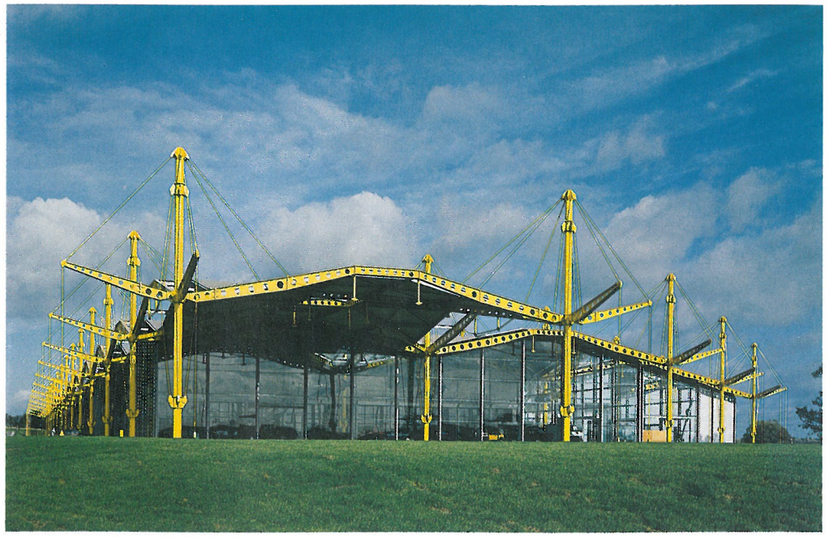

AWARD

# The Renault Centre, Swindon, Wiltshire

For Renault (UK) Ltd

The design concept attempts to integrate a response to both the site and the brief by using a 'module' which can fill out the site irregularities with the potential for random growth over time. The development of a masted structure with a lightweight suspended roof – akin to a vast three dimensional umbrella – offered large spans in two directions with economy of means. Visually the bulk and skyline could then be broken down in scale as a considered alternative to the anonymous bulky enclosures which dominate so many industrial estates across the nation.

From the outside the building form is articulated by the scale of the individual 'modules', their expressed structures and a co-ordinating use of the Renault yellow house-colour. There were tangible Town Planning gains from this approach and the Local Authority raised their preliminary limits of site development coverage from 50% to 67%.

The first stage provides a total area of 24,250 square metres with an expansion potential of 67% allowing for a further area of 16,350 square metres. The suspension structure provides connection points for direct attachment of future 'modules' without disruptive influences on those already existing. The building terminates in a 'prow' containing the showroom and an open entrance canopy.

The structural 'module' comprises arched steel beams which are supported from the top of pre-stressed circular rolled hollow steel masts, at quarter points. The mast system pre-stressing tension rods link the beams one metre out from the column centre-line to top and bottom fixings. These fixings are of a mechanical nature, using castings of spheroidal graphite cast iron: this material provides similar properties to steel castings but is easier to cast and approximately half the price. Pre-stressing of the columns was achieved by the 'Pilgrim Nut' jacking system originally developed for stressing nuts in marine boilers. The remainder of the structure consists of arched beams on the diagonals of the column grid, likewise supported from the masts, on which rest steel purlins at four metre centres. In essence the structural system is an unbraced continuous portal frame. Loading on one bay affects the behaviour of adjacent bays and the beam elements play a role in spanning not only between the pre-stress ties but also between the masts themselves. There are no special expansion joints as all movement is taken up within the structure itself. The main beams were manufactured to tolerances of −0mm +2mm. The pre-stressed mast units were assembled on site to +/−3mm and the main spanning members were adjusted to the exact dimensions required on site (+/−10mm) through tensioning the tie rods. The main mast tie rods were adjusted on site to achieve the correct pre-stress loadings rather than dimensional tolerances.

Despite many penetrations for structure and services in the final roof cover, this consists of one continuous solvent welded specially reinforced PVC membrane. The use of 75mm mineral wool insulation results in a high overall thermal performance standard and also provides a dead load to resist wind uplift forces.

The external wall panels are a low cost system, developed for the project, in which expanded polyurethane foam filling between two outer skins of steel acts structurally to permit a 4 metre horizontal span, as well as providing very high insulation performance. Glazing to the wall and rooflights is a newly developed assembly system of 10mm thick flat bed armourplated glass suspended on bolts countersunk into the thickness of the glass.

Steelwork erection commenced in January 1982, the warehouse being operational by December 1982 and the whole Centre completed in May 1983 at a cost of approximately £8.5m.

**Architects:** Foster Associates
**Structural Engineers:** Ove Arup & Partners
**Steelwork Contractors:** Tubeworkers Ltd

## Judges' Comments:

A joyful and elegant solution for a warehouse facility where the well detailed use of an exposed structural steel frame generates the architectural concept.