

# MACH 14 FREE PISTON HYPERSONIC WIND TUNNEL LONGSHOT

The VKI Longshot free piston tunnel is a short duration facility that can be operated with either nitrogen or carbon dioxide, and it is designed to provide the attainment of very high Reynolds number hypersonic flows.

It has a Mach 14 contoured nozzle of 0.43 m exit diameter and a 6° conical nozzle of 0.60 m exit diameter which can be used throughout the Mach number range from 15 to 20. Typical Reynolds numbers at Mach 15 range from  $5 \times 10^3$  to  $15 \times 10^6/m$ . A high precision incidence mechanism for pitch, roll, and yaw is mounted in the open-jet 4 m<sup>3</sup> test section. Instrumentation includes a force/moment balance, accelerometers, thin-film and coaxial thermocouples for heat flux measurements, piezoresistive pressure transducers, and a schlieren system. A total of 64 channels of transient recorders with a 50 kHz sampling rate are controlled by a PC.

