

LIGHTING

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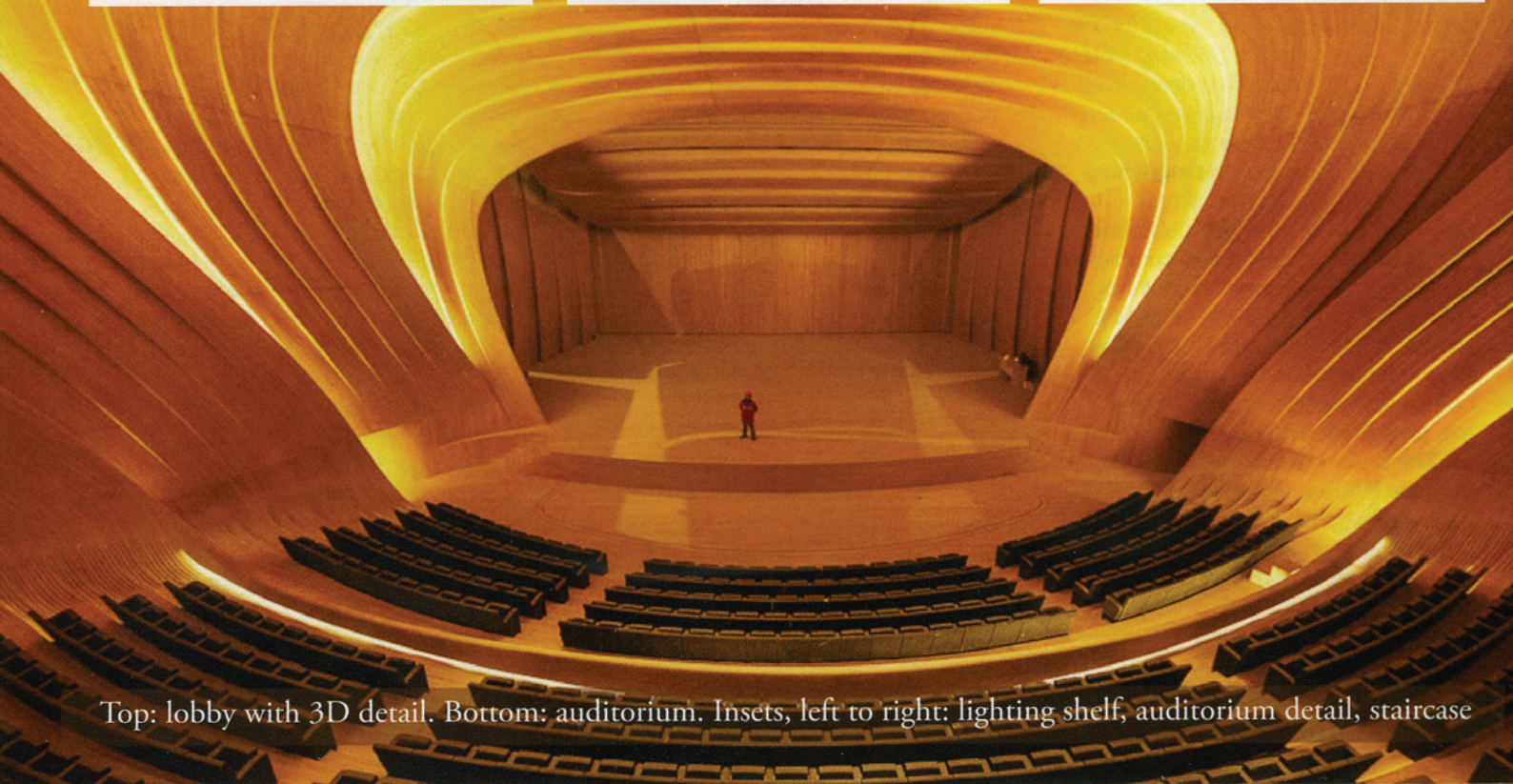
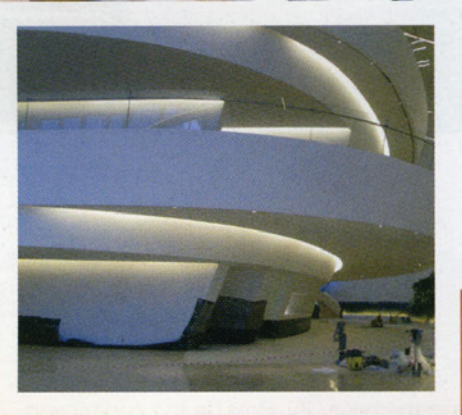
Inside (and out) Hadid's Baku Cultural Centre

Opposite sides of the road: lighting Regent Street

Glaring errors: obtrusive lighting guidance

Safety and performance: LED Standards

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Top: lobby with 3D detail. Bottom: auditorium. Insets, left to right: lighting shelf, auditorium detail, staircase

For the adjoining spaces, the idea of indirect lighting was continued with the use of ceiling troughs and continuous linear uplighting along the balustrades. The accumulated effect of all the uplighting and indirect lighting was to create a lantern effect when the building was viewed from outside.

We also had to explore ways of continuing the same concept for the ambient lighting in tighter areas where the geometry did not allow the use of lighting shelves and floor washers weren't adequate. We also quickly realised that the need for emergency lighting was just going to prove too much for this principle. The notion of a curvilinear ceiling slot that could be used within the internal skin was explored by ZHA and found to be an acceptable way of expressing the sculptural nature of the ceiling while still allowing the lighting to be integrated.

This internal skin detail meant fabricating a ceiling slot that could be mounted and adjusted to fit curving planes in all three axes because there is a direct relationship between the exterior curve of the roof and the interior ceiling. The solution was a three-dimensional flexible T5 linear slot detail (also 3000K) which could fit all the locations proposed. We worked closely with ZHA to optimise the placement and quantity needed to achieve approximately 100-150 lux at floor level.

Lighting all the public access area staircases was also subject to careful consideration, and the concept of the clean and concealed detailing was continued using Barrisol and T5 lighting at the perimeter, combined with a handrail niche LED lighting detail.

The facade of the main building is lit to define the infinite lines and dramatic sculptural shape, and to further express the lantern effect – light oozing from inside out. The idea was to illuminate the faces of the building closest to the building glazing to create an effect of lighting fading off as it moves away from the openings. We deliberately kept parts of the building facade dark to express the lit elements better. It was an incredible challenge to arrive at a solution that achieved a smooth fade-off of light as the building shape converges or merges into the landscape giving very little room to place luminaires.

The arrangement of the luminaires was also closely coordinated with ZHA to create a pattern of uplighting on the floor that echoes the building geometry. Too many buildings today are lit as fully programmable LED media facades,

and we needed to approach the facade as a pure form and allow a greater expression of light and dark to emerge from the architecture.

We used a range of Lumascope inground uplights with a limited selection of beam distributions to uplight selected curved surfaces from below, together with Bega 70W HIT asymmetric inground luminaires to wash the side wall panels as they curve between building and landscape. On the west side, where the building rises up to 70m with overlapping fins, asymmetric projectors were fixed inside the mechanical slots to hide them from view and yet achieve a smooth fade of light.

Externally, the expression of the landscape was defined only by using linear details to wash vertical surfaces and develop the bounded/surrounded feeling of light rather than a more measured appearance. The landscape's grand approach to the main entrance is lit using a combination of continuous uplights in a floor trough, and a series of custom-made LED wall slots and handrail details creating direct washes to the staircase and ramped areas. We wanted to avoid using any column or area lighting, so that the landscape could lead the eye to the building uninterrupted by any foreground pollution or clutter.

The heart of the cultural centre is the auditorium, a completely timber-clad, complex-shaped interior. This is lit using a combination of DMA DMX-controlled continuously mounted 10W Nichia LED modules within each of the timber rings, together with MR16 adjustable downlights linked to Multiload Voltmaster supply units. We provided critical feedback to ZHA to revise the timber detail housing the LEDs to achieve the desirable light distribution while hiding the light source. Most of this review had to be made within the 3D model itself, which meant checking every single section of the ring lighting detail to ensure and demonstrate both the consistency of the ZHA detail and the light output.

It has taken more than five years to realise this project and considerable attention to every detail, line and facet has been necessary to ensure the seamless integration of lighting within the architecture.

This feature is based on the presentation given by Rob Honeywill, director of Maurice Brill Lighting Design, at the ILP's 2012 Professional Lighting Summit



**Project:**

The Haydar Aliyev Cultural Centre, Baku, Azerbaijan

**Architect:**

Zaha Hadid Architects

**Lighting design:**

Maurice Brill Lighting Design

**Project designers:**

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