

Al Khayrien Tower

Lusail, Qatar (2016)

PRODUCTS USED:

**Kryston Internal Membrane™ (KIM®) Kryston Waterstop Grout™
Kryston T1® Kryston Waterstop Treatment™ Kryston Bari-Cote™**

DEVELOPER:

Lusail Real Estate Development Co.

ENGINEERING CONSULTANTS:

Dimensions Engineering Consultancy

CONTRACTOR:

PAT Engineering Enterprises Co. W.L.L.

READY-MIX SUPPLIERS:

Qatar Alpha Beton Ready-Mix Concrete Co. W.L.L.
Green Point Ready Mix Concrete

APPLICATOR/DISTRIBUTOR:

Al Jaber Structural Protection Co.

BACKGROUND

As part of their national vision for 2030, Qatar aims to address several major challenges that affect those living in the country. One challenge in particular involves the need to modernize and preserve traditions. With that in mind, Lusail Real Estate Development Co. came up with the idea to create Lusail, a whole city that uses the latest technology and trends to support a modern lifestyle. At the same time, the city will make use of a blend of Qatari aesthetics and Islamic architecture. All of which will accommodate 200,000 residents, 170,000 employees, and 80,000 visitors across 38 km² (15 mi²).

To help flesh out the city, Lusail Real Estate Development Co. has been developing a number of projects within the city limits. One of which involved the Al Khayrien Tower. The tower actually consists of two towers, residential and commercial, with 19 floors each and a basement level and a mezzanine level spread over a land area of 5,214 m² (6,236 y²).

This extensive project also has a great view of the Persian Gulf. However, because of how close it is to the gulf, Lusail Real Estate Development Co. needed to take extra care with its construction. Without proper waterproofing, the building's concrete structure would have been prone to water ingress, and if water did pass through, the rebar within the concrete could have corroded, weakening the whole structure.

SOLUTION

To keep the building both safe and close to the gulf, the construction team initially considered applying a traditional torch-applied bituminous membrane.



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This idea was quickly discarded, however, when the team thought of the risks this application came with. It would have meant working with a complicated application process that would have consumed a significant portion of the team's construction schedule considering the size of the project. After all, the team not only had to protect the concrete from water ingress, they also needed to do the same for the various joints of the structure.

For a more time-efficient form of protection, the team's engineering consultants chose Kryton's Smart Concrete® solutions. These included the original crystalline waterproofing admixture, KIM; Kryston Waterstop Grout; Kryston T1; Kryston Waterstop Treatment; and Kryston Bari-Cote.

With KIM, they added 15,241 kg (17 tons) directly to the concrete for the tower's raft slab, retaining wall, water tank, and swimming pool during batching. Doing so allowed the team to avoid the extra time, labor, and cost they would have otherwise needed to physically apply an external membrane. They could also eliminate the need for screeding concrete over an external membrane system. KIM would instead do the heavy lifting, working within the concrete mix to make every part of the concrete inherently and permanently waterproof. As a result, there would be no potential application errors, and at any sign of water ingress, the concrete itself would be able to react, forming crystals that would interlock to fill up pores, micro-cracks, and capillaries and block water from entering.

Due to these advantages, the team was able to finish their work quickly and still remain confident that their construction would be safe from the corrosive effects of water.

For extra protective measures and to ensure the tower was fully waterproof, the engineering consultants also added Kryston Waterstop Grout and Kryston T1 to the project pile head treatment and the grout with Kryston Waterstop Treatment to the construction joints. They then went on to add Kryston Bari-Cote to the surrounding tie holes.

This effort was not done in vain either. Completed in 2016, the Al Khayrien Tower is still standing free from water ingress, offering any who visit it a beautiful view of the Persian Gulf.



SMART CONCRETE®

