Sustainable Construction

We promote transformation and we work on the future challenges of the sector.
TECNALIA Research & Innovation is the first privately funded applied research centre in Spain and one of the leading such centres in Europe. A combination of technology, tenacity, efficiency, courage and imagination.

We identify and develop business opportunities through applied research. Inspiring Business is a different, unique vision: we visualise ideas that generate value and provide creative technological solutions to produce real results.

At TECNALIA we are organised in 7 fully interconnected Business Divisions. Cooperation works thanks to the transversality of teams, projects and clients collaborating with each other, combining expertise and commitment. Our best asset is our team, made up of more than 1,500 experts who work to transform knowledge into GDP in order to improve people’s quality of life by generating business opportunities for companies.

We are committed to the future, society, our planet and our environment. This responsibility provides focus to our values and reinforces our activities.

"TECNALIA transforms Knowledge into GDP to improve people's quality of life by generating business opportunities for Companies"
Sustainable Construction

From our technological multi-disciplinary know-how, the close collaboration with our clients and the far-sighted approach, we are capable of providing innovative and effective solutions.

R&D&I Areas

Innovation in Urban Rehabilitation and Regeneration /
- Following energy efficiency, accessibility and universal architectural design criteria.

Innovative & Sustainable Materials /
- Housing construction using recycled materials and biomaterials.

Systems & Processes for Construction Industrialisation /
- Increasing supply of construction solutions and systems with high pre-fabrication levels to meet the demand of sustainable high-performance buildings with lower construction costs.

Patents
- Eco-cement with low embedded energy.
- Tracing smoke generation equipment for ventilation tests.
- High-power fire testing equipment.
- Nanotechnology for the development of high-performance cement matrices.
- Photovoltaic curtain wall.
- Passive solar collector module for architectural envelopes.

Infrastructures /
- Competitiveness and behaviour of the transport infrastructure: intermodality, underground construction, interrelation with heritage buildings or areas, infrastructure intelligence, integration of renewable energies for tunnels, protection against explosions, earthquakes, resilience against terror attacks.

Smart Buildings & Cities /
- Great growth of cities, which will require that the current and emerging cities become committed to sustainability.

"We invest in the regeneration and transformation of cities, in ageing, in sustainable materials and products and in safe, resilient structures".
Business Opportunities

We create Business Opportunities that can transform the construction sector, regarding various work subjects and areas.

Our Offer

OUR OFFER TO THE INDUSTRIAL SECTOR OF CONSTRUCTION:

Manufacturers of cement, concrete and mortar.
Manufacturers of plastics and coatings.
Manufacturers of building and city equipment.
Manufacturers of envelopes, enclosures and prefabricated elements.

Systems & Processes for Construction Industrialisation /
• Development of new products and systems focusing on accessibility and interior architecture (accesses, partitions and partitioning systems according to functional diversity of people).
• High-performance architectural envelopes (structural elements, implementation of new materials, functionality integration based on renewable energy).
• Modular structural solutions (structural safety vs. robustness and durability criteria in aggressive environments; prefabrication; acoustic, thermal and accessibility performance-based design).
• Implementation of more sustainable construction processes, including the definition of the relationship between the different stakeholders involved in the industrialised construction concept.

Innovative & Sustainable Materials /
• Development of new characteristics and improved properties in cements and polymers.
• Incorporation of waste as secondary raw material into cement and its derivatives.
• Incorporation of waste and biomass in polymer and composite systems; development of new materials, geopolymers, biocides and linings.
• Construction and demolition waste recovery and management.

Modultar / • Passive solar collector module for building façades.

Retrowindow / • A window system that joins the air renovation function with an air-air thermal pre-treatment integrated in the window frame.

Autorep / • Development of a self-repairing cement-like material.

Alarte / • Alarm system that issues various alerts in case of infrastructure instability.

Nanosoil / • Technique for soil decontamination using iron nanoparticles (0).

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We generate Business Opportunities by getting financial savings and differentiation for our clients.

Our Offer

SUSTAINABLE CONSTRUCTION

Our Offer to the Public-Private Construction Agents:

Developers, owners, building and urban administrators.
Infrastructure developers, owners and managers.
Engineering and architectural firms.
Construction companies.

Our Offer

Smart Buildings & Cities /
- Promotion of energy management in buildings.
- Construction of sustainable and energy-efficient buildings.
- Development of the smart city concept, sustainable and energy efficient environments.
- Strategic urban planning (development of policies and strategies for local stakeholders).

Innovation in Urban Rehabilitation and Regeneration /
- Promotion of sustainability and resource efficiency in consolidated urban areas and existing buildings.
- Renovation and regeneration of consolidated urban areas.
- Improved quality of life in the built environment adapted to the new citizen needs and towards a low environmental impact.
- Development of policies and strategies to enhance historical and cultural areas for local development.

Infrasctructures /
- Studies prior to project drafting.
- Technical assistance to properties.
- Consultancy and assistance for the performance of audits and monitoring.
- Technical and economic audits of projects and construction works.
- Diagnosis and pathology studies.
- Structural reinforcement, safety and risk analysis projects.
- Structural movement monitoring, geotechnical consultancy and safety against fire and explosions in buildings and civil works.
- Soil remediation studies and projects.
A Team of International Excellence in Cement and Concrete Research

Green Concrete Research / Green Concrete Research seeks to design new concrete materials and processes to find business models that are shared with our clients. One of the characteristics of the Green Concrete Research is its strong activity in the field of computational design, which would allow for a drastic cut on costs and time during the testing phase.

Researching in forefront topics like "gel"-nomic engineering, clinker nanoeengineering, photocatalysis or the self-repair of cement materials, Green Concrete Research has become an internationally renowned group, both in terms of its production of patents, research papers and participation in international projects.

The Green Concrete Research team recently signed a collaboration agreement with the exclusive International Scientific Network (GDRI, Groupe de Recherche International) "M2UN, Multi-scale Materials Under the Nanoscope", integrated by the CNRS, the MIT, the University of Berkeley, the ETH of Zurich and TECNALIA.

The Green Concrete Research team is also recognised by the Spanish National Research Council (CSIC) as a CSIC Associated Unit, through the Eduardo Torroja Construction Sciences Institute, under the name Nanostructured and Ecoefficient Construction Materials Unit.

"The Green Concrete Research leads the BASKRETE initiative (The Basque Initiative for Cement and Concrete Research), which is participated by the Donostia International Physics Center (DIPC), the Materials Physics Center (MPC) and the University of the Basque Country (UPV/EHU)".
International Presence

We participate in International Co-operation projects, for institutional and technical strengthening and training, and application of advanced technological solutions, fully adapted to local requirements.

In Azuay, ECUADOR, we work on setting-up the Applied Technological Research and Innovation Centre (CIITA) in the Construction sector.

We closely collaborate with companies and institutions. We support the companies of our environment in their internationalisation strategy.

We undertake R&D&I projects with international companies and institutions for a joint development of Technological Assets in the Construction industry.

Since 2004, we have a constant presence in CUBA through the development of International Cooperation Projects. Strongly positioned with the Historian’s Office of Old Havana.

Jointly with the United Nations, we are participating in the preservation of an important cultural element (Othello’s tower) which is located in the frontier between both areas of CYPRUS.

In CROATIA, we have conducted the Sisak, Smart Energy City innovation project, which has enabled the industrial city of Sisak to reach a leading position in the area of the Balkans.

The Sustainable Construction Division also works in MEXICO, COLOMBIA and PERU.

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KUBIK by tecnalia
KUBIK is a singular building for R&D&I focused on the development of new concepts, products and services for the improvement of energy efficiency in buildings. In summary, for a Zero Energy Building configuration. Its uniqueness lies in its ability for generating realistic scenarios on which to research energy efficiency resulting from the integration of constructive solutions, air conditioning systems, lighting and energy supply from conventional and renewable energies.

TECNALIA can also provide experimental capacity and laboratories for: façades, structural safety, physical-chemical testing of materials, analytical, acoustic and good practice tests.

NANOC
Centre for Nanomaterials Applications in Construction
As part of TECNALIA and as a CSIC Associated Unit, it has the purpose of generating knowledge in Nanosciences and Nanotechnology to develop ultra high-performance materials in the construction sector and to generate new business opportunities for companies.

The NANOC laboratory has exceptional experimental and computational resources to apply Nanoscience and Nanotechnology to the construction world.

- Facilities for the manipulation of nanoparticles.
- Sol-Gel facilities (chemical reactants, programmable furnaces, "dip and spin coating", devices).
- Characterisation equipment.
- Supercomputing cluster for ab initio and molecular dynamics simulations.

FIRE SAFETY
R&D Laboratory /
The R&D laboratory of the area of the development of materials against fire has the necessary equipment to research the improvement of the properties against fire of materials and the development of new and more efficient flame retardant systems.

Cone Calorimeter /
This high-scientific value equipment is essential in the development of materials and their reaction to fire.

Smoke Chamber-FTIR Spectroscopy /
The use of FTIR technology to analyse the gases produced during combustion represents a qualitative jump in the characterisation of the toxicity of the smoke produced by a burning material.

Experimental Furnace /
For R&D&I in Fire Resistance

KUBIK allows for the optimisation and validation in real usage conditions of construction systems before they are marketed. It also allows experimentation of any modular architectural composition of new framework, roof and façade developments.