



Water Tank Restoration in Cartagena



ABOUT THIS PROJECT:

Market Segment: Water Holding Structures	Consulting and Supervision: CIP SA - Concrete Engineering	Products Used: Xypex Patch'n Plug Xypex Concentrate Xypex Megamix II
Location: Cartagena, Colombia	General Contractor: Empaquetaduras y Empaques	

Located in the coastal city of Cartagena, this water tank faced significant challenges due to the city's flat terrain and brackish environment. To ensure proper water distribution across the area, tanks need to be over 10 meters high, but the saline environment and underground water caused severe concrete degradation over time, leading to leaks, corrosion, and water loss.

The elevated chloride presence in the water posed a serious threat to the tank's structural health, severely compromising the concrete and steel reinforcements. A comprehensive restoration was necessary to remove the damaged sections and implement a waterproofing solution that would protect the structure from future damage.

In response, the city's water company sought a complete maintenance and waterproofing solution. The contractor, Empaquetaduras y Empaques, supervised by CIP SA - Concrete Engineering, undertook the restoration choosing a Xypex waterproofing system. The multi-step process restored the tank's structural integrity and provided long-term protection against water infiltration and degradation.

When Xypex's crystalline technology is applied to concrete, it initiates a chemical reaction between its proprietary active components, moisture, and unhydrated cement particles. This process generates insoluble crystals that obstruct water ingress and prevent the penetration of harmful substances such as chlorides and sulfates.

Additionally, Xypex's Crystalline Technology grants self-healing capabilities to the concrete by activating further crystal formation when micro-cracks appear and are exposed to moisture, rendering permanent waterproofing and enhanced chemical resistance. This ultimately reduces maintenance costs and prolongs the service life of the structure.



The restoration began by removing the damaged concrete and steel sections, followed by using Xypex Patch'n Plug, a fast-setting hydraulic cement compound, to immediately stop leaks and repair joints and cracks.

Xypex Megamix II was then applied to resurface deteriorated concrete areas, restoring the tank walls and columns. This high-performance repair mortar provides superior bond strength, low shrinkage, improved chemical resistance, and high compressive strength—ideal for demanding applications.

Finally, Xypex Concentrate, a cementitious waterproofing product, was applied as a slurry coat. Known for its effectiveness in both positive and negative side applications, and not requiring a dry surface, Xypex Concentrate penetrates deeply into the concrete, providing permanent, integral protection.

The combination of Xypex Crystalline Technology and careful execution of the restoration has extended the water tank's operational life. It is now resistant to the salty water and the pressures of daily use, ensuring a reliable water supply for Cartagena's residents for years to come.

