its Engineering Company

STRUCTURES DEPARTMENT

Brochure

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The Department

The Structures Department offers design and verification services for the static and seismic performance of new civil and contemporary building structures.
Our highly qualified engineers design and optimize structures in reinforced concrete, steel, wood, and innovative, technologically advanced materials. We bring ambitious ideas to life with creative expertise and specialized technical skills, contributing to the realization of economically sustainable buildings and structures with a strong focus on environmental impact and long-term maintainability.
Thanks to their versatility, integration, and data management capabilities, our structural analysis and design models simulate responses to a wide range of static, dynamic, and nonlinear loading conditions, ensuring the safety and robustness of structural projects in compliance with national and international regulations.
Data transfer links enable seamless import and export cycles between analysis models, BIM systems, and CAD platforms, ensuring complete project control at any scale, from design to execution.

Services

01 Structural Design

- Preliminary, detailed, and executive design of structures in reinforced concrete, steel, wood, and innovative materials
- Structural analysis and optimization for buildings, bridges, and complex infrastructures

02 Static adn Dynamic Analysis

- Simulations of static, dynamic, seismic, and wind loads
- Seismic design using advanced technologies such as base isolation and damping devices

03 Work Supervision

- Structural works supervision and on-site verification

04 Integrated BIM Modelling

- Modelling and data management with BIM and CAD platforms for integrated projects
- Interoperability between structural and architectural models

05 Verification and Validation

- Structural and seismic safety assessment of existing infrastructures
- Load testing and performance analysis
- Validation of executive projects developed by third parties
- Compliance analysis according to national and international standards

Our Projects

Lenzino Bridge

Structural Innovation at the Intersection of River Engineering, Restoration, and Geotechnical Stability

The new Lenzino Bridge on the SS45 over the Trebbia River stands as a landmark of engineering excellence, combining advanced structural solutions with landscape integration and geotechnical safety. Built after the collapse of the historic bridge in 2020, the project represents a comprehensive intervention of reconstruction, restoration, and hydrogeological risk mitigation.

The new deck features a composite steel–concrete structure with three main spans supported by steel frames and reinforced concrete piers with twisted toroidal sections—improving static performance and flow interaction. Foundations consist of medium-diameter piles anchored in deep argillite layers, ensuring long-term stability under both hydrodynamic and seismic loads. A key element is the restoration of the original arch span, now repurposed as a pedestrian suspension bridge—preserving historical continuity and enhancing the site's scenic value.

To address slope interaction, engineering solutions included a landslide-free abutment, an 18-meter cantilever terminal span, and a custom joint capable of absorbing ground movements without stressing the deck. The project also includes deep slope stabilization, riverbank protection, and the removal of temporary works with full environmental restoration.

The Lenzino Bridge sets a benchmark in resilient infrastructure, meeting structural, hydraulic, and geotechnical challenges with cutting-edge engineering.

Location:	Emilia-Romagna, ITALY
Client:	ANAS S.p.A.
Year:	2020 - 2023
Work amount:	€25.000.000,00
Categories:	D.02, S.04, S.05, V.02
Service provided:	Final and executive design

F.A.I.T. Underground Parking Garage

Project for the Redevelopment and Refurbishment of the “Ex-Esso Station” and “Ex-Pocol Cable Car Station” Area in Cortina d’Ampezzo

The project involved the construction of a multi-story underground car park (7 floors) using the top-down technique in the centre of Cortina d’Ampezzo. The design was remarkably complex from both a structural and geotechnical perspective due to the nature of the soil (plastic clays associated with ancient landslides), the complex multi-aquifer hydrogeological system, and the proximity to existing buildings. ITS specifically managed the operational direction and part of the geotechnical monitoring. Notably, remote and spot monitoring data were integrated using various techniques.
Additionally, a renovation project was carried out for the former Pocol Cable Car station, which involved stabilizing the slope at the base of the building using self-drilling bars.

Location:	Veneto, ITALY
Client:	F.A.I.T. S.r.l.
Year:	2015 - 2017
Work amount:	€14 million
Categories:	S.06
Service provided:	Work supervision

ATER Potenza

Design of 4 Residential Buildings in Macchia Giocoli

The project involved the construction of four identical residential buildings commissioned by A.T.E.R. Potenza, each consisting of two independent structures with 16 subsidized public housing units per building, totalling 64 apartments.
The adopted structural typology consists of a reinforced concrete frame with a base isolation system. This was achieved by installing seismic isolation devices beneath the first slab to decouple ground motion from the superstructure.
The main advantage of this system is the increase in the structure's fundamental period, shifting it away from the high-acceleration zone of the seismic spectrum. This significantly reduces the accelerations transmitted to the superstructure and decreases inter-story displacements, as the building above the isolators moves as an essentially rigid block. This system prevents damage to non-structural elements, which could render a traditionally built building uninhabitable, and helps protect the building's contents, thus reducing occupant panic.

Location:	Basilicata, ITALY
Client:	ATER Potenza
Year:	2016
Work amount:	€6,913,200.00
Categories:	-
Service provided:	Final and executive design

San Michele Bridge

Structural Safety Assessment of the Historic Railway Bridge

An in-depth structural safety assessment was carried out for the San Michele Bridge over the Adda River, in accordance with Ministerial Decree 14.01.2008, to verify compliance with current regulations and identify potential retrofit needs.

The study included a comprehensive degradation survey, material and soil characterization, and the development of an advanced finite element model (FEM) of the entire structure. Critical issues were identified, particularly in the bracing members—essential for transverse stability—as well as in key structural components such as longitudinal girders and crossbeams.

These vulnerabilities, exacerbated by the transit of heavy rail traffic (SW/2), required a careful balance between safety, serviceability, and structural reinforcement measures.

Built in the late 19th century using wrought iron, the bridge retains most of its original materials. Targeted inspections and detailed investigations allowed for an accurate evaluation of the structure's residual performance.

The final outcome provided a clear definition of the current performance levels and a solid technical basis for planning future conservation and strengthening strategies.

Location:	Lombardy, ITALY
Client:	RFI S.p.A.
Year:	2015
Work amount:	€20.000.000,00
Categories:	-
Service provided:	Inspection, material investigation, structural and seismic vulnerability assessment, structural and functional upgrade design

Cadore Bridge

Structural Characterization, New Monitoring System, and Extraordinary Maintenance Works on Cadore Bridge

The preliminary phase of the intervention involved planning the diagnostic instrumental campaign, with detailed surveys of the entire structure. This was followed by dynamic identification of the bridge under environmental vibration conditions. Based on this phase, a second, more detailed bridge model was developed for conducting the Non-Linear Dynamic Analysis. Structural checks were carried out both under static and seismic conditions relative to the current state, adopting material priorities and the actual thicknesses of the metallic elements found on the structure.

Finally, a preliminary design was completed for the bridge's structural upgrade, an innovative road surface heating system, and reinforcement details for the Corten steel structures.

The third phase involved the design and installation of a new system for monitoring gravitational movements, consisting of sensors, including inclinometers, extensometers, and strain gauges.

Location:	Veneto, ITALY
Client:	ANAS S.p.A.
Year:	2012
Work amount:	€6,764,500.00
Categories:	-
Service provided:	Structural investigation campaign, dynamic characterization, new monitoring system design, new monitoring system implementation

Delle Mire Variant Road

Connection between A27 (Vittorio Veneto Sud exit), SP103, and SS51 Alemagna

The project involves the construction of a new road infrastructure in Vittorio Veneto, in a suburban area south of Ceneda, between the A27 highway and SS51. This intervention is part of a broader road plan to improve connectivity to the S. Giacomo di Veglia Industrial Zone. The SP86 "Delle Mire" variant represents the first functional section, linking the Vittorio Veneto Sud toll booth (Cozzuolo) to SS51 (Via Matteotti). The 1,400-meter-long route, running west to east, was designed to focus on efficiency and environmental integration. During the detailed design phase, specialized studies were conducted, including traffic analysis, noise impact assessments, geological and geotechnical surveys, and tunnel risk evaluations.

Key Works Executed

- Artificial Tunnel and Railway Underpass: Constructed using the Top-Down method, with 80 cm thick reinforced concrete diaphragm walls and a 90 cm post-tensioned slab. The tunnel was covered and seamlessly integrated into the urban landscape. The railway underpass, completed in just 5 days thanks to an innovative engineering solution, reduced costs by 50% compared to traditional methods.
- Bridge over the Cervada Stream: A post-tensioned reinforced concrete box-girder structure with a variable slab thickness (65 to 90 cm), lightweight steel tubing, and 80 cm diaphragm walls for more excellent durability. The elimination of joints and supports resulted in lower long-term maintenance costs.

Location:	Veneto, ITALY
Client:	Province of Treviso
Year:	2010 - 2012
Work amount:	€5.000.000,00
Categories:	V.02, S.03, S.05, S.04, D.0, AI.03
Service provided:	Detailed design and safety coordination during the design phase

Rudavoi Bridge

Construction of the new bridge over the Rudavoi Stream

The project involves the construction of a new bridge in the Municipality of Cortina d'Ampezzo, serving Regional Road No. 48 "delle Dolomiti". The bridge crosses the Rudavoi stream near kilometre 132, close to Passo Tre Croci. The total bridge span is 180 meters, divided as follows:

- 40 meters for each side span
- 100 meters for the central span

The bridge's complex geometry results from the combination of multiple curvatures:

- The horizontal alignment follows a 140-meter radius curve.
- The deck profile has a 1,040-meter radius curvature, with a midspan vertical deflection of 3.8 meters relative to the abutments.
- The underside of the deck is designed with three circular arcs, balancing structural efficiency with aesthetic and architectural considerations.

Through-holes were incorporated into the design to enhance the bridge's visual lightness and emphasize its elegant, dynamic form. This solution reduces the structure's apparent mass and accentuates its depth and three-dimensional curvature.

Location:	Veneto, ITALY
Client:	Veneto Strade S.p.A.
Year:	2009 - 2011
Work amount:	€6,230,000.00
Categories:	-
Service provided:	Preliminary and final design, structural and seismic analysis, validation of the executive project

Headquarters - Treviso Porvince

Conversion of the former Neuropsychiatric Hospital of S. Artemio into the new headquarters of the Province of Treviso

The project involved the conversion of the former Sant'Artemio Neuropsychiatric Hospital and its surrounding park into the new headquarters of the Province of Treviso. The renovation preserved the original structure, consisting of separate pavilions connected by tree-lined avenues, with the addition of elevated walkways to link some buildings. The project included the restoration of approximately 90,000 cubic meters of existing structures, the demolition of 30,000 cubic meters, and the reconstruction and expansion of 70,000 cubic meters, for a total of about 130,000 cubic meters. The new structures were built using reinforced concrete and steel, with roofs made of steel and wood, and walkways in steel. The seismic vulnerability assessment was conducted for all 10 buildings involved, including investigations into structural geometry, construction details, and material properties through on-site testing. Thanks to an extensive survey campaign, the knowledge level was determined to be accurate (LC3). The buildings were originally designed with load-bearing masonry made of solid bricks, except for later modifications such as the insertion of reinforced concrete columns in Building No. 2 and the construction of a new stairwell in Building No. 10. The foundations consist of a 46 cm thick base of solid bricks, over which an unreinforced concrete foundation is placed. The external masonry walls have an average thickness of 40 cm, while the internal walls are thinner, measuring 26 cm. The floor structures are made of steel beams and terracotta vaults, completed with an unreinforced concrete slab. The roofs are entirely made of wood, featuring hip roofs with an average slope of 46%.

Location:	Veneto, ITALY
Client:	Habitat S.r.l.
Year:	2010
Work amount:	€42,500,000.00
Categories:	S.06
Service provided:	Final design for integrated contract, including static and seismic vulnerability assessment, structural works supervision, infrastructure, and roadway management

New School Complex

A new energy-efficient school complex with a reinforced concrete and steel structure

The project integrates the intervention's functional requirements with the site's morphological, environmental, and landscape characteristics, particularly the designated area. The new school complex covers a total volume of approximately 32,150 m^3 with a usable floor area of about 7,150 m^2 and accommodates 450 students. The Agordo School Complex is a low-energy building characterized by:

- Flexible interior spaces to optimize construction and management costs
- High energy efficiency to achieve significant energy savings
- Use of eco-friendly materials and construction techniques
- Careful landscape integration, ensuring the new construction naturally complements the surrounding area while maintaining the continuity of slopes and open fields leading to the nearby stream, with a portion of the area remaining undeveloped

The building consumes only 28 kWh/m^2 per year, approximately five times lower than the legal limits set by Law 10/91, placing it well within Energy Class B.
Additionally, the complex is equipped with renewable energy systems, including: 50 m^2 of solar thermal panels and 140 m^2 of photovoltaic solar panels.
The project was selected among the top 10 Italian projects showcased at MCE Expocomfort Milan 2006 under the theme "Actions for Sustainability" on an urban scale.

Location:	Veneto, ITALY
Client:	Province of Belluno
Year:	2005 - 2009
Work amount:	€10,494,941.32
Categories:	E.08, S.06, IA.01, IA.02, IA.04
Service provided:	Preliminary design, final design, executive design, work supervision and safety coordination during execution phase

Battistella S.p.A.

New Industrial Building and Office Complex

The new Battistella factory was inaugurated between 1992 and 1993, resulting in the creation of an innovative building that strikes a perfect balance between functionality and industrial design. The intervention can be formally and functionally divided into an office complex and a production facility.
The production area's structural scheme is based on a rectangular grid of 20x32 meters, with concrete "fungus" columns at the nodes that support 32-meter-span trusses to which the roof platform is attached. The roof is made up of secondary trusses with a 20-meter span and a closing panel. The installations are positioned along the spans of the secondary trusses, ensuring a net height of 7 meters for the production activity.
The design goal for the production area was to create spaces as free from structural constraints as possible, achieving a high degree of flexibility in managing the layout and quickly reorganizing the production lines. Product sorting is carried out by computerized trolleys.

Location:	Veneto, ITALY
Client:	Battistella S.p.A.
Year:	1991 - 1993
Work amount:	€7.440.000,00
Categories:	S.03
Service provided:	Preliminary design, final design, executive design, work supervision and safety coordination during execution phase

its
Engineering
Company

Operational offices

Italy

Pieve di Soligo (TV)
Padua (PD)
Cortina d'Ampezzo (BL)
Bolzano (BZ)
Catania (CT)
Venice (VE)
Verona (VR)

Abroad

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