Publications Detailing Other TFI Instrumentation (includes abstracts)

VINO, G., WATKINS, S., MOUSLEY, P.D., WATMUFF, J.H. & PRASAD, S.N. (2005) 'Flow structures in the near-wake of the Ahmed model', *Journal of Fluids and Structures*, **20**(5): 673-695.

Abstract: The time-averaged and time-dependent nature of the Ahmed model near- and far-wake has been investigated experimentally. The use of a new multi-hole probe allowed for measurement in regions exhibiting large flow angles (including flow reversals), and high levels of unsteadiness, allowing examination of flow regions previously difficult to investigate. Although time-averaged results of the far-wake showed good agreement with previously published work, the near-wake structure was found to be somewhat different, with much of the inconsistency being found in the interaction between a separated region over the slant and the recirculatory flows behind the model. Time-dependant analysis revealed that the shedding behind the model is analogous to vortex shedding behind bluff bodies, with most of the fluctuations confined to the axial direction. In addition, the shedding characteristics on the slant showed very similar behaviour to the vertical base, indicating strong turbulent mixing between the two regions, emphasizing time-averaged findings. ***(DPMS, ECA Probe)***

VINO, G., WATKINS, S., MOUSLEY, P.D., WATMUFF, J.H. & PRASAD, S.N. (2004) 'The unsteady near-wake of a simplified passenger car', In *Proceedings of the 15th Australasian Fluid Mechanics Conference, 13-17 December*, Sydney, Australia.

Abstract: The time-averaged and time-dependant nature of the wake of a simplified passenger vehicle (Ahmed model) has been investigated experimentally. Time-averaged results of the far-wake showed good agreement to previously published work, although the near-wake structure was found to be somewhat different, complementing findings made through flow visualisation. Time-dependant analysis revealed that the shedding behind the model is analogous to vortex shedding behind simple bluff bodies, with most of the fluctuations confined to the axial and vertical directions. In addition, the shedding characteristics on the slant showed very similar behaviour to the vertical base, indicating strong turbulent mixing between the two regions, emphasizing time-averaged findings and complementing the proposed flow topology. ***(DPMS, ECA Probe)***

WATKINS, S., MOUSLEY, P. & VINO, G. (2004) 'The development and use of dynamic pressure probes with Extended Cones of Acceptance (ECA) ', In *Proceedings of the 15th Australasian Fluid Mechanics Conference, 13-17 December*, Sydney, Australia.

Abstract: The development and use of multi-hole pressure probes for measurements in time-varying flows is outlined. An FFT-based dynamic calibration technique is used that permits enhanced dynamic response from relatively robust probes. To enable high turbulence flows to be measured, including flow reversals, a probe with an extended cone of acceptance is described including validation in a variety of turbulent and smooth flows. The pressure-based probes can be used for a range of measurements that would normally be outside the scope of HWA, LDA and PIV. Some applications are described. ***(ECA Probe)***

WATMUFF, J.H., VINO, G., WATKINS, S. & HILL, B. (2004) 'Dynamic measurement of differential buffet pressure' in *Proceedings of the 15th Australasian Fluid Mechanics Conference, The University of Sydney, 13-17 December*, Sydney, Australia.

Abstract: A technique for measuring the unsteady differential pressure acting across two closely spaced surfaces is successfully demonstrated. The results show that conventional single-surface pressure measurements are likely to provide misleading information about the buffet pressures responsible for unsteady structural loading on fighter aircraft. ***(DPMS)***