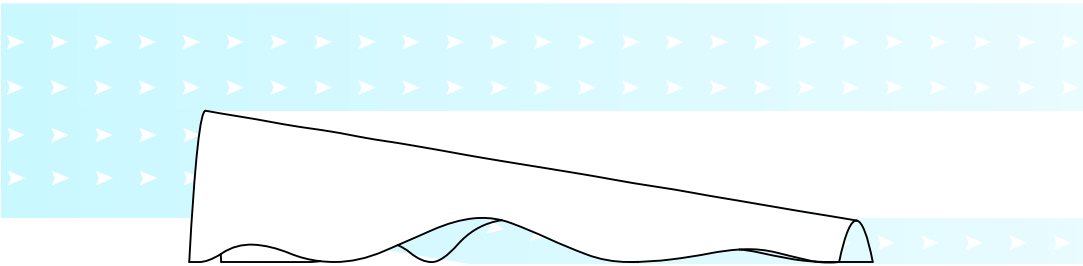


# CARAVANSERAI

A BREATHING GATEWAY FOR MASDAR CITY

**SUSTAINABILITY:**

The structure is shaped and formed in accordance with the flow of wind on the site, creating a horizontal wind tunnel to direct air downwards and into the city. This improves the natural ventilation within the city, cooling down the environment.



The skin of the “tunnel” consists out of Large ETFE panels: super-lightweight, 100% recyclable fabric structures which inflate and deflate as well as change opacity, reacting to environmental conditions in real time. By breathing the skin is able to improve the visitors comfort in an automated and efficient way, while inviting the visitors to watch the skin move, bending and reflecting light in mesmerising yet calculated and sustainable ways.

Within the ETFE cushions are placed photovoltaic panels, that, except from powering the structure, produce renewable energy for the Masdar City and Abu Dhabi in general. The entire south-facing photovoltaic area covers more than 2000 m2, allowing a nameplate capacity at more than 2000 kWp.

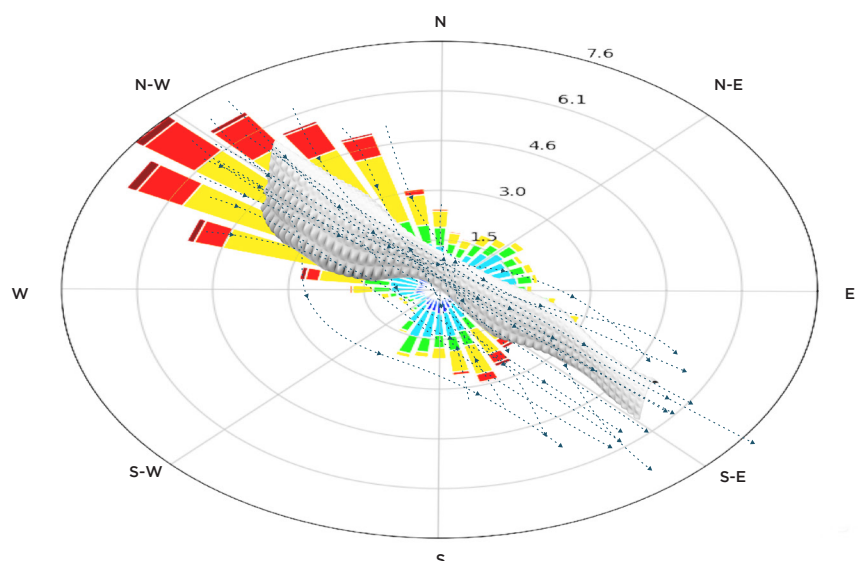
A plaza made out of polished rammed earth anchors the breathing skin. Through an embedded information stand in the middle, data about the energy performance, production and the skins behavior can be tracked live. The stand also functions as the entrance to the technical space right below. By coating the plaza with titanium dioxide pigment, that acts as a catalyst for removing smog and cleaning up the surrounding air, fresh air is generated within the skin, whenever the coating interacts with sunlight.

**PROGRAM:**

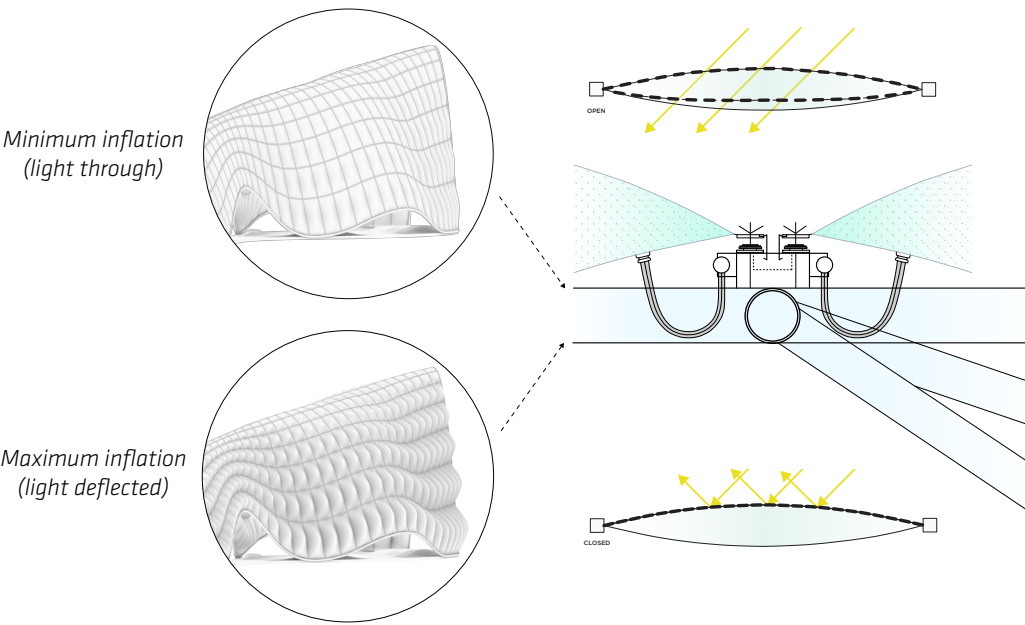
The Caravanserai is more than 240 meters long, and can as such host large events, markets, conferences and exhibitions, almost more comparable to an urban street, than a traditional building. Its shape at ground level naturally divides the plaza into several different sized zones, that can be programmed individually. The road dividing the site is continuing through the structure, creating an iconic gateway in the process.

**ILLUMINATION:**

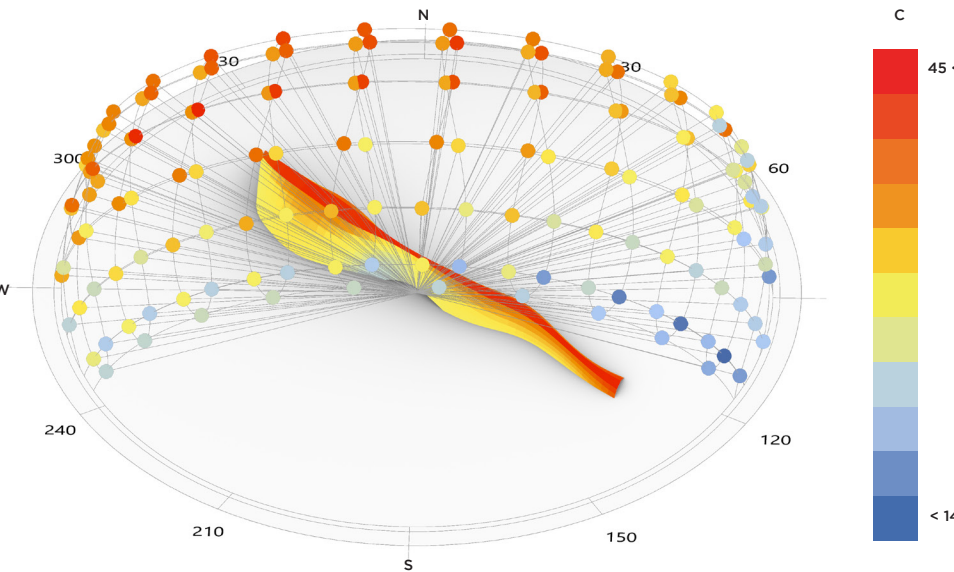
Glowing panels are fixed on the backside of the solar panels, facing the interior of the structure. During the day these panels absorb the UV rays hitting them, but when the sun sets, they start glowing, providing a beautiful and entirely energy neutral way of illuminating the Caravanserai at night.



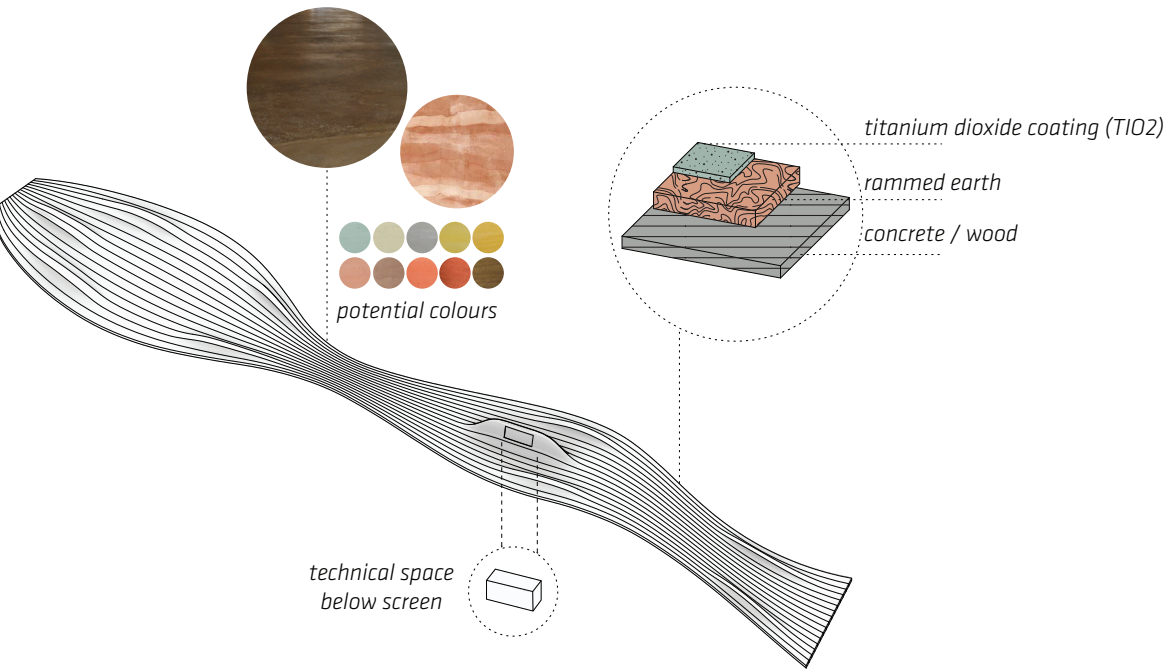
**WIND TUNNEL**  
The structure opens up according to the wind flows, funneling the air through, thus providing natural ventilation along the entire length



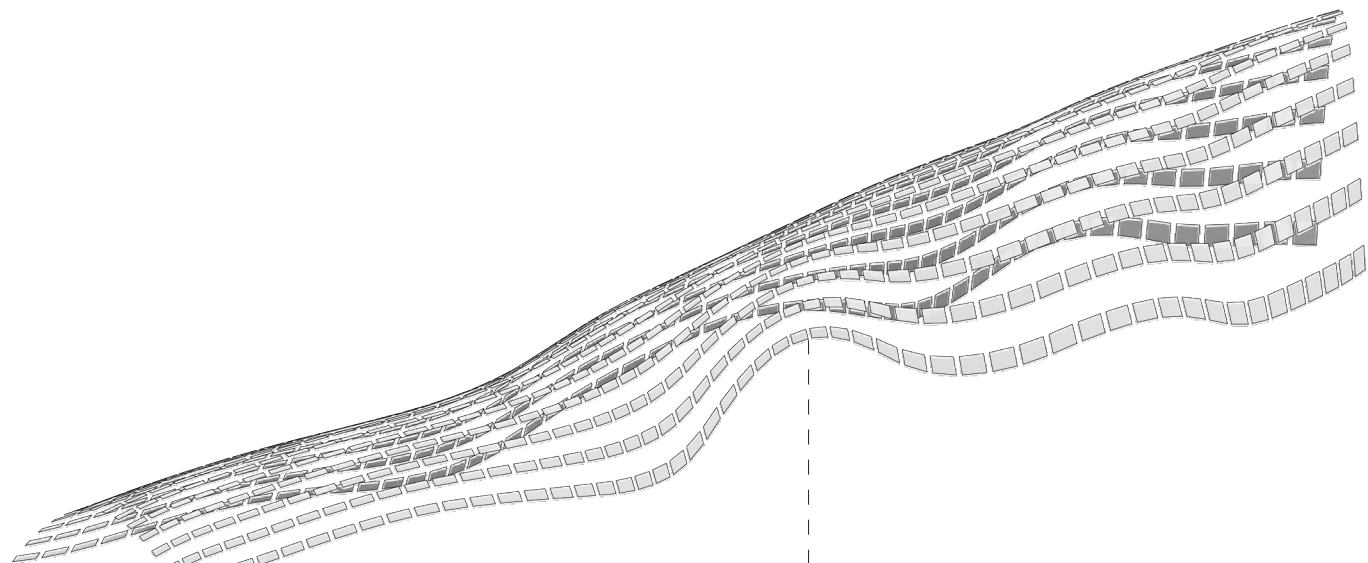
**BREATHING ETFE**  
The use of different printed patterns on the individual layers of the cushions allows for a variety of opacities that can be adjusted through inflation and deflation.



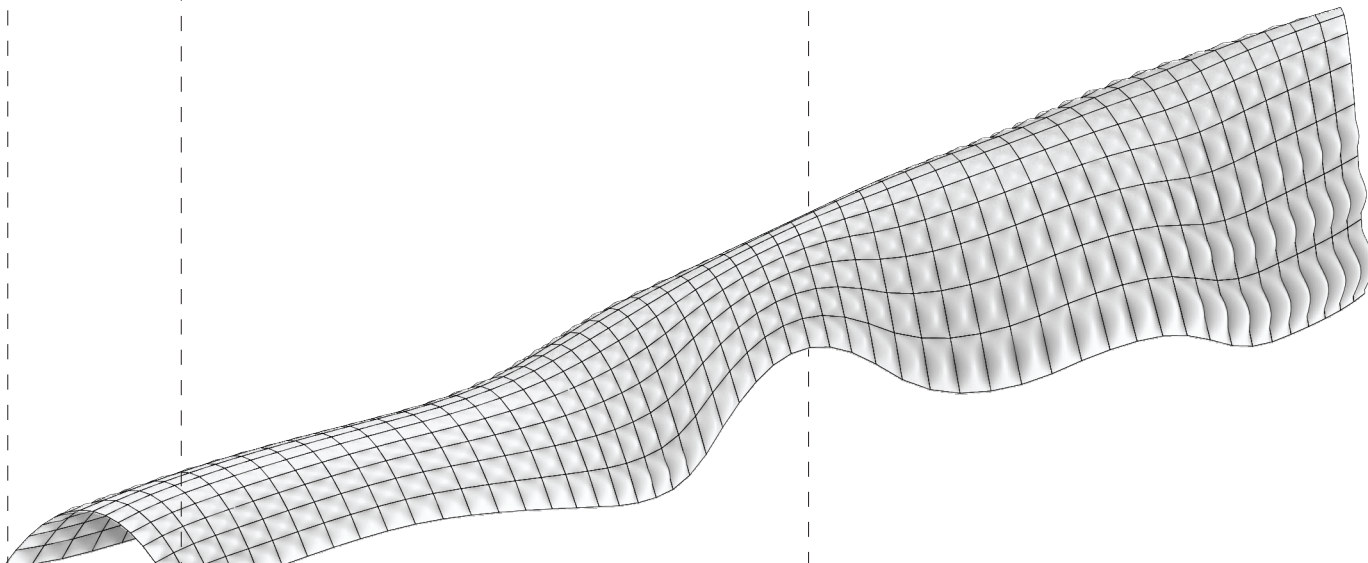
**SKIN SOLAR EXPOSURE**  
Solar panels are placed in relation to their efficiency, taking the proposed context into consideration. Of 3610m² of potential panels, 2051m² is picked based on performance.



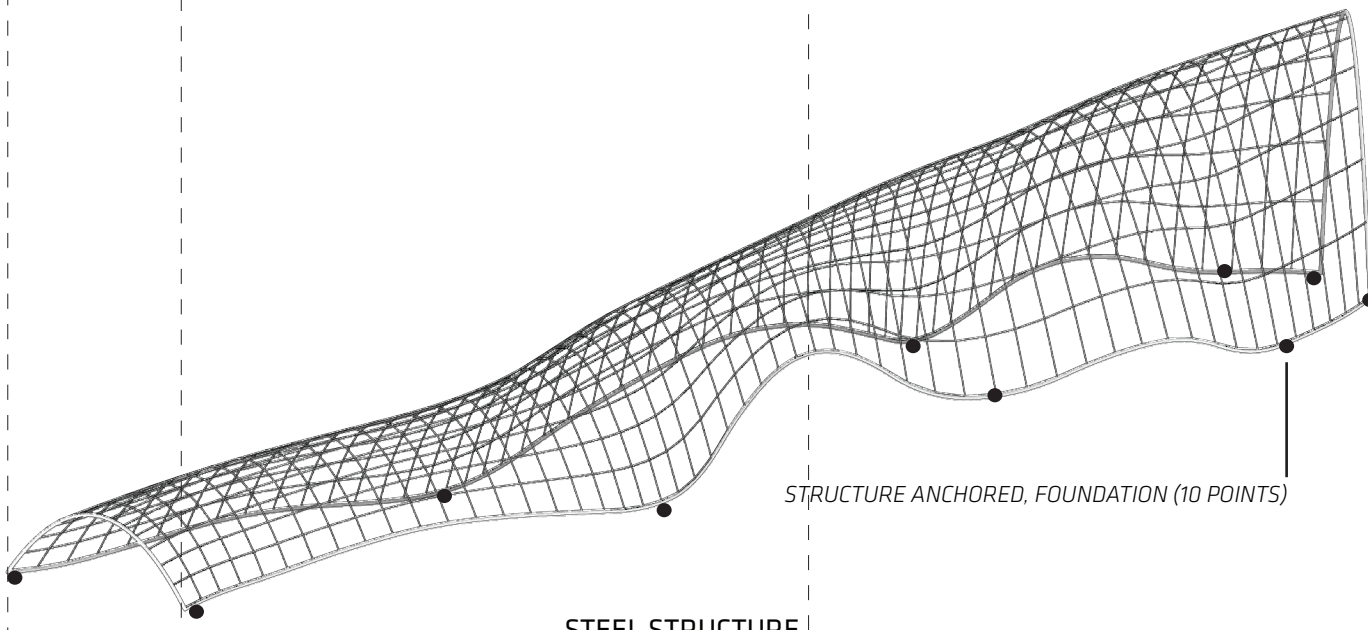
**RAMMED EARTH PLAZA**  
Polished rammed earth coated with titanium dioxide for passive air cleansing. The rammed earth can be coloured. In the project the Masdar City colour, light blue, is used.



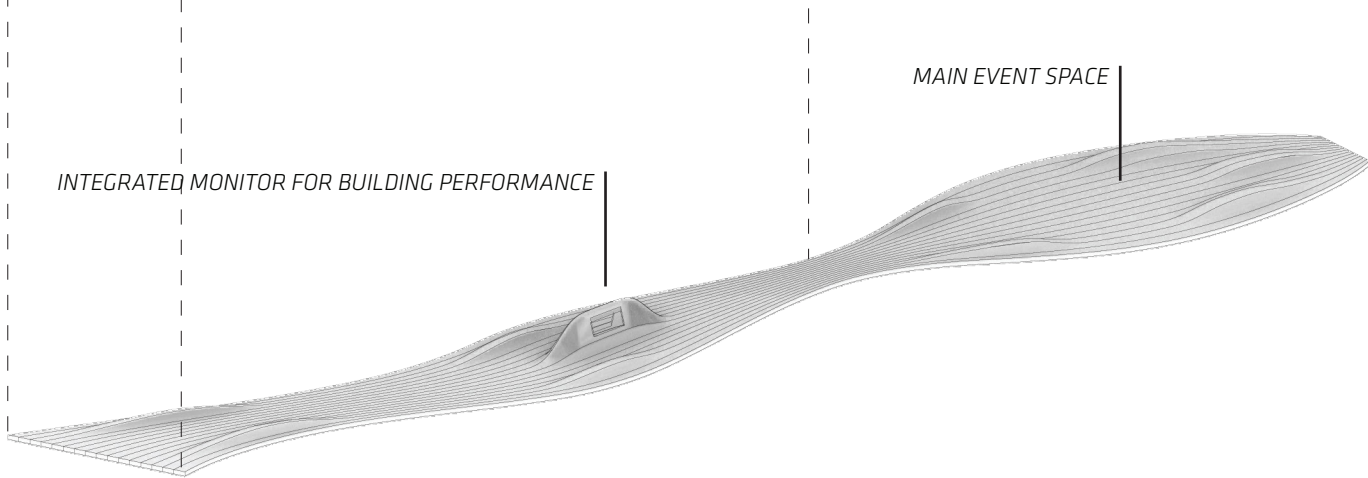
**INTERIOR (SOLAR) PANELS**  
(2061 m² out of 3610 m² picked for solar panels)



**ETFE PANELS**

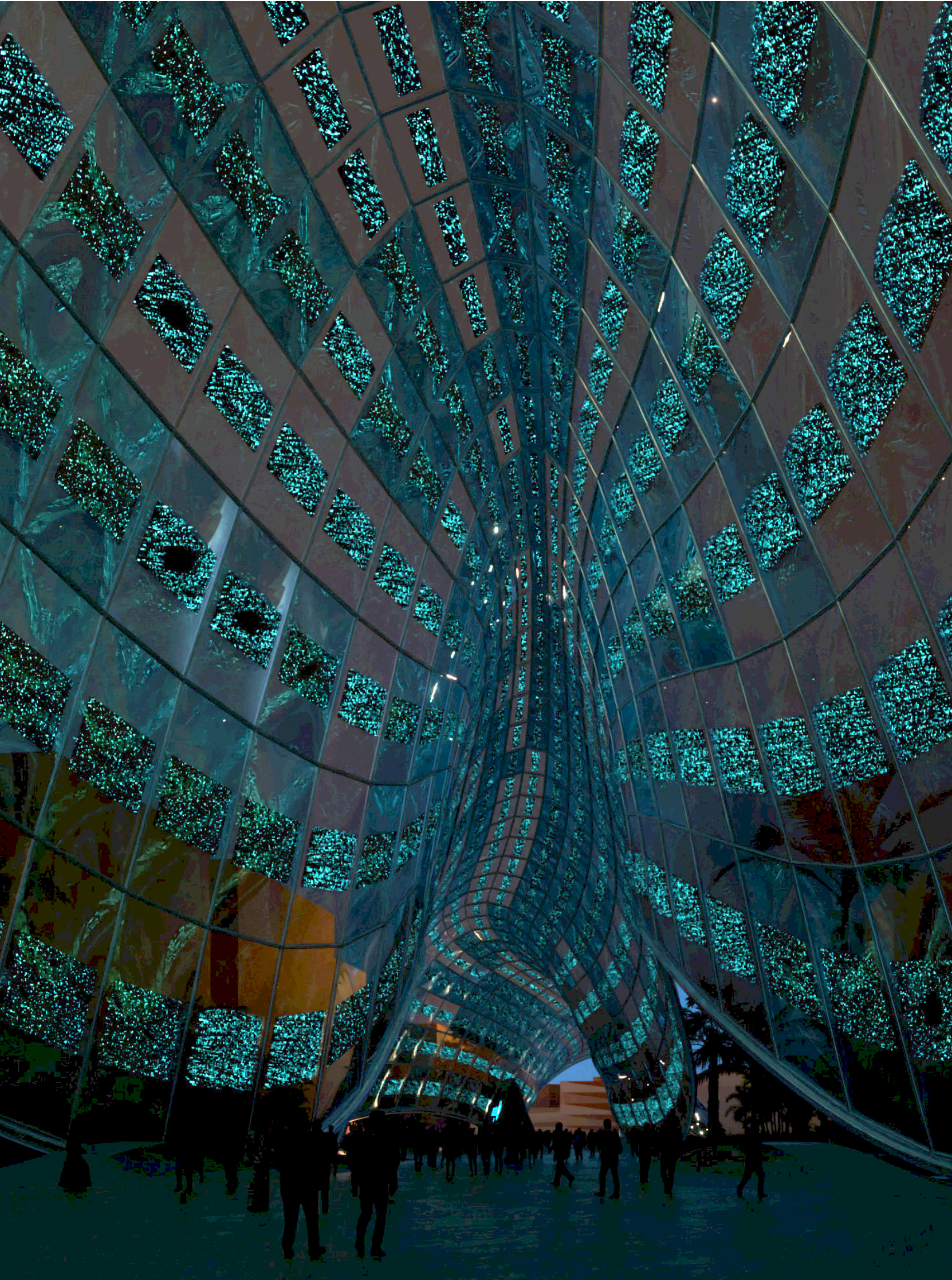


**STEEL STRUCTURE**



**POLISHEDRAMMED EARTH PLAZA**

**EXPLODED AXO OF THE STRUCTURE**  
The four main parts highlighting the different elements of the installation. In the proposal the surrounding is envisioned as a green corridor, as in the masterplan for the city.



**ILLUMINATION**  
At night glowing panels illuminate the inside of the Caravanserai, creating a spectacular underwater mood at no extra energy cost.



**GATEWAY**  
The structure spans the existing road, creating a visually striking gateway for all surface mobility. A true gateway for Masdar City.

