

## Structural Strengthening Products & Services

**TECHNO**POL  
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## **Technopol: Structural Strengthening Solutions**

A structure may be damaged during its services. Improper design and execution of the structure, ambient temperature and humidity, increase in structural loading due to usage change, continuous earthquakes, etc. have a negative impact on the behavior of the structure, reducing the strength of structural members.

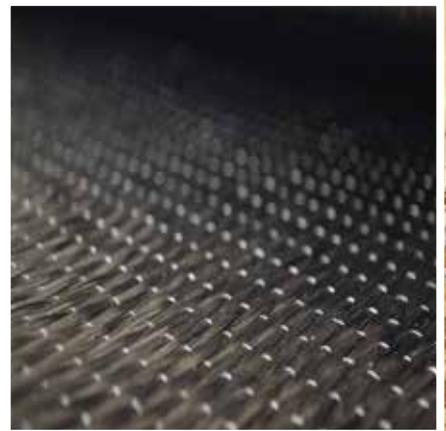
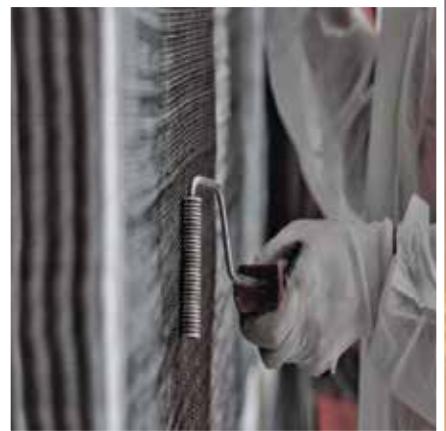
Demolition and reconstruction of existing structures is a costly and time-consuming operation. As a result, reinforcement operations can be used to strengthen and repair structural members. For this reason, Technopol Company has been established with the aim of providing specialized services of retrofitting, seismic improvement, supply of required strengthening products, etc. Due to its brilliant history and continuous activities, Technopol Group has gained a lot of experience in strengthening existing structures. and is ready to provide all specialized services to dear employers and colleagues.

## Technical and Engineering Services

Using the knowledge and skills of experienced experts and with the support of years of experience in the field of repair, restoration and reinforcement of various structures, Technopol Company provides technical and engineering services to esteemed employers and colleagues.

Technopol services are categorized as follows:

- Consulting and presenting retrofitting plan and solutions
- Supplying structural rehabilitation and repair materials
- Implementation of retrofitting plan and quality control (QC) programs
- Specialized structural evaluation and testing





## Consulting and Presenting Retrofitting Plan

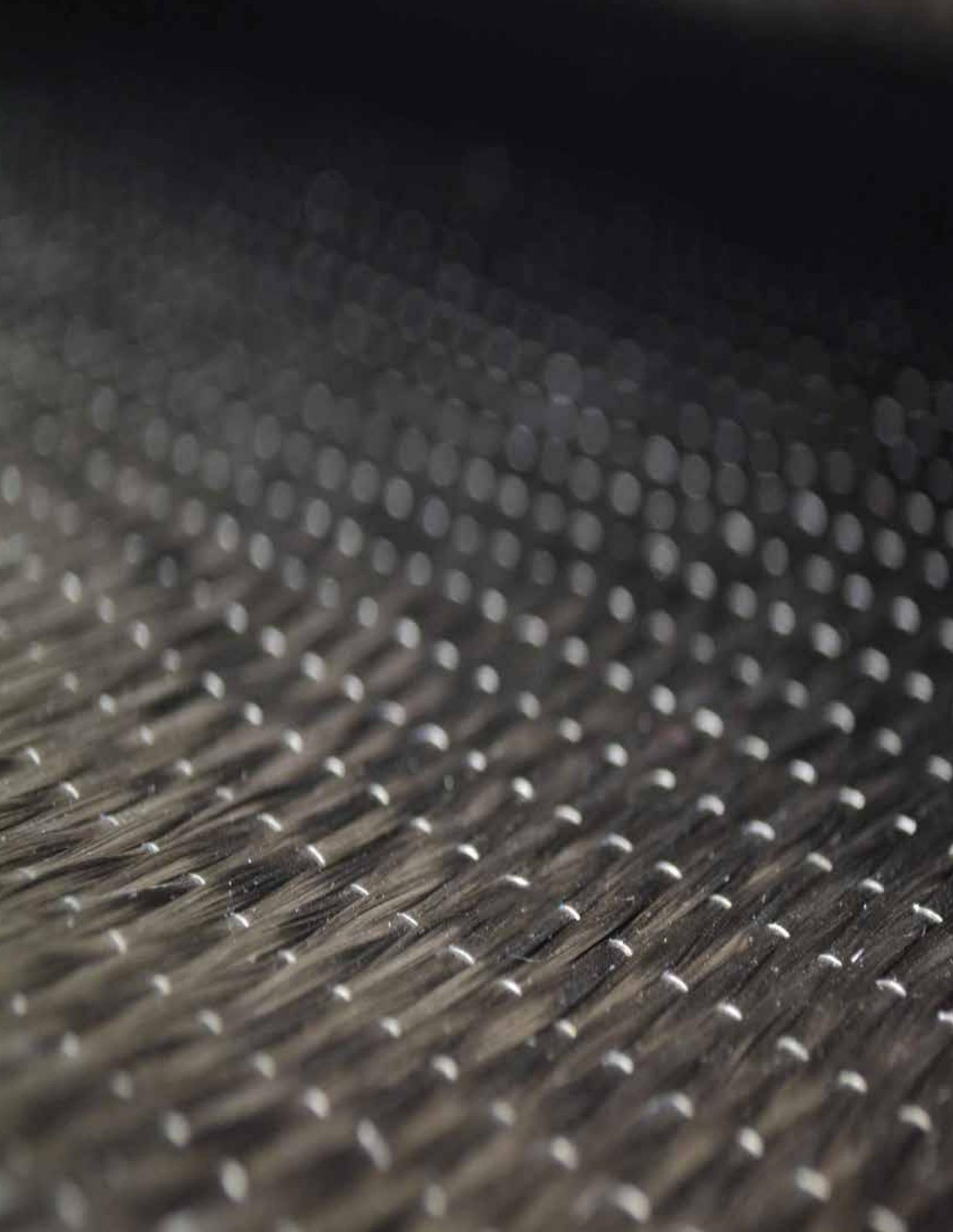
Repair, restoration and strengthening of existing structures are done in order to withstand double design loads, increasing the useful life of the structure, improving the defects caused by erosion, increasing the ductility of the structure, etc. Reinforcement of structures in relation to the effective parameters in each project is done in different ways. Each method has its advantages, disadvantages and limitations. As a result, in order to consult or provide a suitable plan for the reinforcement of any structure, these advantages, disadvantages and limitations should be well known and the best method should be selected for it. Technopol Reinforcement Group, with a long history in the reinforcement of various structures, and nobility to all international laws and standards, well knows all the advantages, disadvantages and limitations of each method and provides a suitable and optimal design for the project conditions. In this regard, Technopol Group is ready to provide all technical services, consulting, etc. to dear employers and colleagues.

Technopol also divides retrofitting solutions into five categories:

- Structural and Seismic Improvement
- Corrosion Protection and Control
- Waterproofing
- Force protection
- Concrete Repair







## Supplying Structural Rehabilitation and Repair Materials

In addition to designing and providing the necessary measures for the reinforcement of structures, Technopol Group also works in the field of supplying restorative and structural rehabilitation materials. This has led to the strengthening and repair of structures by Technopol Company without any affiliation with the institution and away from problems such as lack of materials or the lack of some materials in the country.

Technopol Company has always tried to train an experienced and specialized team with appropriate ethical and behavioral characteristics to be able to answer customers' problems and ambiguities while maintaining respect and building trust for them.



## Implementation of retrofitting plan and quality control (QC) programs

Structures may experience a decrease in strength due to environmental conditions, usage change, increase in structural loading, etc. As a result, in order to increase the life of the structure, it must be repaired and strengthened. Reinforcement is done according to the project conditions in various ways. And each of these methods has its own limitations. In fact, a skilled workforce is needed to carry out retrofitting operations.

Technopol Group implements all the proposed designs for repair, restoration and reinforcement of structures with the support of a trained technical team, as well as with the highest international standards. The quality control process (QC), which is an important part of any construction and retrofitting project, ensures that products are in compliance with technical requirements and design requirements. As a result, Technopol Company, in order to ensure the proper execution of retrofitting operations and the quality of materials used, such as fibers, adhesives, resins, etc., performs various quality control (QC) tests and issues the required technical certificates.







## Specialized Structural Evaluation and Testing



For the repair, restoration and reinforcement of any structure, the materials of the existing structural members must have the minimum strength mentioned in the regulations and international standards for reinforcement. Also, the structure must be thoroughly evaluated after the reinforcement operation to ensure the desired strength. To determine the initial strength of materials and the final strength obtained from the reinforcement operation, tests such as destructive, semi-destructive and non-destructive tests should be performed directly or indirectly.

Techopol Group with advanced tools and devices performs all relevant tests for repair, restoration and retrofitting with the highest level of international standards and then presents the results for evaluation and design to the Technopol design team.

Specialized tests for repair, restoration and retrofitting are as following:

- Pull-off test
- Pull-out test
- Concrete scanning for rebar
- Concrete core testing
- Schmidt Hammer test
- Ultrasonic testing of concrete



## Markets Served by Technopol Company

The construction and repair of bridges, tunnels, multi-story car parks, airports, port facilities and even sewage systems are usually highly complex undertakings.

Such projects have enormous importance for the development of a country and are thus frequently carried out under the glare of publicity. Even small defects or errors can give rise to costly consequences, adversely affect reputations and, in extreme cases, even endanger life. With our product systems and service our customers are able to permanently ensure the stability, resistance and durability of such structures.

Markets served by Technopol Company are categorized as following:

- Buildings
- Water and Wastewater Structures
- Oil, Gas and Industrial Facilities
- Transportation Infrastructures
- Marine Structures



## Buildings

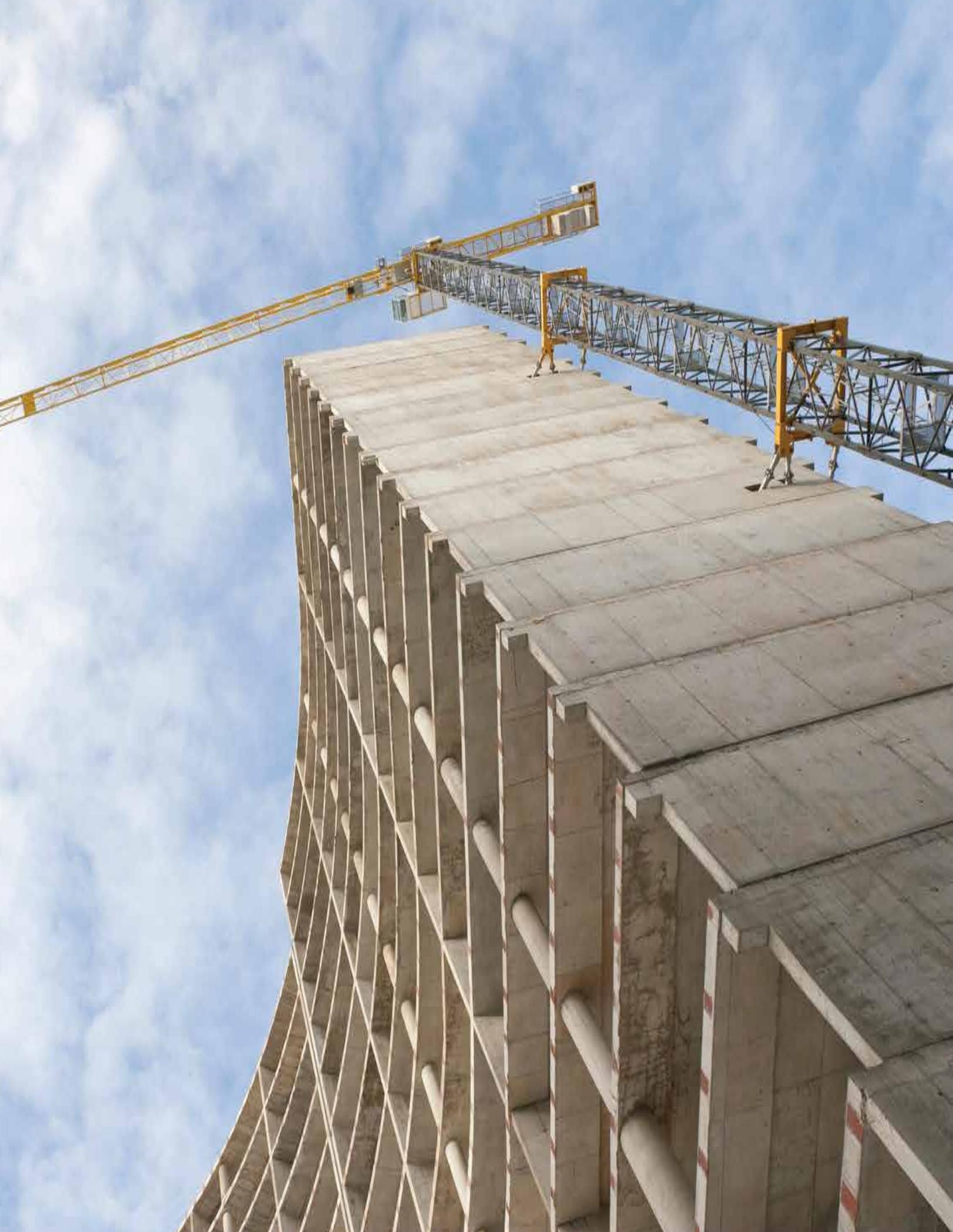
Technopol Group offers an extensive line of products and technical services to restore or enhance the load-carrying capacity of reinforced concrete, steel, masonry and timber buildings.

Our in-house team of strengthening experts collaborates with designers, contractors, and owners to develop customized solutions to help solve the most complex structural challenges.

Our repair and strengthening solutions and products are suitable for all type of buildings, including:

- Residential Buildings
- Commercial Buildings
- Municipal Buildings
- Historic Buildings
- Parking Garages





## Water and Wastewater Structures

Structures of the water and sewage industry will be damaged and worn out due to uninterrupted service and exposure to high humidity and corrosive environments. In fact, it poses a constraint on the integrity of the structure.

Using up-to-date knowledge and considering international standards, Technopol Group has provided solutions to strengthen such structures. These solutions have been provided by the research team of Technopol Group by using durable materials, with low weight and also compatible with concrete, steel, cast iron, composite elements, etc. In addition to quick installation and meeting the needs of the structure, these solutions are more cost-effective than the old solutions from the economic point of view and the final mass of the structure.

Our repair and strengthening solutions and products are suitable for all type of water and wastewater structures, including:

- Water & Wastewater Treatment Facilities
- Water Storage Tanks
- Sewage and Wastewater Tanks
- Clarifier Vessels
- Water & Wastewater Pipelines
- Medium to Large Diameter Concrete and Steel Pipes
- Transmission Line
- Reservoirs





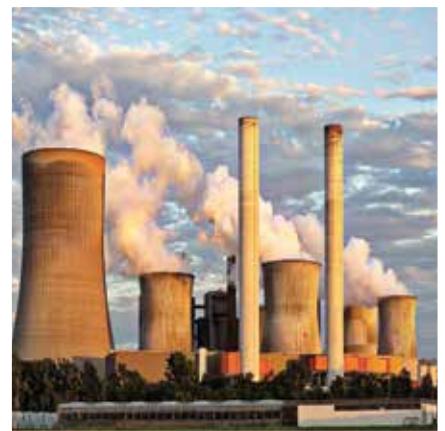
## Oil, Gas and Industrial Facilities

In fact, industrial structures are always in the priority of retrofitting due to their high importance. Also, most of these structures are more damaged than other structures due to exposure to concentrated or decentralized loads, alkalis, humidity, high ambient temperature, etc.

Demolition and renovation of such structures is not cost-effective due to the large area of the structure and always requires employers to search to find a suitable solution for retrofitting. Using state-of-the-art knowledge and the latest international standards, the Technopol complex offers solutions for the strengthening of oil and gas structures, as well as all parent industries. These solutions are provided by Technopol Group by using high quality, durable, light weight and also economically cost-effective materials.

Our repair and strengthening solutions and products are suitable for all type of oil, gas and industrial facilities, including:

- Tanks
- Silos
- Pipelines and pressure vessels
- Plumbing facilities
- Cooling towers
- Chimneys
- Primary and secondary compartments
- Power plants
- Refineries
- Equipment foundation structure
- Pedestals







## Transportation Infrastructures

Transport infrastructure officials are always faced with a wide range of problems related to the repair, restoration and reinforcement of transport structures. For this reason, the design of repair, restoration and reinforcement solutions in accordance with the needs of this section is on the agenda of the Technopol team. Based on this, Technopol has provided methods for seismic retrofitting and improvement of worn-out transportation structures, damaged by environmental conditions, continuous earthquakes, excessive loads on the structure, etc., in accordance with the needs of each project. The solutions provided by the Technopol research team can be implemented by using experienced and highly durable materials, lightweight materials, fast installation, cost-effective in terms of economics and time, etc. by experienced and trained staff.

Our repair and strengthening solutions and products are suitable for all type of Transportation Infrastructures, including:

- Bridges
- Tunnels
- Roads
- Freeways
- Airports
- Railroad



## Marine Structures

Marine structures are usually damaged due to their constant contact with water, and the corrosive nature of this environment, thus reducing the useful life of the structure. Therefore, demolition and reconstruction of existing structures in these areas will not help to prevent damage to the structure. In this regard, solutions should be provided to make the structure resistant to these conditions. The Technopol group evaluates and then presents solutions according to the latest international standards and modern reinforcement methods, taking into account existing damages or possible damages to the structure. These solutions are implemented by Technopol using durable, lightweight, fast installation, economical, etc. materials.

Our repair and strengthening solutions and products are suitable for all type of marine structures, including:

- Ports
- Wharves
- Piers
- Bridges and Jetties
- Oil & Gas Platforms
- Seawalls
- Docks
- Subsea Pipelines







## State-of-the-Art Products

Structural strengthening is the process of upgrading structures to improve performance under existing loads or to increase the strength of structural members to carry additional loads. The need for structural strengthening is commonly driven by building codes, deterioration, change in use, or deficiencies caused by design and/or construction errors. Technopol offers an extensive line of products and technical services to restore or enhance the load-carrying capacity of reinforced concrete, masonry, timber and steel structures. Our products can be used stand-alone, or combined together, to solve nearly any project requirement.

Restoration and retrofitting products provided by Technopol are classified as following:

- Structural Strengthening products
- Concrete Repair and Grout
- Surface Protection Products
- Fireproofing Materials
- Structural Strengthening Kits



