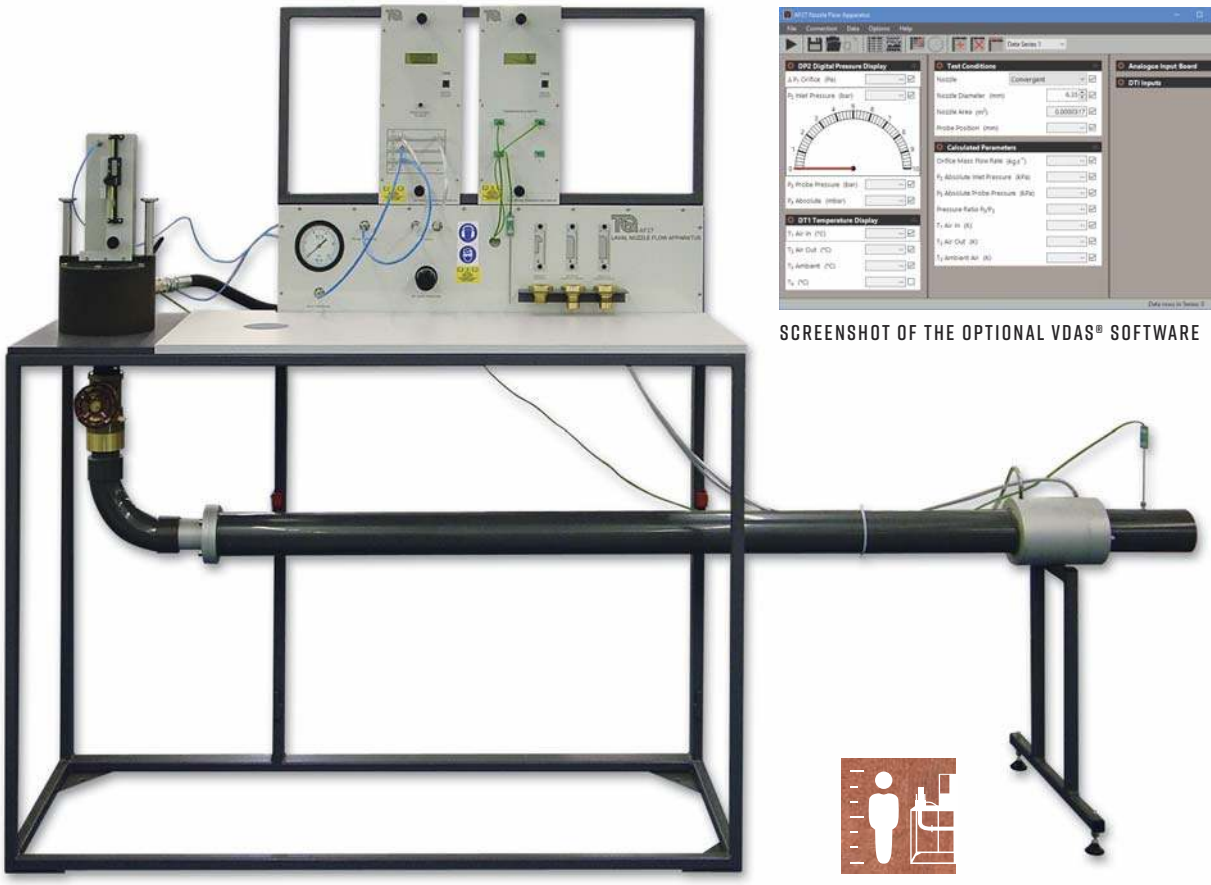
LAVAL NOZZLE FLOW APPARATUS

VDAS® AF27

Demonstrates the thermodynamics and fluid mechanics of the adiabatic expansion of air through subsonic and supersonic nozzles.



SCREENSHOT OF THE OPTIONAL VDAS® SOFTWARE

- Connects to suitable laboratory compressed air supply or TecQuipment's optional Compressor (AF27a)
- Includes three interchangeable, profiled and polished brass nozzles: convergent, convergent-divergent and convergent-parallel
- Electronic instruments measure and display multiple pressures and temperatures at the same time, for ease of use and for connection to TecQuipment's VDAS®
- Works with TecQuipment's Versatile Data Acquisition System (VDAS®) for instant recording of multiple readings and automatic calculations

A nozzle is fitted to the chest. Compressed air passes through the pressure regulator and an isolating valve. It then enters the pressure chest and passes vertically down through the nozzle, then through a precision downstream valve. The air flow then settles as it passes along a horizontal pipe, through an orifice and out to atmosphere.

LEARNING OUTCOMES:

- The relationship between pressure ratio and flow for convergent and convergent/divergent Laval nozzles
- The pressure profile in convergent/divergent nozzles at various pressure ratios
- Investigation of expansion with friction in a parallel passage at high subsonic velocities
- Boundary layer growth under subsonic and supersonic conditions
- The phenomenon of choked flow corresponding to sonic velocity at a nozzle throat

ESSENTIAL ANCILLARIES:

- Compressor (AF27a)

RECOMMENDED ANCILLARIES:

- Versatile Data Acquisition System – Frame-mounted version (VDAS-F) 299

ALTERNATIVE PRODUCTS:

- Supersonic Wind Tunnel – Intermittent (AF300) 59
- Supersonic Wind Tunnel – Continuous (AF302) 61