

Press release

01 octobre 2003

New Headquarters for the TAG McLaren Group. Woking, England 1998 - 2003

The new corporate and production headquarters for the TAG McLaren Group aims to redefine the manufacturing workplace for the twenty-first century.

Since the early 1970s Foster and Partners has pioneered the design of flexible workplaces that can respond quickly and easily to changes in working practices and communications and information technology. For example, the practice installed the first raised floor system within an office building. Foster and Partners is committed to designing sustainable and environmentally friendly workplaces, providing significant benefits for the environment and real cost benefits for our clients. These low-energy strategies are closely connected with social factors - creating a pleasant working environment is central to a company's productivity.

In the design of the McLaren Technology Centre, Foster and Partners responded to a challenging brief to create a headquarters for the majority of the TAG McLaren Groups employees, previously scattered across 18 locations in and around the Woking area, combining a broad range of different functions under a single roof.

The building includes design studios, laboratories, research and testing facilities, electronics development, machine shops and prototyping and production facilities for the Team McLaren Mercedes Formula One cars and the Mercedes-Benz SLR McLaren. The building also contains a state-of-the-art wind tunnel capable of accommodating 1:2 scale car models.

Viewed in plan, the building is roughly semi-circular, the circle being completed by a formal lake, which forms an integral part of the building's cooling system. Internally, the building is organised around double-height six-metre wide linear streets, which form circulation routes and allow daylight into the interior of the building providing all employees with an awareness of the outside. These streets separate 18-metre wide fingers of flexible accommodation, housing production and storage areas on the lower levels, with top-lit design studios, offices and meeting rooms above.

The principal lakeside facade is a continuous curved glass wall, shaded by a cantilevered roof. Directly behind the facade a circulation boulevard leads to areas for hospitality, including the VIP restaurant, a juice and coffee bar complete with a television wall and the staff restaurant, all of which look out across the landscape beyond. Other facilities include a training pool and a fitness centre.

Wind Tunnel

The 145-metre long wind tunnel was designed and under construction in collaboration with the leading international engineering services company AMEC, while the rest of the building was still on the drawing

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board. The building is an acoustically sealed block with two walls linked to the structure by rubber mounts to minimise noise break-out and vibration. Using 400 tonnes of steel between 8-10mm thick, its construction is similar to that of a large ship. The wind tunnel was completed in 2001 and has been operational since then, providing state-of-the-art aerodynamic testing facilities.

The Visitor and Learning Centre

A Visitor and Learning Centre with educational facilities is located in a separate building at the entrance to the complex. This two-storey structure is buried underground and is designed to make a minimal intervention in the landscape. Its only visible element from outside is a ring of glass roof lights protruding through a grassy mound. The roof is supported, under the weight of several hundred tonnes of earth, by massive steel ribs creating a dramatic conical ceiling for the exhibition centre below. The Visitor and Learning Centre also houses a 250-seat presentation theatre and classrooms. It is linked to the main Technology Centre by a subterranean building with a permanent display, which will convey the history and growth of McLaren.

Landscaping, Lake and Ecology

The Technology Centre posed the challenge of sensitively accommodating a building as large as Stansted Airport on a 50-hectare green belt site. The required 60,000m² of accommodation had to be contained within a 20,000m² footprint the extent of the farm buildings already on the site and a height limitation of 10m above datum. The solution was a low, deep-plan building sunk into the landscape, shielded from view by the planting of 100,000 new trees.

The dramatic lake adjacent to the Technology Centre is central to the buildings environmental strategy its 50,000 cubic metres of water form a vital part of the cooling infrastructure for the entire complex. Even the 160-metre-long waterfall that extends around the far edge of the lake serves a practical purpose, taking hot water generated by the giant radiators of the wind tunnel cooling system and gradually reducing the temperature as it cascades down a series of shallow steps. The rapid movement of the water causes it to aerate, thereby oxygenating the entire system and naturally reducing algae growth.

The lake water is used to cool the building. It is pumped via a natural filtration system of reed beds and a cleansing biotope through to the buildings heat exchangers. Cold water is stored in five cooling buffer vessels located next to the restaurant. The water circulates every 48 hours. The use of lake water for cooling purposes has reduced the requirement for cooling towers from seven to two. All run-off water goes through the network of lakes; the rainwater from the roof goes directly into the formal lake while car-parking drainage flows through the reed beds before dissipating into the adjacent River Bourne. The form of the cascade and the development of the water flow was developed using full size models.

Windblade Façade

The buildings relationship to the lake and the surrounding countryside was a key generator in its design. An innovative engineering solution was required to ensure the maximum transparency of the principal, curved, lakeside façade to maintain the dramatic views of the landscape. A minimal hanging glass wall was devised because traditional vertical posts and mullions would have obscured these views.

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The glass walls minimal structure is the result of a close collaboration between Foster and Partners, Schco International and McLarens own engineers, incorporating aerospace and Formula One engineering technology. Wind loads are absorbed by 12-metre long, computer-cut aluminium windblades connected to columns by a machined aluminium collar. The vertical loads are supported by 5mm, elliptical, stainless-steel tie-rods, the same tie rods that are used to strengthen the bodywork of the Team McLaren Mercedes Formula One racing car. They form a framework from which 40 tonnes of laminated glass is suspended with virtually no visible means of support. The glass is hung from the roof and each of the polished stainless steel supports holds 2.4 tons of glass in place. The streamlined design of the windblade was inspired by the rear wing support struts of the 1995 Le Mans 24 Hours-winning McLaren F1 sports car.

Lighting

Foster and Partners and McLaren worked with the American lighting consultant Claude Engle and the Italian lighting specialist Targetti to develop innovative ways of combining natural and artificial light within the building to provide the ideal working environment. An automatic control system provides a constant level of light in the office areas, regardless of the time of day and the external conditions. Bespoke diffusers, consisting of low-iron glass wings will ensure that there are no direct shafts of sunlight causing dazzle or hot spots, and will also subtly alter the colour of the natural light entering through the roof lights.

Quality Detailing

Foster and Partners has benefited from the partnerships formed by McLaren with specialist manufacturers and suppliers to ensure the highest possible quality of materials, furniture and fittings throughout the building. Many of the buildings components are unique to this project, the product of intensive research to provide a bespoke environment. Faram Ltd has produced and installed bespoke workstations, storage cabinets and partitions; Grohe has supplied the water disinfection and management systems; and Mapei has contributed to almost every aspect of the buildings construction, from aggregates in the concrete to the chemical adhesives that bond the flooring to it.

The result is a standard of design rarely seen in the working environment. The McLaren Technology Centre has established a new benchmark that will become a model for the workplace of the future.

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