LONDON DESIGN FESTIVAL - THE HOTHOUSE






J & J Carter were contracted by Cake Industries to manufacture and install the membrane roof for an arched greenhouse, named the Hothouse. Designed by Studio Weave the structure is built from a series of galvanised steel arches and steel tension cables with a transparent membrane, as part of London Design Festival.

The greenhouse highlights the rapid effects of climate change, as it is filled with tropical plants predicted to be able to grow in the UK within only 30 years due to rising temperatures.

As the pavilion was designed during the coronavirus pandemic, the exterior needed to be engaging as people would not be allowed to go inside. To ensure this, the greenhouse was enclosed with transparent CNC-cut recyclable PVC to make the plants as visible as possible, lighting up at night to draw attention to the planting.

J & J Carter undertook the design of the tensile membrane roof which involved the detail connection design, form-finding, bi-axial testing and patterning. Being made from an unsupported transparent PVC membrane brought additional challenges. All

unsupported PVC's, i.e: those without a base cloth, can be prone to dimensional instability which is brought on by changes in temperature.

The bi-axial test, which tests for elongation under load in two simultaneous orthogonal directions, called for a 0.1% compensation with a 1.0 kN/m pre-stress. Careful planning and fabrication was essential to ensure the success of the installation.

The edges of the membrane are finished with a Keder and clamp plated to the steel structure.

The installation looks to demonstrate the effects of climate change, whilst also celebrating the beauty of plants and humans' adaptability, ingenuity and ability to overcome problems and create safe and stable growing environments for plants from all over the world.

KEY FACTS

LOCATION: United Kingdom

STRUCTURES: Frame Supported

INDUSTRY: Events

ROOF FORMS: Barrel Vault

MATERIALS: PVC/PES

DATE: 17 Aug 2020







