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 exciting the visitors to watch the skin move, bending and reflecting light in mesmerizing 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 behaviour 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.