

£10m Silent Wind Tunnel for ING Renault F1 Team



Eric Doyle, Computerweekly.com

Part of a \$50m long-term investment including a 5-year extension to ING Renault F1's partner Boeing Phantom Works research & development division, is co-working on the development of a "wide speed range Computational Fluid Dynamics code" that will eventually serve to replicate the resource of a full scale wind tunnel. This brings to six the total number of automotive wind tunnel schemes that AAD has been appointed to support.

Located at the team's base at Enstone, Oxfordshire, this underground mathematical modelling resource is a low environmental impact research & development facility providing 1025m² accommodation as an arched space with a 16.4m span and 6.5m height to apex. One end is enclosed to accommodate a server "farm" accommodating a 52m long array of Appro Xtreme-X™ Supercomputers, a 38 terraflop (38 trillion calculations /sec) system with 265 terabyte storage capacity, immediately providing a 5-fold increase in the teams computational fluid dynamics resource. The centre is scheduled to accommodate additional capacity every six months, with the 2009 F1 car being the first car to benefit from the investment.

A full height glass curtain wall at the other end of the facility provides a panoramic view to the open plan office accommodation; to the centre of the building is an exhibition space and an auditorium. With the interior design to feature natural concrete and glass finishes wherever possible, the acoustic design task itself could only be tackled with the support of 3D internal noise propagation modelling.

Key acoustic control matters included sound insulation between the server farm and the adjacent auditorium and between the auditorium and the adjacent exhibition space. Surface finishes providing sound absorption consistent with reverberation control in the large volume low population density open plan office space; within this large volume space is an open sided open topped meeting "pod", featuring linear slotted timber finishes to its outer edges. These promote effective speech distribution within the pod and surface absorption to the large volume office space. Provision of specifications for auditorium and exhibition area finishes were also part of AAD's brief, which ran from design stage inception to contractor's implementation.

Architect / Engineer
Main Contractor

Ridge
SDC Builders