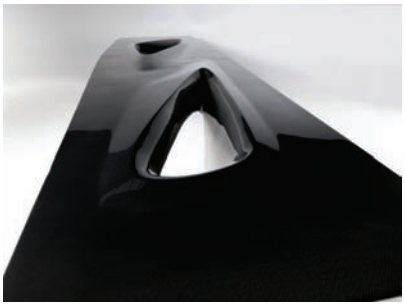
Seoul Table – Zaha Hadid Architects

We were commissioned by New York based art commissioning company, NY Projects Inc, to realise Daniel Widrig's dynamic yet complex design for a table to be exhibited at the 2008 Seoul Design Olympiad.

Having an understanding of construction gleaned not only from our work in general, but also from specific FRP related projects such as Chanel's Mobile Art Pavilion, enabled us to approach this project with a certain degree of knowledge and experience. Working closely with Daniel and Patrik Schumacher of ZHA throughout the interpretation, analysis and manufacturing processes, we overcame many of the challenges that can occur when manufacturing such a unique prototype within such a tight timescale.

Particular challenges came in the shape of achieving the required finish and also achieving the correct balance to enable the structure to stand correctly. Daniel had stipulated that all surfaces should have a visible carbon fibre weave meaning that with no subsequent layers of finish to be applied to the surface, the piece had to be perfect-straight out of the mould.



Our in-house team of 3D modelling specialists have experience with regards to the interpretation and analysis of furniture design. They worked with Daniel's Rhino model, deciding how to derive the set of moulds, how many components were required and where the joint lines would occur and how these would be minimised or concealed. Carbon Prepreg was chosen for the manufacture of all components of the table as it afforded the strength and stiffness necessary to achieve the large span and shallow depth dictated by the geometry of the design. Prepreg was also a material that would achieve the finish necessary to accentuate the curves.

As with any design, there are certain inherent limitations. In this particular case, these regarded the thickness - dictated by the structural span - and also the radius of curvature, limiting how sharp we could make the edges. Whilst bringing many advantages, using Prepreg to manufacture the components also brought its own limitations and required us to manufacture the moulds from a material with a similar thermal expansion coefficient. Carbon Fibre Reinforced Polymer (CFRP) was used for the moulds in order to avoid distortion, which in a 4.2m long piece, could have made a significant impact.

Our 5 axis CNC machine was used to mill the positive mould pattern, or plug, with a series of two moulds being manufactured for the table deck and three moulds for each of the two table legs. Once these moulds had been completed, a quasi-isotropic lay up was used for the Prepreg in order to achieve uniform properties in all directions as required by the design. This was then vacuum bagged to consolidate the laminate. After carefully controlled heating in our ovens, the components were de-moulded and our CNC facilities were then used to machine the foam sandwich cores for each component before the table was assembled, bonded and cured. Once the adhesive had cured in our ovens, the satin finish could be applied.

Given the timescale of this project we believe that the end result for the Seoul Table prototype proved to be pretty stunning and as close to the dictates of the design as was feasible.