Nottingham High School for Boys, ETFE Roof

Client: Nottingham High School for Boys Year of Completion: 2009
Architect/Designer: Maber Architects Main Contractor/Customer: GF Tomlinson

A spacious, airy and modern facility was the brief when GF Tomlinson and Maber Architects were contracted to build a new sixth form centre at Nottingham High School for Boys. Faced with this challenge, the architects developed a design which included a complex ETFE cushion roof and approached Architen Landrell to assist with the design, manufacture and installation.

The project entailed providing a multiple steel truss arrangement supported on a series of steel columns to support the 25 no. two ply ETFE foil cushions. The roof covers a courtyard made up of the existing surrounding walls of the old school; now protected from the elements, the space can be used as a new dining and recreational area.

Maber Architects were keen to combine old and new; the original school buildings are nearly 500 years old and incorporate intricate stonework designs. Therefore, by installing an ETFE cushion roof along with two levels of mezzanine floors and an acoustic sound pod as the centerpiece of the structure, the aim was to create a beautiful juxtaposition between these building materials.

The weight of the material was not a small factor in the material choice. Weighing in at approximately 1% of the weight of glass the ETFE cushion system requires significantly less heavy duty steelwork than a traditional glazed system. As a result, the steel truss design used at Nottingham Boys School has a lightweight appearance, adding to the airy feel to the courtyard area and complimenting the bulbous appearance of the ETFE foil cushions.

As well as the visual impact of the cushion roof the ETFE structure provides a feel of a light and open area, which is both watertight and achieves the thermal requirements; the two layer cushion system achieves a U value specified by the architect at the outset of the design process. In addition, solar glare was reduced by applying a fritted honeycomb pattern to 70% of the surface area of the external layer of the ETFE cushions this achieves around a 40% reduction in solar glare.

The two mezzanine floors in the space provided an extra design challenge for Architen Landrell and the design team. ETFE cushions can be noisy on a rainy day and when people are positioned ...see http://www.architen.com for more information.

Location:
Nottingham, UK

Category:
Exterior

Market Sector:
Education

Scope Of Works:
Design
Engineering
Research and Development
Manufacture
Project Management
Install
Steelwork

Fabric Type:
ETFE

Design Style:
Inflatable

Function:
Roof