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VASCO DE GAMA TOWER

PROJECT DESCRIPTION

The goal of this project is to provide coverage for the newly created hemispheric dome constructed on the upper deck of the 132m tall Vasco de Gama Tower in Lisbon (Portugal).

The dome's structure is supported by 38 pillars along its perimeter, creating a circle with a diameter of 21m. On its upper part, 5 metres from the base, the structure is anchored to the tower's circular core. It has a remarkable design, comprised of 80 x 80mm bars which form 152 hexagons.

IASO is responsible for installing an ETFE cushion inside each hexagon and guaranteeing that the entire surface is perfectly sealed, as well as to install a tensioned PVC membrane surrounding the central core of the tower to channel the water falling between the last row of cushions and the wall.

CHARACTERISTICS

Material	ETFE Film
Application	Hostelry
Surface	365.18m²
Measures	Ø21m x 5m tall (entire cover).
Location	Lisboa, Portugal
Architect	STABÖRD Nuno Rodrigues
Year	2020

TECHNICAL DATA

The work features 152 ETFE cushions organised into four rows with 38 cushions in each. The cushions are made of two layers, each being 200 microns thick, with the outer layer decorated with screen-printed white dots with a diameter of 6mm. Each cushion has three lines of vertical soldering, helping achieve the desired shape. The solder lines are vertical on all the cushions, creating visual continuity across the entire dome.

The cushions are inflated using a radial system. The air machine feeds a closed-loop distribution network which is connected to 38 branches leading to the 38 cushions in the upper row of the dome. From here, the other three rows of cushions are inflated through a bypass system. A flexible transparent sleeve with a diameter of 41mm is used to connect the cushions together.

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The PVC tensile structure is known as a sail thanks to its shape. A polar array of stainless steel radial cables is installed to the dome, connecting it to the tower's core. The cables are mounted alternatingly at high points and low points. Finally, the canvas is attached to the cables both above and below, creating the shape of a fan.

A matte white PVC 502V2 membrane by Serge Ferrari was used for the fan.