



SMART EVOLUTION



CARE.
GROW.
CREATE.



ENGINEERING SERVICES
FOR CREATING PRECAST PROJECTS



FROM ANALYSIS AND DESIGN TO CERTIFICATION

Precast is a modern and versatile building method for any type of building. Its excellent load bearing capacities and possibilities for long spans give more freedom to architectural and structural design than traditional methods. Column-free interior space is so flexible that it allows changes to floor plans if the building's use changes.

Ever since the establishment of Elematic in 1959, the company has been involved in projects all around the world. Over the years we have learned the varying needs of precast projects, and tacit knowledge has been transferred from one generation of experts to the next. On the basis of these insights, we have set up a team of experienced structural engineers to help you construct a sustainable, well-designed building.

We provide end-to-end structural engineering services for all kinds of buildings, from analysis and design to certification. Together we will find the best and most efficient ways to implement precast in your project – not only regarding materials and structure but also in terms of the required production system, logistics and site execution.

We coordinate the design process with all parties involved so that you are not only able to control your building project better but also get a faster return on your investment.

OUR SERVICES

Elematic Engineering Services offer complete engineering support for your building project. The services can also be tailored to your specific needs - in addition to a complete service package, you can also choose only a specific service, such as engineering or element drawings.

STRUCTURAL ANALYSIS AND DESIGN

Our structural analysis and design service includes finite element modeling and analysis to determine and evaluate stability and structural system requirements, and to ensure the desired behavior of the building. It also includes connections design and the design of precast elements, taking into account their production, demolding, handling, storage, transportation and erection in addition to building lifetime service conditions.

What is included?

- **Structural modeling**
- **Stability analysis:**
 - gravity loading
 - wind analysis
 - seismic analysis
 - building super-structure design
 - all structural member design
 - precast element design
 - connections design
- **Building sub-structure design and foundation design**

EXECUTION AND PRODUCTION DRAWINGS

In the precast method, the creation of structural drawings as part of building design is a far more elaborated process than in conventional construction. The drawings include the execution drawings for the project site and the precast element production drawings for the plant. The Elematic structural engineering team can offer in-depth knowledge on all the drawing requirements. We cover all the required aspects, which means you don't need several different partners - and with just one team working on the project, the risk of errors is decreased and high quality results ensured.

What is included?

- **Building Information Modeling (BIM)**
- **Building execution drawings**
- **Element production drawings**
- **Bill of quantities of structural material**
- **Reinforcement schedule**

FOR ALL BUILDINGS

We provide engineering for various kinds of buildings.

- **Residential**
- **Office buildings**
- **Shopping centres**
- **Public buildings**
- **Logistics facilities**
- **Industrial buildings**
- **Parking garages**
- **Villas and farmhouses**
- **Boundary walls**
- **Stadiums and arenas**

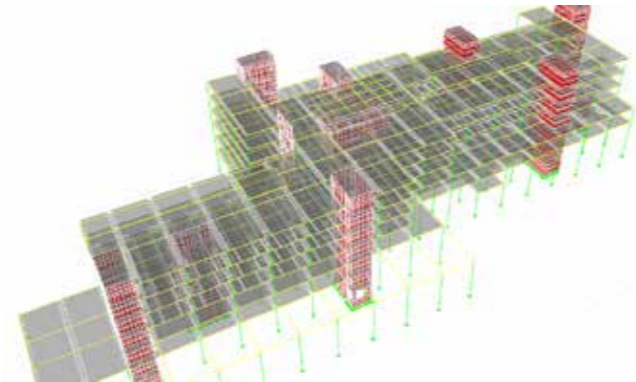


VARIOUS NEEDS

Based on occupancy requirements, different buildings need different types of structural or architectural precast elements:

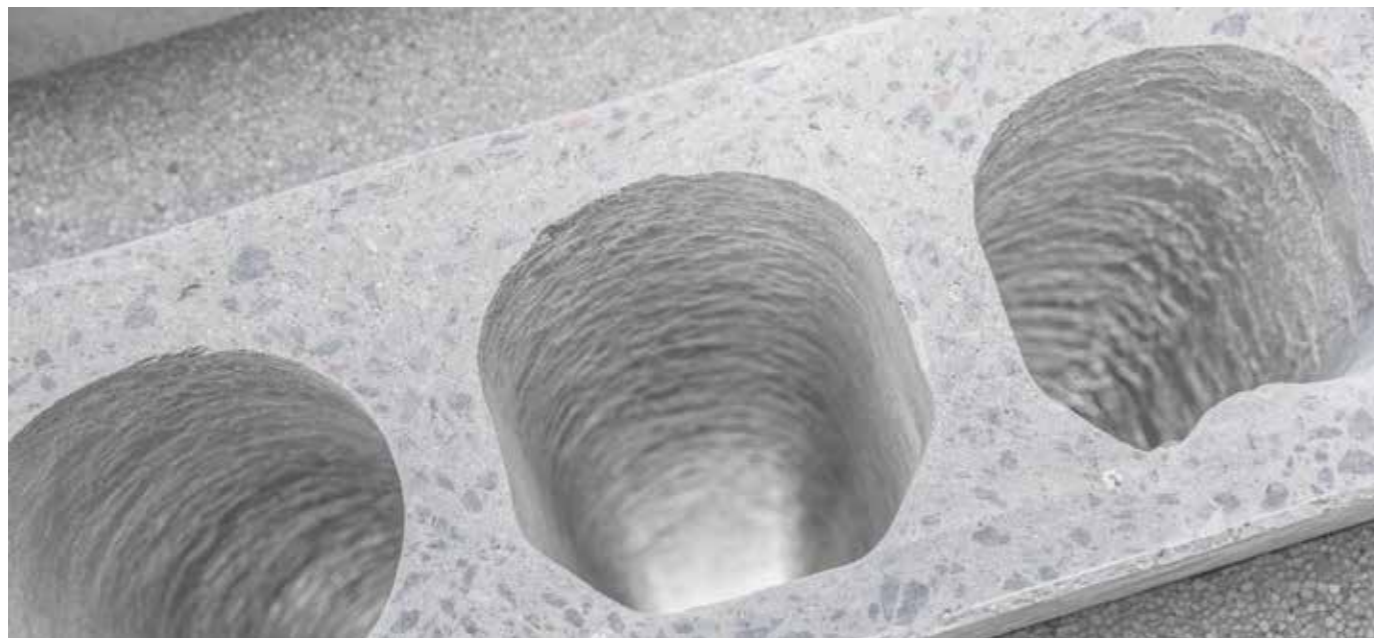
- **TT-slabs, solid slabs, hollow-core slabs**
- **Beams, girders, spandrels**
- **Columns, wall panels (solid & sandwich)**
- **Shear walls, moment frames**
- **Additional components**
 - **Stairs**
 - **Balconies**

Our team has worked on almost every type of precast element for building construction. Our team understands the different requirements set for the elements by the production system, handling, storage, transportation and erection, the connection system and the service conditions.



CODES/STANDARDS

Our team has garnered experience in various parts of the world, including the USA, Europe, Middle East and Australia, and is well-rehearsed in designing according to different international standards: ACI, PCI design handbook, IBC, CPCI, Euro code 2 and NPCAA.



STRUCTURAL DESIGN STEPS

A structural design project starts with an engineering service agreement that defines the scope of the project. In the starting phase, our experts will ask you to supply project information required for the design.

Our design team develops the design concept on the basis of the supplied project information. Once the concept has been cleared with the project owner, the detailed modeling, analysis and design is carried out. The execution of the project and the element production drawings for the complete project will also be put together at this stage. If needed, our team can also define a detailed schedule for the production of precast elements and for the installation at the construction site. We will also provide the tolerances and required quality criteria for achieving the desired results.

During the project's execution phase, our team may visit the plant and the site to supervise the quality of the work in progress.

The Elematic team has extensive experience in designing precast plants. The structural design of precast plants comprises building and stockyard design, specific machine foundations for precast machinery and the batching and mixing plant.



PROJECT ROLES & RESPONSIBILITIES

Elematic Project Manager

- **Overall responsibility**
- **Main point of contact**

Local Structural Designer

- **Must be an authorized engineer at the project location**
- **Liason with local authorities, if required**

You

- **Project data supply**
- **Appointment of the local structural engineer**
- **Discussions and acceptance of project requirements**



OUR ENGINEERING TOOLS

We use the most common advanced software tools.

- **Analysis & design:** ETABS, SAFE, STAAD.Pro, ConciseBeam, spColumn & spWall, EliSlab
- **Detailing:** AutoCAD
- **BIM:** Revit Structure, and Tekla Structures.



OUR EXPERTS

The members of our highly motivated and competent team of professionals holds academic degrees in civil engineering or technical design.

The team has a solid track record of concept design and structure design projects on three continents, including demanding structures and challenging special designs for seismic areas.

Together, they can offer nearly 100 years of top class structural engineering experience. Your project is in safe hands.

THE TEAM IS LED BY:

PRAKASH SHAH

- Head of Technical Support
- Master of Science in Civil Engineering, Structural Design
- 17+ years of project experience
- Passionate about finding the perfect precast solution for every customer.



REFERENCES



STUDENT HOUSING

Structural design for 5 buildings, 6 storeys high, 40 000 sq.m. Each house was built in four months using precast wall elements, hollow core slabs, prestressed half slabs, and precast stair flights.



R&D BUILDING, NESTLE

Complete precast structure for a building of 15 000 sq.m. comprising of multi-storey precast columns, prestressed beams, prestressed slabs with structural topping, stairs, walls and CIS shear walls. The building is located on seismically active area of PGA 2.40 m/s². The building is located in seismic zone 4. The building has large slab spans of 12.0 m and loading of 15.0 kN/ sq.m.



HOSPITAL, PMHS

Structural design for 6 storey high hospital building with seismicity of PGA 1.60 m/s² and importance factor 1.50. The structure includes multi-storey precast columns, prestressed beams, hollow-core slabs with structural topping, stairs, walls and CIS shear walls. The building has a total area of 25,000 m² and a grid span of 8.50 m.

WHY GO WITH US?

Peace of mind

- We have carefully chosen the experts on the design team. You can trust that your project is in the best of experienced hands as results are guaranteed by a well-known international company, Elematic.

Comprehensive know-how

- All our experts have a thorough education in the field of structural design and experience from several projects from various geographical locations.

Production knowledge

- As an equipment manufacturer, our team has unique knowledge of how to design precast elements that are efficient to produce at the factory.

Professional insight

- With experience comes professional insight. Our experts will not only give you a design that works but a design that performs best in the conditions given.

ENGINEERING SERVICES FOR CREATING PRECAST PROJECTS

Elematic provides precast concrete technology, production lines, equipment and related services that help customers succeed. We are the global technology and market leader in precast concrete technology for residential and non-residential buildings.

Our precast production technology is highly respected worldwide for its high quality, excellent productivity and efficiency, and advanced solutions. We believe in continuous improvement of our operations and offering to develop our customers' business in a smart way. That's why we are trusted by 40% of the world's precasters.

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