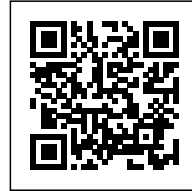




MINIMA | MAXIMA

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Tallest-ever construction from material as thin as a coin challenges how we understand structure and space

Minima | Maxima, the latest Structural Stripes 'Crawling Assembly' from MARC FORNES / THEVERYMANY, provides a moment of contemplation amid the busy grounds of World Expo 2017.



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Why, among visitors of all ages, does it seem instinctive to engage the structure playfully? For instance, to tuck one's body inside a pleat at the base, assuming a contorted curved form that matches the structure itself. To be inside *Minima | Maxima* is to be transported to a strange, future science-fiction world, removing us from ourselves and finding within a sense of naive wonder. The project is radically different from the built environments we know. The impulse is to explore, to visually wander. Transformed into a childlike state, visitors can do so without the pretense of reference or concepts, employing instead the potent investigative powers of our senses.

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The project extends MARC FORNES / THEVERYMANY's research and development into achieving structural integrity through ultra-thin, self-supporting structures which find their strength in the double curvature of their form. In the whimsical yet durable universe the studio creates, curves win out over angles; branches, splits and recombinations make columns and beams irrelevant. A 'networked' surface rolls in, on, and around itself, transforming into a space that obscures our preconceived notions of enclosure, entrance/exit, and threshold, while also providing its own support to stand up. The surface is ultra-thin: 6 mm aluminum. If an egg were scaled up to the same height as *Minima | Maxima*, the shell would be much thicker.

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Towards the base of the structure the rolling surface begins to softly corrugate, its zig-zag angles gently rising into a full pleat as they meet the ground platform. The visual threshold of this transition – from pleated base to smooth and doubly curved, continuous surface – is subtle, yet its structural effect is significant in achieving the height of 43'.



The project is a multi-ply composite: three layers of flat stripes – white and white sandwiching pink – are constructed in tandem, supporting one another as they assume curvature and gain height. One layer never exists independently but contributes to and benefits from the unified whole. The stripes of each layer move perpendicularly to one another, creating an anisotropic composite material (the structural properties of the composite depend on direction) from an isotropic material like aluminum (the properties of the material are mostly the same in all directions).

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The system warrants comparison to fiber technology – such as carbon or glass fiber – yet is unique in that, unlike fibers, each individual component does not need to be in tension (a straight line), and/or their processing does not require any mold or temporary scaffolding. Also, such a composite system is mechanically bonded, allowing for recomposition and corrections during construction.



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Minima | Maxima was commissioned for World Expo 2017, an event with a history of architectural and engineering innovations. The structure was situated prominently on the grounds in Astana, Kazakhstan, where it will continue to live as a permanent structure. The environment it creates proved to be a successful destination and experience for visitors, inciting curiosity from afar, providing a moment of contemplation within. 

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