

## Dubai Route 2020

CERAMIC TILES AND ENGINEERED STONE INSTALLED IN THE NEW STATIONS ALONG THE METRO RAILWAY LINE RUNNING TO THE EXPO SITE



The aim of the “Route 2020” project was to extend the Red Line of the Dubai metro railway system connecting the city to the Expo site. Thanks to an investment of 2.9 billion US dollars, the new stretch is now 15 km long (11.8 km of elevated railway and the remaining 3.2 km underground) and runs from Jebel Ali station to the Expo area, near Al Maktoum International Airport. As a result, this new infrastructure makes it easier to access the exhibition area and, because it passes through various densely populated areas of the city, it is also a fast, safe method of urban transport for many inhabitants of Dubai.

4 of the 7 stations in total were opened to the public on 1st January this year (Jebel Ali Station, The Gardens, Discovery Gardens and Al Furjan), whereas Route 2020 became operational a little later on 1st June along the section running to the Expo site.

Route 2020 is now ready to guarantee the journey of the 35,000 visitors/day expected during the week and 47,000 at weekends during the months of the Expo. The construction work also included three main power supply stations and an additional traction power supply station.

### Mapei's contribution

Mapei was involved in the excavation works of the new metro line, supplying products for underground works to the Expolink consortium, made up by Alstom, Accio-

na and Gülermak. The company provided solutions for building a 2.5 km long, 10 m diameter tunnel, which was excavated with TBM (Tunnel Boring Machine). Mapei supplied chemical products used for TBM excavation works such as the grout systems for the backfill of the TBM segment (MAPEQUICK CBS SYSTEM 1 and MAPEQUICK CBS SYSTEM 2, MAPEBENT CBS 2); the foaming agent POLY-FOAMER FP for the TBM cutterhead and the sealants MAPEBLOX T and MAPEBLOX H. Besides, LAMPOSILEX and RESFOAM 1 KM were used to close the water leakage in the tunnel.

The company also took part in the construction works for the new Route 2020 by supplying materials for the screeds, to prepare substrates and for the installation of stone inside all the stations along the line. To cope with the constantly increasing passenger levels, the stations have larger access ramps to the platforms compared with those along the existing stations of the Red Line.

TOPCEM special hydraulic binder was used to create normal setting, controlled shrinkage and rapid-drying screeds in all the stations along Route 2020, for a total surface area of 70,000 m<sup>2</sup>.

In four of the stations, slabs of engineered stone were installed using GRANIRAPID adhesive, which allowed the site teams to install the material in difficult climatic conditions, at temperatures of more than 30 °C. The stone

covering was made up by engineered agglomerate so, following extensive tests in Mapei R&D laboratories, this adhesive system was especially selected, to avoid any stains or moisture-related problems to the final surfaces. Besides, fast-track products like TOPCEM and GRANIRAPID helped the application teams meet the tight timeline. The stone was then grouted with KERACOLOR FF cementitious mortar mixed with FUGOLASTIC admixture. The product chosen to seal the expansion joints was MAPESIL LM which helps prevent the formation of marks and stains on the surface of stone.

In the service areas of the stations, ceramic tiles were installed with KERAFLEX MAXI S1 adhesive before grouting joints with KERAPOXY. Given the high level of vibration caused by the movements of the trains, KERAFLEX MAXI S1 was chosen due to its high deformability.

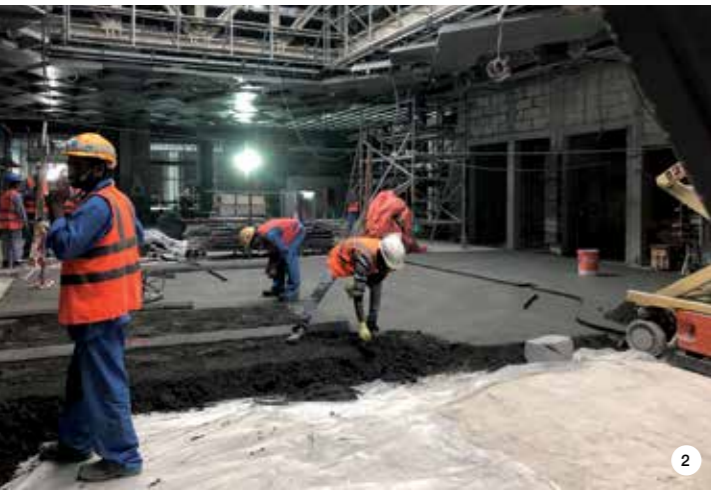
For the four buildings that house the electric controls for the trains the MAPETHERM SYSTEM was used, an external thermal insulation system for facades that prevents rooms inside buildings from heating up excessively, thereby reducing energy consumption, improving the level of comfort and the sustainability of the structures. Apart from bonding rockwool insulation panels with MAPETHERM AR2 mortar, the materials chosen for this work were MAPETHERM AR1 adhesive and skimming compound and MAPENET 150 mesh. In all buildings, the insu-



The new Route 2020 is an extension to the Red Line of the Dubai metro system and runs for 15 km from the city to the Expo 2020 Dubai site.



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1. TOPCEM hydraulic binder was used to create the rapid-drying screeds in the stations.
2. In the stations, the engineered stone flooring was installed with GRANIRAPID before grouting joints with KERACOLOR FF + FUGOLASTIC.
3. The walls of some of the buildings that house the electric controls were insulated with the MAPETHERM system before finishing off the surfaces with QUARZOLITE BASE COAT and QUARZOLITE TONACHINO.
4. Mapei also took part in the excavation work of the Red Line by supplying products for TBM and underground works.

lated surfaces were then treated with QUARZOLITE BASE COAT coloured acrylic undercoat before applying QUARZOLITE TONACHINO, a textured coating of 1.5 mm grain size. Using the ColorMap® automatic tinting systems, which is also available in the UAE, enabled the right shade of grey to be obtained from amongst the more than 1,000 colours of the Mapei Master Collection.

In several areas ULTRAPLAN ECO 20 levelling compound, which is produced and distributed on the local market by Mapei Construction Chemicals, was used to level off the substrates, after treating them with PRIMER G.

On raised floors, on the other hand, the system chosen to level any irregularities was made up by PRIMER SN, mixed with QUARTZ 1.2 ME (which is distributed on the UAE market by Mapei Construction Chemicals), and ULTRAPLAN MAXI.

In some areas vinyl floor coverings were installed with ULTRABOND ECO 375 adhesive.

Various building materials distributed on the local market by Mapei Construction Chemicals, such as MAPEGROUT ME05, MAPEGROUT ME06, MAPEFILL GP-ME and MAPEGROUT T60 ME, also found a use in the construction work for the various structures of the Route 2020 project.



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## MAPEI PRODUCTS

**Products for underground constructions:** Mapequick CBS System 1, Mapequick CBS System 2, Mapequick CBS 2, Polyfoamer FP, Mapeblox T, Mapeblox H, Lamposilex, Resfoam 1 KM  
**Building screeds:** Topcem  
**Preparing substrates:** Primer SN, Ultraplan Eco 20\*, Quartz 1.2 ME\*, Ultraplan Maxi, Ultraplan

**Fiber Kit\***  
**Installing ceramic tiles and stone materials:** Granirapid, Keraflex Maxi S1  
**Grouting joints:** Keracolor FF, Fugolastic, Kerapoxy, Ultracolor Plus  
**Sealing expansion joints:** Mapesil LM  
**Installing vinyl floors:** Ultrabond Eco 375  
**Thermal insulation:** Mapetherm AR1,

Mapenet 150  
**Wall coatings:** Quarzolite Tonachino, Quarzolite Base Coat  
**Products for building:** Mapefill GP ME\*, Primer G, Lamposilex, Mapefill SP ME\*, Mapegrout T80, Polyfond Kit Drain, Resfoam 1 KM Flex, Resfoam 1K-M, Resfoam 1K-M AKS, Eporip, Lamposilex, Mapegrout

ME 05\*, Mapegrout ME 06\*, Mapegrout T60 ME\*, Planigrout 300 ME\*, Planitop 110 ME\*

\*These products are manufactured and distributed on the UAE market by Mapei Construction Chemicals (UAE)

For further info on products see [mapei.com](http://mapei.com) and [mapei.ae](http://mapei.ae)



## TECHNOLOGY FOR UNDERGROUND CONSTRUCTION

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- Products for grouting and consolidating

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