ARCHITECTURAL

We have delivered FRP engineering for complete roof structures, façades and cladding, houses, urban installations and art sculptures.

Advantages sought in Architectural application using advanced composites are:

- Light weight for seismic resistance, transport and installation
- Durability, sustainability, low maintenance over lifetime
- Inherently good thermal and acoustic insulation properties
- Vandalism resistance
- Faster and lower cost installation

SAMPLE OF ARCHITECTURAL PROJECTS UNDERTAKEN BY GURIT

Marsden Cross Interpretive Centre, New Zealand

Gurit was brought in to help project managers meet their budget while achieving a modern geometric design and ensuring the roof of the centre remains structurally sound for years to come.

After extensive engineering analysis using a parametric model to combine shape and laminate optimisation, a final epoxy infused laminate of E-glass / Gurit® G-PET foam core was derived.

Makkah Clock Tower, KSA

One of the world’s tallest buildings, standing at 607m, the top 200m of the tower is clad with over 40,000m² of advanced FRP composite panels, including the largest clocks in the world. Gurit worked closely with the tower top designers, SL-Rasch (Stuttgart, Germany), to carry out the structural engineering of the composite tower top cladding, clock hands, and the 23m diameter crescent, a self-supportive FRP composite structure which is located at the top of the building.
Ministry of Foreign Affairs, Turkmenistan
The Turkmen foreign ministry built in Ashgabat includes a unique 26m diameter spherical conference room at its top which is decorated with a map of the world realised in mosaic tiles. Gurit has worked along with the main contractor, Bouygues International to deliver a composite design for this sphere complying with the challenging technical brief and the tight schedule.

Villa Roof, Switzerland
Gurit provided structural engineering for an FRP composite roof, which was fabricated by Rhebergen Composites for a client in Basle. Advanced composites and a sandwich panel construction enabled manufacture of the 21 metre by 6 metre roof in one piece, providing a thin, lightweight, strong structure, which is resistant to extreme temperature changes and incorporates insulation within the sandwich structure of the roof.

Ancien Palais, Turkmenistan
The original dome of the Ancien Palais was manufactured from tin sheet on a steel substructure. The tin skin of the dome had deteriorated over time and a replacement dome in FRP was manufactured to fit onto the original steel substructure. The dome was manufactured using Gurit epoxy resin and Corecell™ core. The light weight of the dome allowed the panels to be pre-assembled and the dome installed in two parts.

Docklands Light Railway Station, UK
The Docklands Light Railway station in London consists of two main platforms that are accessed using a curved steel footbridge, covered by a large fibre reinforced composite canopy that is suspended from the flanking lift towers. Gurit (UK) was commissioned by AM Structures on the Isle of Wight to structurally engineer two halves of the bridge canopy with the brief that the structure and joint detail of the two pieces should be as simple as possible to allow them to fit together easily under site conditions.

Paradise Street Car Park Screening, UK
Following construction of the Paradise Street car park in Liverpool, a privacy screen was required as the car park overlooks the neighbouring police station. A translucent screen was preferred to enable daylight to illuminate the interior of the car park.

Gurit were contracted by AM Structures (Isle of Wight), to design and optimise the panels and laminate specification for the structure.
Lightwands, UK
The LightWands are an architectural sculpture consisting of 3 flexible masts 33, 28 and 23m tall which form an entrance feature for the Bullring Development in Birmingham.
Gurit calculated the required laminate specification to achieve the client's deflection criteria and used in-house laminate analysis and mast design programs with non linear capabilities to optimise the laminates.

Big Blue, UK
Big Blue is an architectural sculpture which is installed in Canary Wharf, London. The sculpture is a 13.5m diameter truncated ellipsoid, which sits over a skylight to an underground shopping mall, and is supported on an eight metre diameter glass wall. The sculpture contains a complex internal structure, designed to spread the six tonne mass and the high wind loads which can develop around the support points to avoid overloading the glazing.

Millenium Dome Home Planet, UK
The Home Planet was a 33m diameter, 9m high, monocoque structure with no internal support and a large cut-out for people to enter.
Gurit engineered a solution which combined a sandwich laminate over the upper part of the structure, with single skin over the lower region which had higher curvature.

Wind Wand, UK
The Wind Wand mast was installed at Westferry Circus in the Canary Wharf development in mid December 1999. The 50m high sculpture was designed to move even in the slightest of wind. The challenge for Gurit was to make it move as much as possible in light winds, while ensuring that it would also survive the gusting winds generated between the tall buildings that make up the Canary Wharf and Riverside developments.
DIRECT CONTACT

Luke McEwen (UK)
EMEA Civil, Vehicles and Renewables Practice
T  +44 (0) 7739 261 601
E  luke.mcewen@gurit.com

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