Year: 2000
Location: Germany
Program: Exhibition

Japan Pavilion Expo 2000 Hannover

The year 2000 Hannover Expo was planned around the theme of environmental issues. However, contrary to the main theme, each country had built a temporary pavilion for the half year duration of the expo, and disassembled them after the end of the show producing vast amounts of industrial waste. This is where we thought to make material and construction method choices so that most of the materials would be recyclable or reusable after dismantling the building. We appointed Frei Otto to develop the world's first ever paper tube grid shell structure. For the foundations, concrete was avoided because it is difficult to recycle and instead wooden boxes filled with sand were used to secure the paper tube grid shell. For the roof, a paper membrane was developed that met German standards for waterproofing and fireproofing. The intersecting paper tubes were fastened by fabric tape and belt buckles. The paper tube grid shell was formed into a three-dimensional curve with three humps to prevent deflection in the X and Y directions and wooden frames were placed across the spans to increase the in-plane stiffness of the grid-shell.