

Luxembourg Pavilion

~EXPO2025 Osaka-Kansai Expo~



TRA · K Co.,Ltd.



FABSPACE JAPAN Co.,Ltd.

The structure presents a unique and innovative design



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Advanced manufacturing and construction techniques that are attracting attention within the industry !!

A rare form characterized by irregular undulations that vary in size and placement.

A suspension membrane structure that requires no undercables and is formed entirely from high-strength membrane material.

The main structure consists of a membrane, steel columns, cables, and tie rods.

It is a suspended membrane structure in which tension is applied to the membrane by hydraulically pulling in tie rods attached to the cone at the base and the surrounding vertical cables.

The membrane material used was Ferrari 1302,

A PVC membrane, which is stronger than PTFE membrane,

The initial tension of the membrane is 7 kN/m.

Since there are no undercables, high tension is generated in the conical membrane at the bottom, which is reinforced by a large-area double-layer membrane.

The membrane material is 1.02mm thick, which makes it difficult to process.

However, by employing dimensional and precision control based on cutting plans, along with many years of experience and reliable processing technology, we are able to produce three-dimensional membranes.

In the construction plan, we conducted a construction analysis and determined the sequence of construction.

The construction involved unfolding the membrane material, which was divided into four sections, over the entire scaffolding on the roof of the building, connecting them into a single membrane, and then lifting the top of the membrane, onto the top of the columns and pulling in the bottom of the cone with jacks. This introduced high initial tension throughout the membrane, enabling us to achieve this beautiful and unique shape.

Membrane: Ferrari 1302

Membrane surface area : 1,110m²

Contractor: Naito House Co.

Membrane structure part: TRA · K Co.

Cable : FABSPACE JAPAN Co.

Tie rods: FABSPACE JAPAN Co.

Completion: March 2025