

CASE STUDY



RESTLESS PLANET - DUBAI | SPORT & LEISURE



fds consult

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One of the most ambitious visitor attractions ever built, the US\$300 million Restless Planet development in the City of Arabia, Dubai, aims to transport visitors back in time 100 million years with a unique mix of educational exhibits, exhilarating rides and animatronics dinosaurs. The 11-acre park has been built to accommodate up to 10,000 visitors per day and includes numerous potentially hazardous attractions, including an indoor volcano and fireworks, so it was essential that provision for visitor safety was just as cutting edge as the visitor experience itself.

The size, location and nature of the scheme all presented exceptional challenges in terms of fire safety so, thanks to the company's innovative approach and expertise in designing effective evacuation strategies, FDS Consult was brought on board to advise on Restless Planet's fire design. The focus was on safety and management rather than cost reduction, requiring FDS Consult to implement pioneering fire design techniques and leverage the company's experience to devise practical safety solutions and an evacuation strategy that could be managed by Restless Planet's own team following completion.

One of the scheme's key design features is a catenary arch dome, an enormous glass structure which, during the height of the Dubai summer, could reach temperatures as high as 550C. FDS Consult addressed the challenges presented by the dome by:

- Using the company's knowledge of the Middle Eastern market and the potential for stagnation of smoke by avoiding a natural ventilation system for the dome as the heat at the top of the dome could prevent smoke from rising up and out in the initial period
- Devising a mechanical exhaust system to release any smoke at various points at the top of the dome to allow good smoke control within the large open space, enabling extended evacuation times for visitors and good level of smoke control for the fire service
- Utilising understanding of fire First Principles and CFD (Computational Fluid Dynamics) to evaluate the effects of smoke and fire on key elements of the venue, such as the open glass bridges that span large areas of the dome, to plan fire safety effectively
- Addressed power and mains water issues apparent in its location in the middle of a desert – the fire safety strategy was designed to ensure the structure will be self-sufficient in the event of fire
- Adopted a sophisticated visual detection method within the design to overcome the issue of smoke detection false activating due to heat or smoke from fireworks or volcano
- Improving on local standards by specifying an EFTE foil

cushion which offers excellent thermal performance and light penetration benefits whilst improving fire safety as it will just disintegrate if ignited, it will not drip. This will be the first time it is incorporated into a structure in the Middle East.

The other critical consideration was developing a fire strategy that would answer the need for extended evacuation times as the number of visitors and the fact that many of them are locked into rides at any given time makes evacuation extremely complex in this environment. FDS Consult responded by:

- Considering the increased time required for visitors unfamiliar with their surroundings
- Incorporating automatic controls that cause the sound to cut out and the evacuation lights to switch on in the event of a fire to make it easier to identify exit routes and manage evacuation
- Designing an innovative evacuation system which involved creating tunnels disguised within the scenery that light up in the event of a fire to illuminate visitors' routes to safety
- Providing thorough evacuation planning and handover to ensure ongoing delivery of the strategy by the venue's building management team
- Positioning escape routes that allow the rides to be evacuated on power failure within the building or on the ride itself

By focusing on reducing the speed with which smoke can spread within the building and facilitating easier evacuation with measures such as increased exit widths, FDS Consult was able to gain approval for the scheme whilst delivering an evacuation strategy that remains low key; allowing visitors to enjoy their trip back to the Jurassic era.

Type of project:
New-build Visitor Attraction

Client:
Ilyas & Mustafa Galadari Group (IMGG)

Architect:
Fumeaux Stewart



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