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**Bellapart**  
construction



Bombay Sapphire Distillery Glasshouses

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## FREE-FORM PLEATED GLASSHOUSES IN HAMPSHIRE (UK)

Bellapart has recently completed work on two free-form pleated glasshouses in the historic site of Laverstoke Mill, Hampshire (UK).

The structures are composed of 32 double-curved glass strips that form a pleated circle at ground level and then follow a curved path in space to finally connect to one of the existing masonry buildings. Stainless steel mullions follow the creases of the pleated surface both at ridge and valley levels,

bending and twisting as necessary to keep parallel to the glass skin.

Double-curved laminated fully-tempered glass panels fill the space between mullions. These have a primary structural role under both permanent and live loads, transmitting in-plane compression forces to the mullions mainly through their chamfered vertices. In order to equilibrate these forces, slender stainless steel struts connect adjacent mullions showing an apparently random distribution.

Glass was curved in the factory to a cylindrical shape that approximates the final geometry and later cold-bent on site. The cylindrical shape was achieved, depending on the curvature, by either hot bending or cold bending in the autoclave during lamination.

Bellapart developed the definitive structural concept to realise the architectural vision while at the same time significantly reducing the predicted cost to accommodate

the project budget. The highly irregular geometry of the structure resulted in an extraordinarily large quantity of unique parts. Detail engineering and production were only possible through an extensive use of automation and scripting in all design and fabrication activities.

The on-site assembly also presented significant challenges. A sufficiently clean, dry and temperate environment was required for the injection of epoxy resins on site. Thus,

a large temporary enclosure was built with a supporting platform partially over the river.

The combination of a creative concept design, rigorous engineering practice, an effective and highly automated production method and the use of an experienced assembly team permitted to complete the work on time for the grand opening on 1st. October 2014.

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