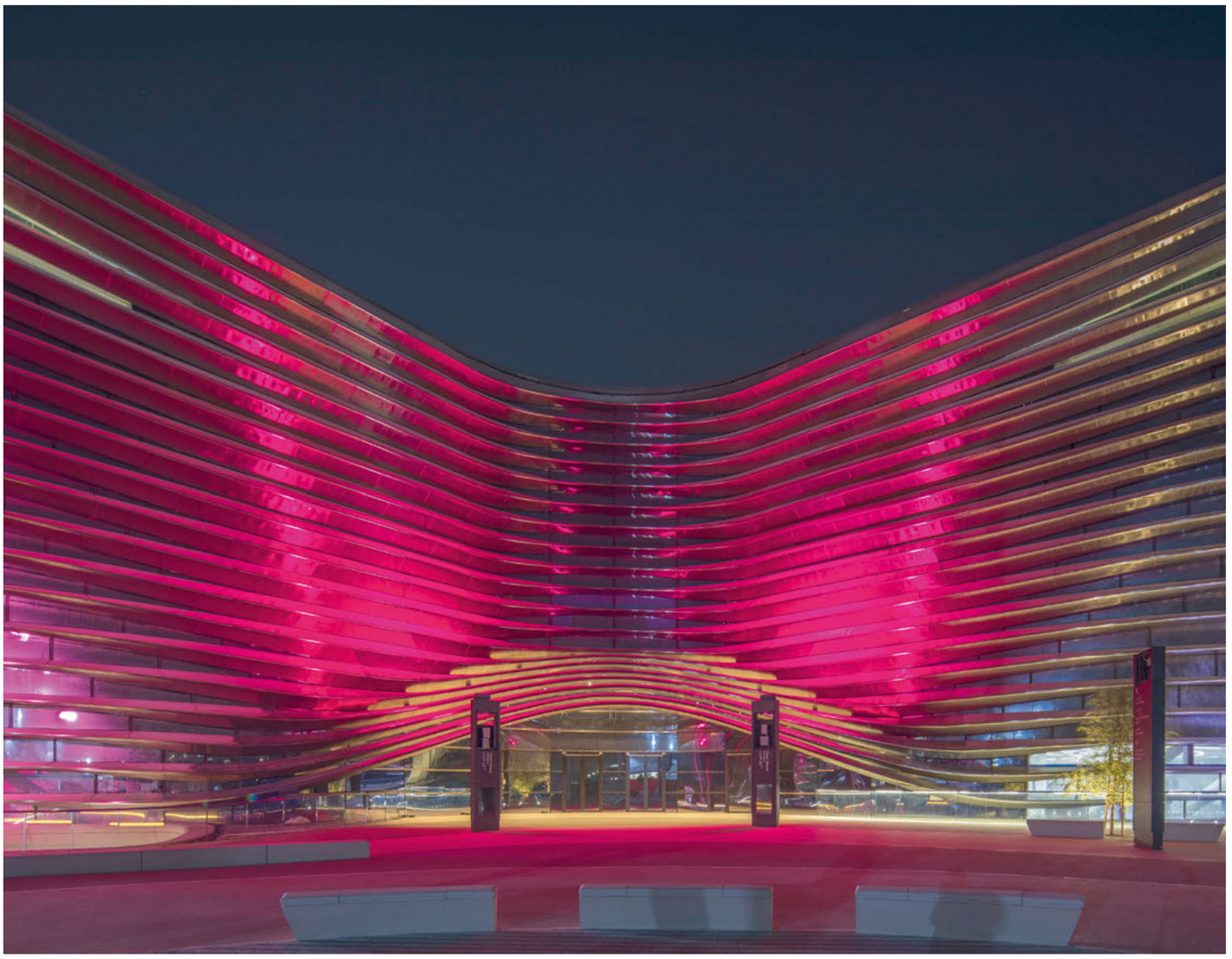
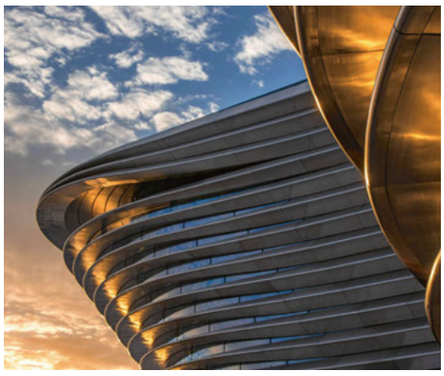
Pavilion of Progress

Designed to symbolise progress and new horizons, Alif - The Mobility Pavilion is one of the cornerstones of Expo 2020. The Foster + Partners designed pavilion is enhanced by an exterior lighting scheme from DALD.



Alif – The Mobility Pavilion is one of Expo 2020's three signature pavilions, based on the sub-themes of Mobility, Sustainability and Opportunity. Designed by Foster + Partners, the pavilion was a collaborative project with Expo 2020 Dubai, exemplifying the event's overall theme of 'Connecting Minds, Creating the Future'.
Named Alif, after the first letter of the Arabic alphabet to symbolise the beginning of progress and new horizons, the Pavilion occupies a dedicated plaza at the south entrance to the Expo site, and is built around a lively, dynamic landscape, conceived as a fairground with undulating tracks and demonstration areas for the latest technological innovations related to mobility. Spanning a large site of 12,000sqm, the flowing trefoil-shaped, polished stainless-steel structure complements the Expo's sub-themes of connections and movement.
The surrounding landscaped areas correspond to the internal functions of the pavilion, with three main zones offering a variety of spaces for visitors to relax and enjoy the spectacle. This includes a part underground, part open-air 330-metre track that allows visitors to see cutting-edge mobility devices in action, as well as witness mass produced technology that has the opportunity to vastly improve the quality of life for people in developing countries, such as solar-powered tricycles.
A raised platform for large-scale presentations and performances, The Stage is optimally located for a changing schedule of complementary events with a sheltered viewing area for the underground portions of the high-speed track. The Bowl is a large amphitheatre that can seat up to 500 people, located at the pavilion's exit, making it an ideal spot for visitors to rest and contemplate their journey.
Internally, the display areas are divided into three key zones based around the pavilion's three sub-themes: Empowering People through Mobility; Distributing Goods and Resources; and Connecting through Data and Information. Each sub-theme forms a petal in the trefoil plan. Visitors enter directly into the central core, which features the world's largest passenger lift, capable of holding more than 160 people (although this was reduced to 38 for social distancing restrictions). This moving platform takes visitors up to the third level, where they then move down through successive interconnected galleries to the lower ground floor, viewing innovative, immersive and interactive visitor experiences focused on mobility.
To showcase the striking architecture of the Pavilion, Foster + Partners needed a dynamic lighting design approach that would enhance and animate Alif itself, as well as its surrounding landscape. David Atkinson Lighting Design (DALD) helped to create a sympathetic synergy between the architecture and the landscape.
DALD was brought into the project at an early stage by Foster + Partners to work through the complex external lighting design, which was effectively broken down into areas. DALD worked with Delta Lighting Practice, who was responsible for the technical design stage, focusing on seamless integration of light fittings within the architectural design, to deliver the intent and ensure lighting performance achieved the targeted criteria.
The building façade is made up of a series of undulating fins that are linked by the three main petals, along with the three entrance points. For the lighting designers, the main challenge for the external lighting was with the polished, stainless-steel cladding of these fins.
David Atkinson, Founder of DALD, said:



“After extensive trials initially with a model using fibre optics, as well as running tests on large scale mock-ups and through previous experience of lighting polished stainless steel, it was decided where possible to uplight the fins from an acute angle using fixtures with asymmetric distribution.”
DALD worked closely with Studio Due to produce lighting simulations to ascertain the most suitable fixtures and optics for the project. Each fixture is DMX controlled with RGB and white LED, allowing for dynamic and subtle use of colour to the exterior of the building. The fixtures were custom designed with special brackets and remote ballasts as some of the fixtures were attached to “totems”, which doubled up for signage and internal video monitors. This meant that it was key to minimise the aesthetic impact by reducing the bulk of the fittings; to limit glare and light spill, the fixtures were also fitted with horizontal louvres.
With the three entrances serving as focal points to the Pavilion, the canopies above them are lit by reflecting light off the resin bound floors. This was achieved by mounting a series of high output fixtures with spreader lenses and baffles discreetly positioned at high levels above the entrances. These fixtures are also fitted with RGB and white LED, which are linked in with the remote façade lighting.
Elsewhere, the roof terraces were lit by discreet fixtures recessed under fin shelves and from small downlights recessed into the roof canopies. DALD opted for a colour temperature of 3000K, to bring a feeling of warmth to these areas.
In the underground areas of the high-speed track, DALD developed IP65-rated circular LED panels that were recessed into the walls of the tunnel and controlled via DMX. The panels were sequenced, which helped to animate the space and give the drivers the impression that they are travelling at high speed.
To help bring a further dynamic to the surrounding landscape of the Pavilion, strips of ADO Lights’ LED-Lightlines form bands of light within the landscape that effectively radiate from the building. Each strip is fitted with a 4000K LED strip, which is DMX-controlled to allow for sequential control animation; this further helps to create a sense of movement to the pavilion.
Set within the landscape, clusters of indigenous trees are uplit via in-ground adjustable fixtures in a warm colour temperature of 3000K, which further adds to the depth of the overall lighting of the Pavilion.
The intricate external lighting scenes were programmed on a DMX-based system from Pharos, which is triggered from the building’s control system to run from dusk until closing of the site. Although the Pavilion is very large in scale, the external lighting design approach was minimalistic, stretching the light sources to their maximum potential.
Mohamed Medani, Associate at Delta Lighting Design, added: “Lighting is in perfect sync with the architecture, and they send a mutual message of movement, fluidity, and connection. The perpetual shift of colour, the fidelity with which light follows the curves of the façade, the controlled reflections, they all convey a feeling of motion and of a constantly regenerating energy.
“The building seems to spin in a continuous flow, and this flow is enhanced by seemingly moving light. The deep understanding of architecture leads to the success of this building, as light is fully committed to the concept of movement, and it reaches its goal, to keep the pavilion ‘spinning’.” ■

www.dald.co.uk
www.deltalightingdesign.com