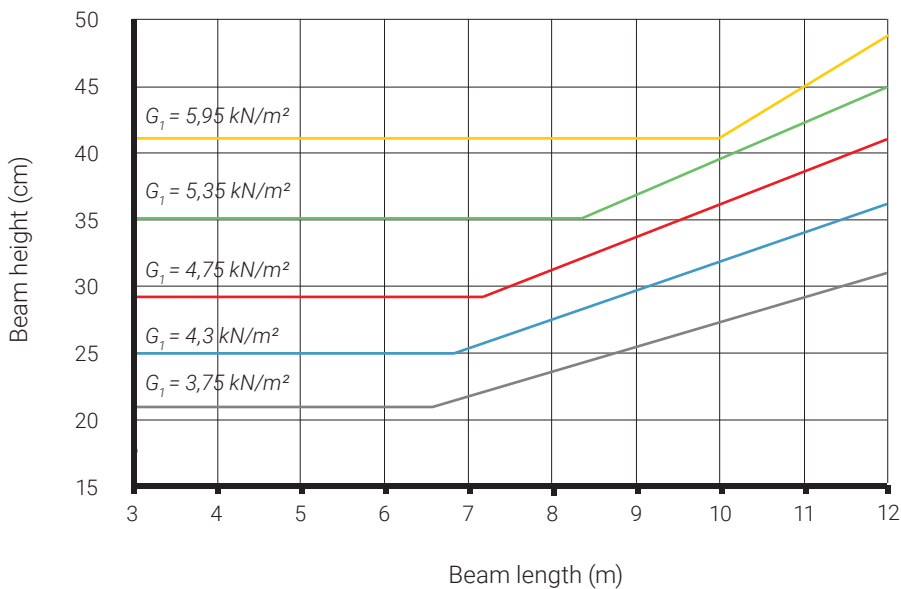
$(G_2 = 3 \text{ kN/m}^2, Q_k = 2,0 \text{ kN/m}^2)$



$b_1 = 4,0 \text{ m}$
 $b_2 = 6,0 \text{ m}$
 $b_3 = 8,0 \text{ m}$
 $b_4 = 10,0 \text{ m}$
 $b_5 = 12,0 \text{ m}$
 $b_i = \text{Slab span}$

Office building

$(G_2 = 3,5 \text{ kN/m}^2, Q_k = 3,0 \text{ kN/m}^2)$



$b_1 = 4,0 \text{ m}$
 $b_2 = 6,0 \text{ m}$
 $b_3 = 8,0 \text{ m}$
 $b_4 = 10,0 \text{ m}$
 $b_5 = 12,0 \text{ m}$
 $b_i = \text{Slab span}$

Notes:

- Diagram for central beam.
- Height of the beam, excluding the thickness of the bottom plate.
- Load combinations according to Eurocode 0.
- Values can be optimised by our technical department.
- Contact us at tech@tecnostrutture.eu or call +39 0421 570970.

NPS® Cls beam

THIRD-PARTY
VERIFIED EPD®



NPS® Cls beams feature smooth steel lower rebars embedded in a **reinforced concrete base**. They are ideal for structures with large spans and/or heavy loads where fire resistance is required, such as multi-storey car parks or underground structures. Suitable for all types of slab, with the ideal combination being hollow core or predalles slabs. Advantages: **large spans/loads with fire-resistant properties**. Fire resistance is provided by the concrete base

that protects the bottom bars, with **no additional protective measures required**. Due to their self-supporting nature, subsequent work (e.g., MEP installations) can begin immediately after the beams and slabs have been installed. The construction site remains tidier, and work progresses faster.



◀ QR code for detailed information and technical data.



△ NPS® Cls beams used for Angelini Pharma headquarters in Rome.



△ NPS® Cls beams are also suitable for non-regular architectural plans.



△ NPS® Cls curved beam, which adapts to the circular perimeter of the structure.



△ NPS® Cls beams supported on NPS® Slim columns allowed for the combination with hollow core slabs over 14 metres long.

▽ NPS® Cls beam with shaped head surrounds the oval NPS® Style+ column.



NPS® Truss beam



NPS® Truss beams are smooth steel trusses designed for the construction of steel-concrete composite beams. They provide high fire resistance characteristics and require temporary support during installation. They are particularly **suitable for use with Predalles slabs**, as they eliminate

the need for additional formwork. Advantages: trusses with a high degree of prefabrication and **excellent fire resistance**. This is achieved by the in-situ concrete that completely encases the beam, protecting it from direct exposure to high-temperature gases.



◀ QR code for detailed information and technical data.



△ Example of use with Predalles slabs.



△ i.lab Italcementi, Bergamo – Architect Richard Meier.

NPS® Slim column

THIRD-PARTY
VERIFIED EPD®

ATEX
du CSTB

CE

NPS® Slim composite columns are manufactured in our modern factory by assembling tubular steel profiles with high-adhesion reinforcement. They are completed on-site with concrete. These columns offer **integrated fire resistance up to 120 minutes**, thanks to the internal reinforcement cage, without the need for additional protective measures. Unlike conventional cast-in-place

reinforced concrete columns, they **are more compact, allowing for spaces with greater usable area** and enhanced flexibility. NPS® Slim columns are ideal for seismic-resistant structures. The combination of the external tubular profile and the internal reinforced concrete core **enhances stiffness, strength, and ductility**.

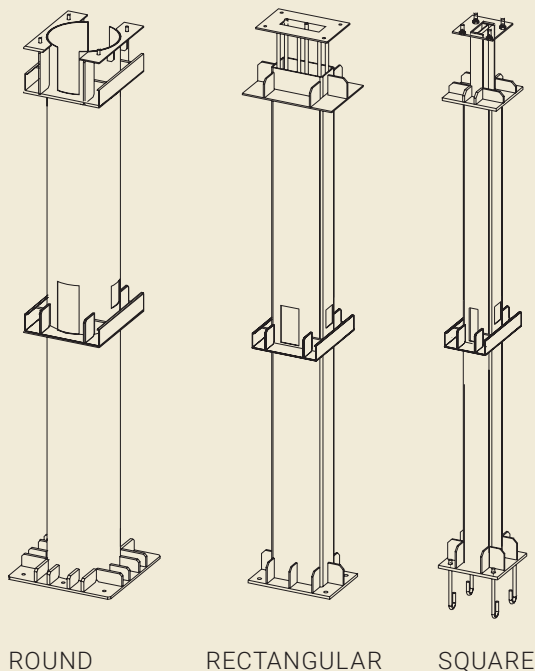


◀ QR code for detailed information and technical data.

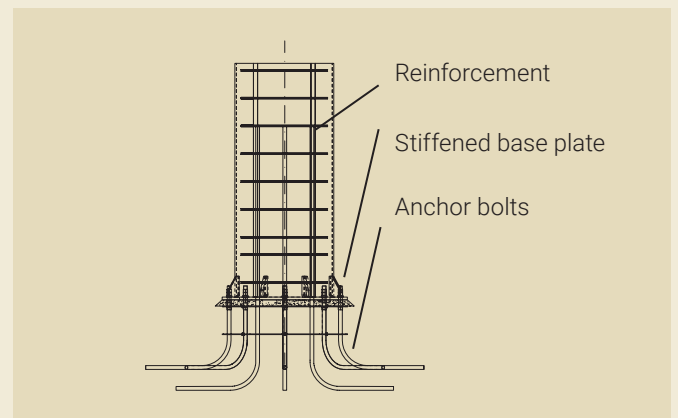


Sections

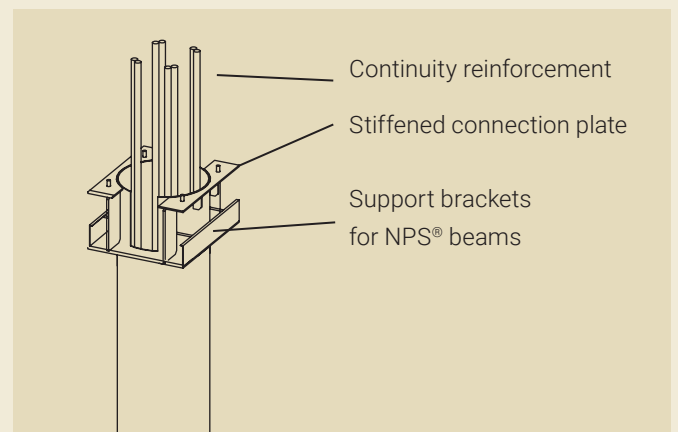
NPS® Slim composite columns can be supplied with a square, rectangular, or round section and are available in single-storey, two-storey, or multi-storey configurations, helping to accelerate the construction process.

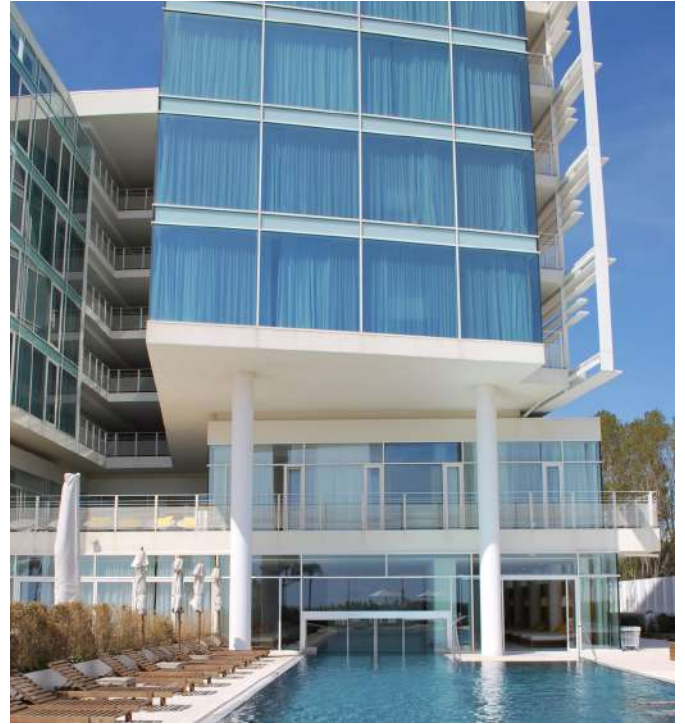


Detail of foundation connection



Detail of head connection





△ NPS® Slim composite columns with a compact section, used for the Falkensteiner Hotel in Jesolo, Venice. Project by Richard Meier, interior design by Matteo Thun.

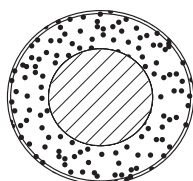
NPS® X Slim column

The distinctive feature of these even **slimmer columns** is the inclusion of a **steel profile on the inside, which enhances load-bearing capacity**. NPS® X Slim columns can be supplied either fully preassembled or to be completed on site with concrete. Fire resistance is ensured by the

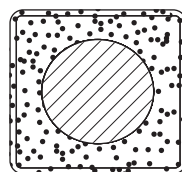
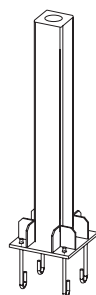
concrete layer between the outer tube and the inner profile. In seismic zones, they can be used as secondary elements resistant to gravitational loads. The columns can have a rectangular, square, or round section to meet any architectural requirement.



Sections



ROUND



SQUARE



◀ QR code for detailed information and technical data.

NPS® Slim Sisimi column



NPS® Slim Sisimi columns are an innovative solution **for buildings with isolation at the base and energy dissipation in areas of high seismicity**, or for strategic constructions. The primary innovation lies in the **anti-seismic device pre-installed at the top of the column**, making it seismic-resistant directly on the construction site. Compared to traditional reinforced concrete systems, NPS® Slim Sisimi columns isolate the building at the base by introducing additional

dissipation, which significantly reduces stresses on the structure above. These columns can be supplied with a circular, square, or rectangular section and can be combined with multi-storey NPS® Slim columns featuring different sections for each floor. Installing an NPS® Slim Sisimi column with NPS® Slim up to three storeys high allows for **the vertical element to be ready for the two upper storeys**, resulting in significant time savings.



◀ QR code for detailed information and technical data.

▽ NPS® Slim Sisimi columns for the Angelini Pharma headquarters in Rome.



NPS® Style column

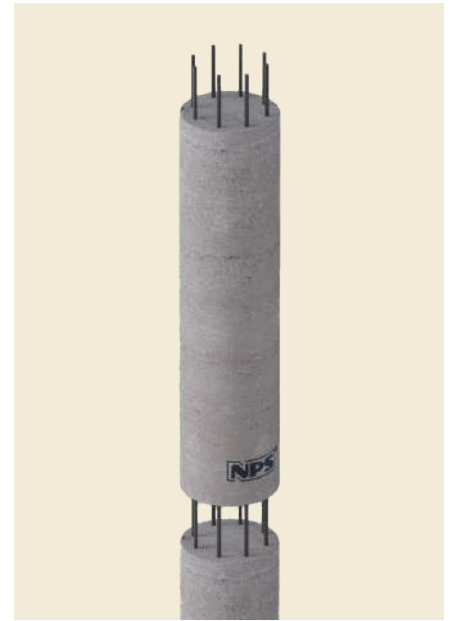


THIRD-PARTY EPD®
VERIFIED



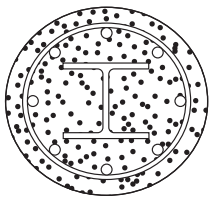
NPS® Style columns are characterized by their **high surface finishing quality**, exceptional mechanical performance, and **fire resistance up to 180 minutes**. They are available in square, rectangular, or round sections. NPS® Style columns provide a perfectly smooth surface, making them ideal for visible concrete applications. This feature, combined with their compact sections, gives the columns

an **elegant and architecturally appealing appearance**. In seismic zones, they can serve as secondary elements resistant to gravitational loads. NPS® Style columns can be designed as either reinforced concrete columns or, if equipped with a central steel profile, as steel-concrete composite columns.

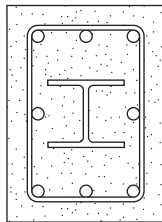


◀ QR code for detailed information and technical data.

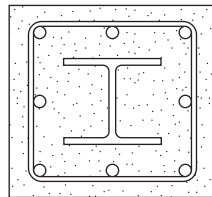
Sections



ROUND



RECTANGULAR



SQUARE

NPS® Style columns can be designed as reinforced concrete columns or as composite columns with an integrated steel profile.



△ NPS® Style columns used for the new Milan General Hospital. Project by Stefano Boeri.

NPS® Style+ column



THIRD-PARTY EPD®
VERIFIED



NPS® Style+ columns are made of **centrifuged concrete, providing a superior surface finish**. They offer high fire resistance for up to 180 minutes. The use of high-performance concrete enables these **columns to support substantial loads even with slender sections**, thus maximizing floor space utilization. In seismic zones, they can serve as secondary elements resistant to gravitational loads. The elegantly crafted surface is ideal for meeting the architectural needs of contractors, architects, and interior

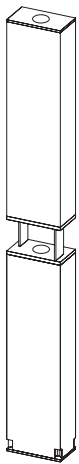
designers, as it eliminates the need for additional finishing layers. The internal cavity, generated by the centrifugation process, can be exploited for the placement of installations. Furthermore, the concrete can be pigmented to achieve **various color options** and designed for either **smooth or marbled surfaces**.



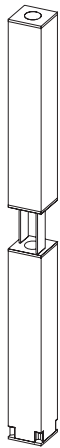
NPS® Style+ columns can be supplied with a square, rectangular, round or oval section.



◀ QR code for detailed information and technical data.



RECTANGULAR



SQUARE

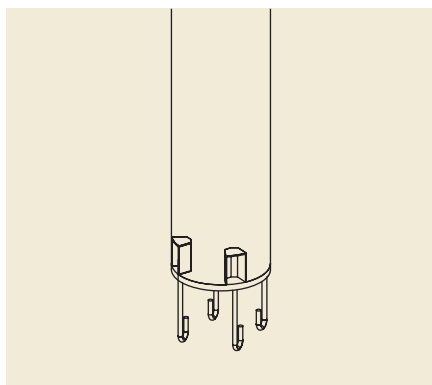


OVAL

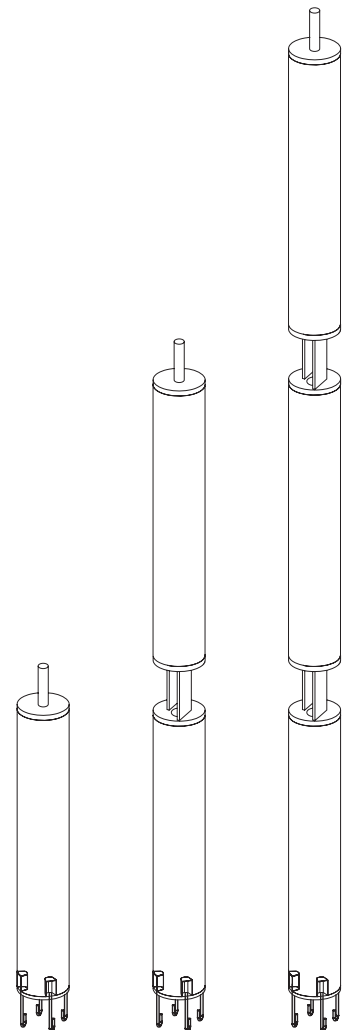
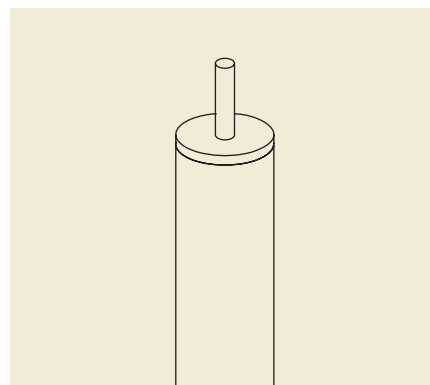


ROUND

Column base



Column head



△ Available in single-storey and multi-storey versions.



NPS® Style+ column

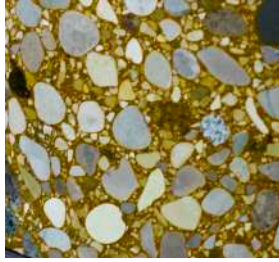
NPS® Style+ centrifuged concrete columns with visible concrete, for the Champoluc-Crest cable car building, Ayas, Aosta Valley.

Surface design

GRAVEL COLLECTION



Native Gray



Silt Yellow



Royal Red



Raw Green

SMOOTH COLLECTION



Natural Gray



Desert Yellow



Noble Red



Forest Green

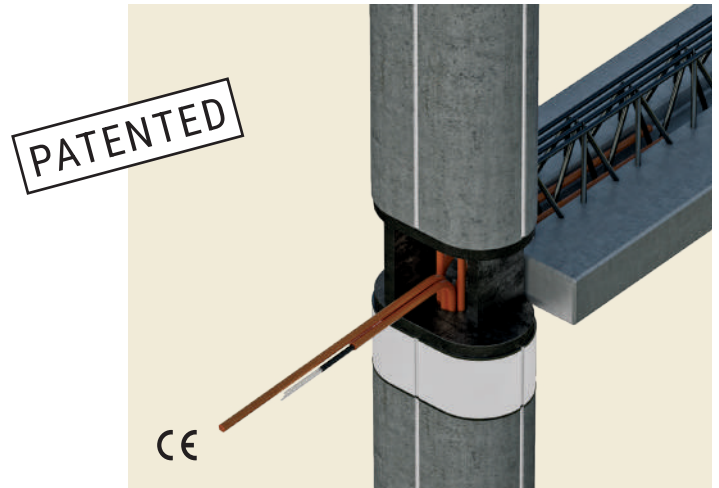
NPS® iStyle+ column

NPS® iStyle+ columns represent an evolution of centrifuged reinforced concrete columns, developed through collaboration between Tecnostrutture, RNDR Studio, and THEY simply design. **This innovative solution integrates lighting and domotic systems directly into the Style+ column**, offering both elegance and functionality. For instance, in multi-storey car parks, these columns can incorporate parking management systems.



◀ QR code for detailed information and technical data.

▷ The NPS® iStyle+ column can be equipped with integrated interactive screens or other decorative and lighting elements.



The innovative lightweight self-supporting slab. Airfloor® is the lightest self-supporting slab available on the market, patented by Tecnostrutture. It provides effective thermal insulation, it is fast to install and adaptable to

all slab spans, with three width variations derived from the 1200 mm base module. The Airfloor® panel arrives at the construction site ready for installation and can be walked on immediately, without the need for additional formwork.

The standard slab comes in two heights: 200 mm and 240 mm. In both cases, the structural section is completed on site with a minimum 60 mm collaborating concrete layer.

Advantages

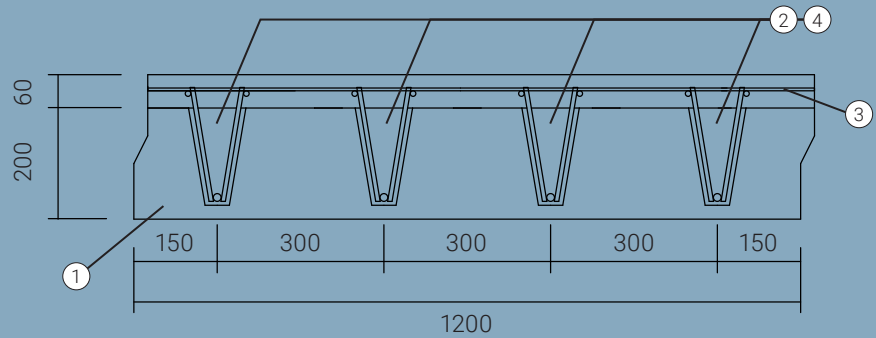
Dry weight Maximum 45 kg/m².

Self-supporting Up to 6 meters (depending on load and design geometry).

Thermal insulation Enhanced by the polystyrene layer (airpop).

Installation Simple and fast, panels adhere thanks to the shaped edge, allowing for the slab and the minimum continuity reinforcements required by the standard to be cast immediately after installation.

Continuous and homogeneous bottom surface It can be fitted with provisions for false ceiling suspension upon request.



LEGEND

- ① Shaped EPS panel
- ② Baustrada truss B450C
- ③ Partition bars
- ④ Lightened concrete

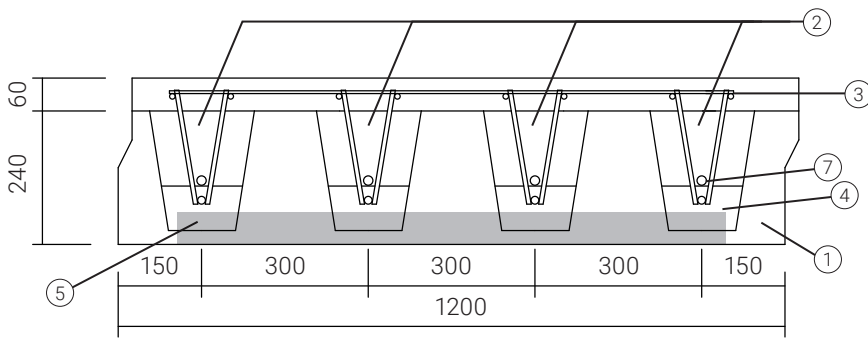


◀ QR code for detailed information and technical data.



△ Thanks to its low self-weight Airfloor® allows easy handling on site.

From 2024, the Airfloor® range is expanded with Airfloor® Fire, the first EPS integrated fire-resistant slab. Designed to offer all the benefits of Airfloor® as well as integrated fire resistance.



LEGEND

- ① Shaped EPS panel
- ② Baustrada truss B450C H 250 mm type 12/16/10
- ③ Bidirectional grid
- ④ Structural concrete
- ⑤ Supporting plate
- ⑥ Collaborating structural concrete layer (cast in situ)
- ⑦ Additional lower fire reinforcement

Advantages

Fire resistance Integrated resistance up to 120 minutes.

Self-supporting Superior compared to similar slabs.

Installation Simple and fast, can be walked on immediately after installation.

Certifications EPD certified.

High finishing freedom Suitable for visible finishes, skimmed surfaces, or false ceilings.

Versatility and adaptability

Airfloor® Fire is ideal for use in any traditional structure and offers significant advantages when combined with NPS® beams and columns. Its high degree of finishing freedom makes it adaptable to various aesthetic and functional requirements, presenting a versatile and innovative solution for any project.



NPS® Strong slab



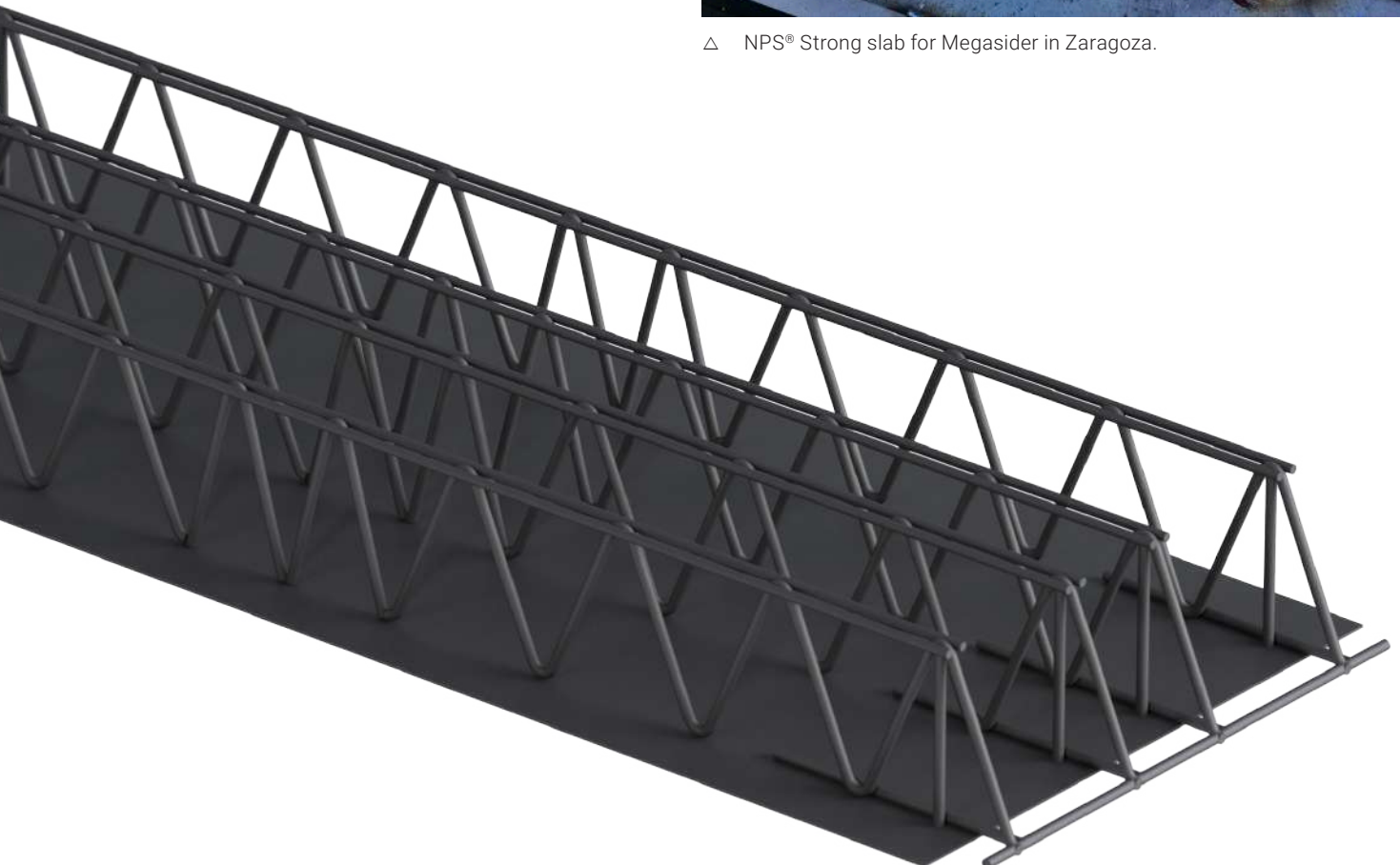
Ideal for decks subject to high loads, **NPS® Strong is a all-metal slab designed to be used as formwork**. Its dimensions and thickness are tailored to the design spans and expected loads. The width of the modules can reach up to 2.5 meters, while the height is determined by the thickness of the slab. The finish of the lower surface, which is the visible part after casting, can be either painted or galvanized, depending on the aesthetic and durability requirements of the project.



◀ QR code for detailed information and technical data.



△ NPS® Strong slab for Megasider in Zaragoza.



NPS® Flex

CE

The future of construction: our demountable **version of NPS® beams and columns**, designed according to the principle of design for disassembly. With NPS® Flex, we have transformed NPS® products into fully recyclable and reusable construction elements. The joint is separated from the concrete casting using a box profile, allowing the **beam and support** to be **easily disassembled and reused**. NPS® Flex not only facilitates the disassembly and reuse of NPS® elements but also **enhances the building's value** and supports the **achievement of a Cradle to Cradle certification**.



◀ QR code for detailed information and technical data.



NPS® Base column head

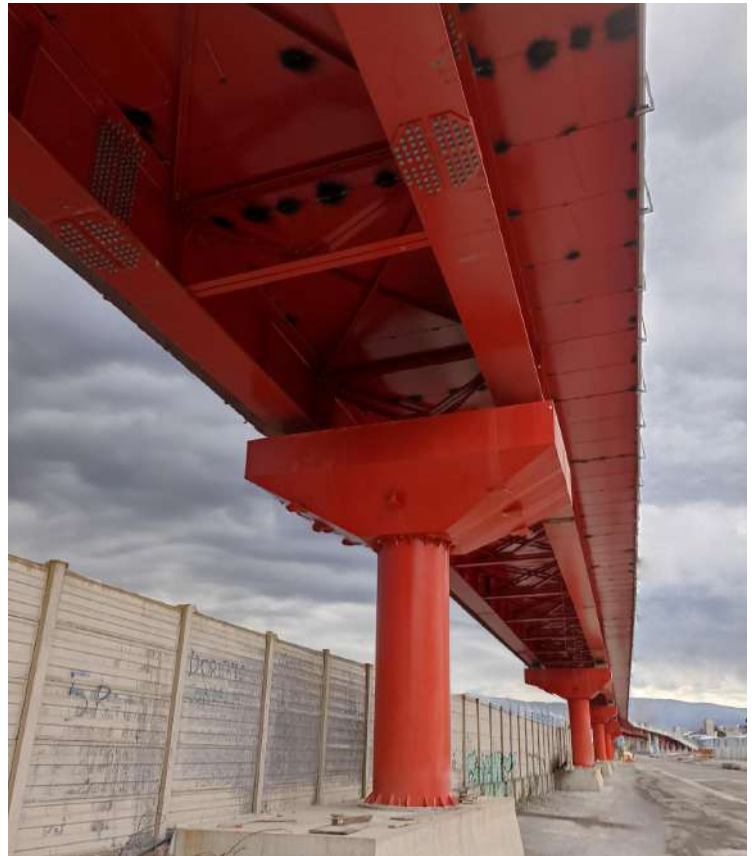
CE

NPS® Base column **head prevents perforation** in the column area and is versatile in its application. It can be used not only with NPS® elements but also with in-situ concrete and precast reinforced concrete columns.



▷ Other accessories are available. Please contact us.

The steel formwork is designed to be self-supporting during casting and includes pre-inserted slack reinforcement. **It is ideal for the fast construction of bridge bearings or specialized structures in elevated or challenging locations.** For larger projects, the formwork can be **divided into segments for easier transportation and on-site assembly.** In these cases, the reinforcements are carefully dimensioned and positioned to ensure structural continuity once the segments are assembled.



△ Bridge bearings on new Superba route, Genoa.



△ Bridge bearings on the Torraccia Viaduct – A1 MI-NA motorway.

CE NPS® Safety

NPS® Safety is a fall protection system. NPS® beams can be supplied with integrated provision for the insertion of an anti-fall panel upon request. This feature allows a quick and secure installation of railings, ensuring safety during construction.



NPS® Top-Down

The NPS® Top-Down solution facilitates the rapid construction of underground structures without encroaching on areas outside the excavation or

requiring extensive maneuvering space on site. This system leverages the self-supporting characteristics and speed of NPS® System to build underground structures that can absorb horizontal stresses within the excavation, eliminating the

need for temporary tie-rods and struts. The NPS® beams, acting as permanent load-bearing elements, counteract the deformation of perimeter walls, ensuring stability and safety.

The traditional NPS® Top-Down system employs only beams, which are ideal for underground work.

These beams rest on diaphragms and serve as both struts and supporting beams, thus avoiding the need for temporary elements.

The complete NPS® Top-Down system incorporates both beams and columns. In this case, the beams rest on NPS® Style multi-storey columns, which are lowered into the excavation beforehand. This approach supports the excavation progressively using the NPS® System, again eliminating the need for temporary struts.

Advantages

Self-supporting Total self-supporting capacity of the beams.

Excavation Containment of the excavation within the site perimeter.

Installation Fast execution with simultaneous installation of perimeter diaphragms and intermediate columns.

Visible design Visible beams and columns that do not require additional finishing.



△ NPS® columns and NPS® beams used to build the site from ground level down.



△ Before and after use of Top-Down NPS® solution for underground car park in Piazza Ghiaia in Parma.

NPS® Zenith

The NPS® Zenith system is designed for constructing deep structures with large, multiple spans. By using permanent beams and columns, it eliminates the need for transitional works and is suitable for installations that remain visible.

The NPS® Zenith Top-Down system ensures millimetric precision in installation and enhances site safety, while also guaranteeing high productivity. Construction time and public area occupation are significantly reduced as there is no need to wait 28 days for concrete curing. The impact on the surrounding environment is minimized by

optimizing work areas.

During installation, the NPS® Zenith device leverages gravity to stabilize the structure, thereby reducing vibrations.

This system is particularly effective for underground work with large spans in confined spaces. The NPS® beams and columns have integrated fire-resistance, requiring no additional treatment, and can remain visible without finishing. This approach avoids the 'skyscraper syndrome', as excavation occurs internally and remains concealed from view.

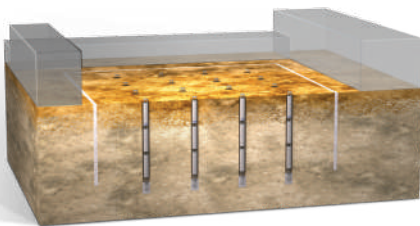


◀ QR code for detailed information and technical data.

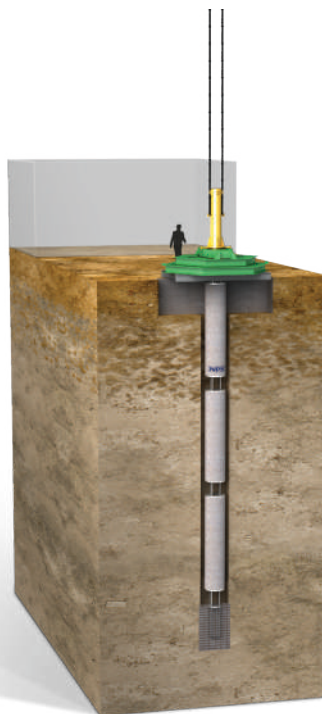
- ① Lowering of columns with Zenith and casting of foundations.
- ② *Zenith functioning.* * ▷
- ③ Excavation and pouring of the foundations.
- ④ Ascending with completion of the slab.

* Zenith operation: position the device, connect the aiming antenna and the Zenith fitting to the top of the column, lower the column into the pit until the Zenith fitting aligns with the base rectangle.

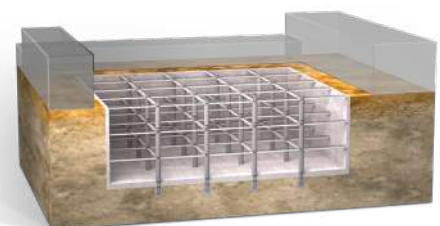
①



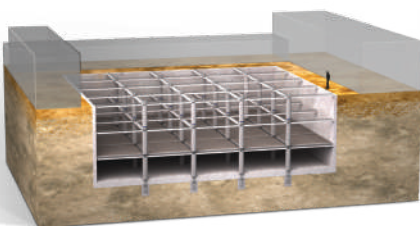
②



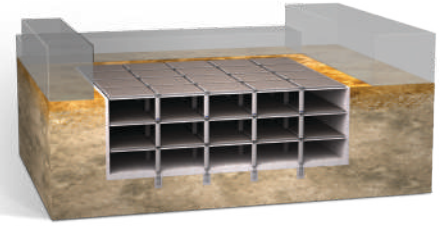
③



④



⑤



Services *Included*

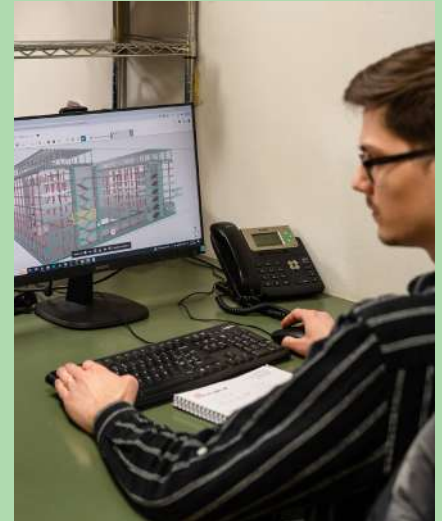
Tecnostrutture's technical team offers **personalized advice** and **technical support** from the initial stages through to project completion.

REQUEST A CONSULTATION
tech@tecnostrutture.eu
+39 0421 570 970

This includes:

- Preliminary technical consultation
- Alternative design with NPS®
- BIM modeling of NPS® structures
- Design of NPS® structures with calculation reports and detailed drawings
- Certificates

Each quotation includes costs, estimated installation times, the quantity of concrete to be poured, and the calculated CO₂ emissions.



Certified life cycle analysis and contribution to the environmental certification of buildings.

Our company is ISO 14001 certified, which means that Tecnostrutture has implemented an **effective environmental management system** in accordance with international standards. This certification assures customers that Tecnostrutture actively works to minimize its environmental impact and complies to the highest environmental standards. We have conducted a comprehensive analysis of every stage of our products' life cycle, and the results are documented in a report verified by a third party. Each NPS® product is accompanied by an **Environmental Product Declaration** (EPD), which complies

with UNI EN 15804 and ISO 14025 standards. These EPDs enable environmentally sound decisions to be made right from the design stage. Is your building certified according to the LEED (Leadership in Energy and Environmental Design) protocol? If so, you have access to a **document detailing the credits that can be earned using NPS® products**. Similar mapping is also available for the DGNB protocol.



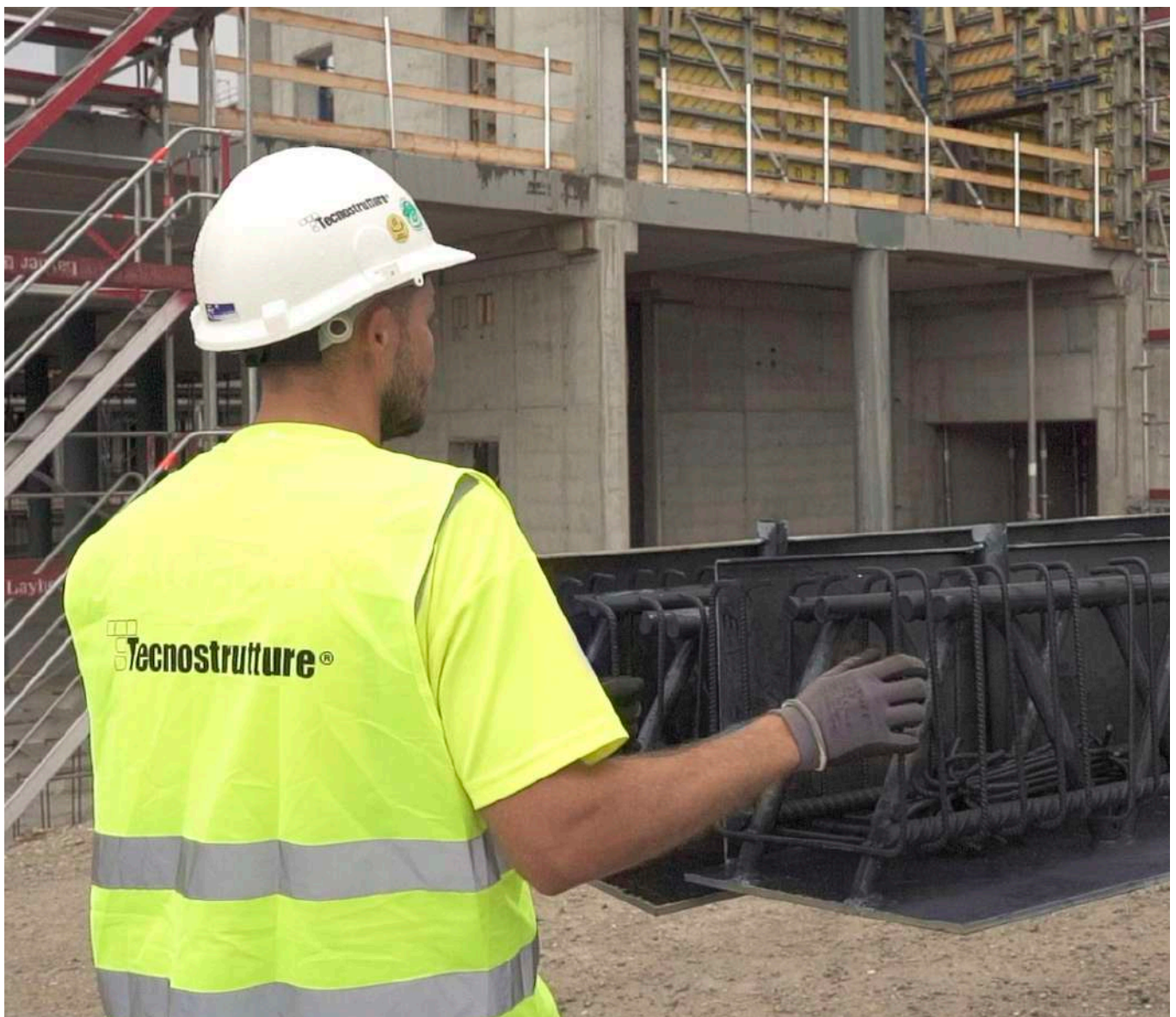
◀ Scan the QR code to download EPDs, mappings for LEED, DGNB, and our sustainability report.



Services *Optional*

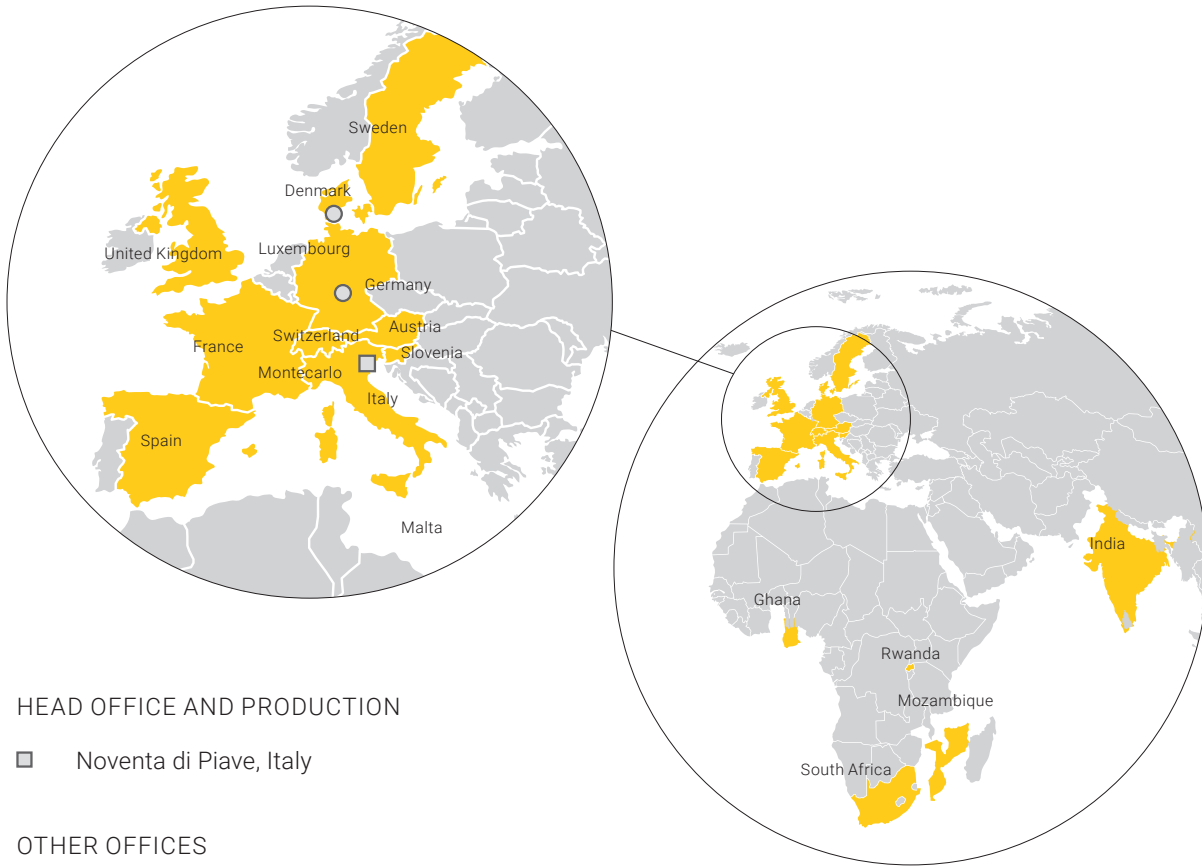
Tecnostrutture also assists you in the assembly of structures on site. We know that **the presence of an NPS® installation expert on site can be particularly useful to ensure the necessary safety for correct installation**, especially when the system is being used for the first time. That is why we

offer you the support of a site manager. Our experience? After the first day, workers are able to work independently because **NPS® is so easy to install**. Do you prefer to delegate the installation? **Tecnostrutture can also take care of this and assemble both beams and columns for you.**



△ Assembly instructions by one of our site managers, who coordinates the company's installation team.

Market areas



HEAD OFFICE AND PRODUCTION

■ Noventa di Piave, Italy

OTHER OFFICES

○ Germany
○ Denmark

Scientific Partners



We drive (r)evolution in construction.

Tecnostrutture Srl

Via Meucci, 26 I-30020
Noventa di Piave Venezia
+39 0421 570 970

sales@tecnostrutture.eu
tecnostrutture.eu

Tecnostrutture Deutschland GmbH

Alfredstrasse 81
D-45130 Essen
+49 (0)201 490 201 76

nps@nps-system.de
nps-system.de

