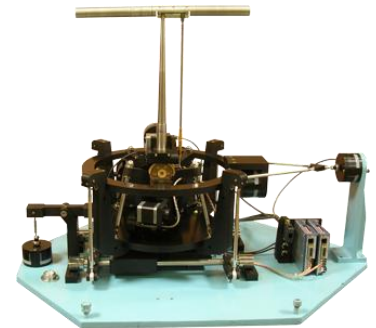


AEROLAB

www.aerolab.com

EDUCATION & RESEARCH



Subsonic Wind Tunnels and Instrumentation

Lasting Quality

Since 1947, AEROLAB wind tunnels have been shipped to over thirty countries on six continents. AEROLAB products last for generations!

Standard features for all AEROLAB Subsonic Wind Tunnels

Construction

- steel for all wind tunnels with test sections of 12 inches or larger
- fiberglass for small, low-speed tunnels only (6", 8", 12")

Honeycomb Flow Straightener

- seamless aluminum, hexagonal cells

Turbulence-reducing Screens

- two 20 x 20 (mesh) screens made of 0.009" (0,23mm) diameter stainless steel wire
- screens reside in a recessed pocket with space allowance for two additional (optional) screens

Contraction (bell mouth) Contour

- proven proprietary designed used by NASA and employed on all AEROLAB wind tunnels
- user-defined contraction ratio, typically 9:1 for open circuit tunnels and 7.5 for closed

Static Pressure Rings

- access to test section static pressure for non-intrusive dynamic pressure measurement
- consists of four pressure ports – one on each wall sharing a common manifold
- one ring in the settling chamber and one at the entrance of the test section

Test Section

- precisely machined aluminum structure
- two top-hinged Acrylic side windows

Diffusers

- conservative 5.5° total effective included divergence angle

Motor / Fan / Speed Controller

- high-efficiency
- solid-state
- rugged, recognized world supplier/manufacturer
- adjustable rotational speed is standard
- adjustable pitch is available as an option
- high accuracy

Excellent Flow Quality

- typically < 0.2% for fiberglass tunnels
- typically < 0.1% for steel tunnels

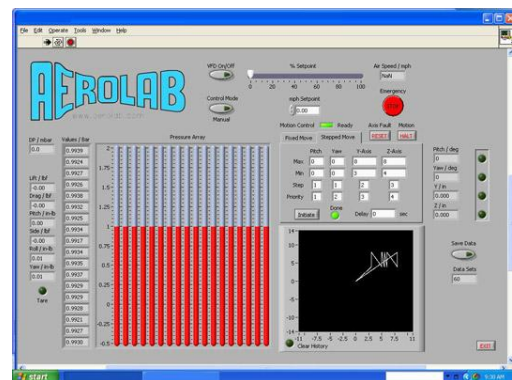


Custom-made Wake Rake

AEROLAB has decades of experience designing and constructing wind tunnels to meet specific needs.



Smoke Generator System



Data Acquisition System Display Panel

Optional features for all AEROLAB Subsonic Wind Tunnels

Data Acquisition, Display and Control System (DAC)

- incorporates industry-standard National Instruments hardware and LabVIEW software
- able to monitor, display and record all types of instrumentation data including Forces, Moments, pressures, positions, temperatures, V_∞
- able to control wind tunnel speed (dynamic pressure), model position and probe traverse system

Force / Moment Balances

- one-piece internal Sting and external Pyramidal available
- highly accurate and repeatable results
- custom mounts available



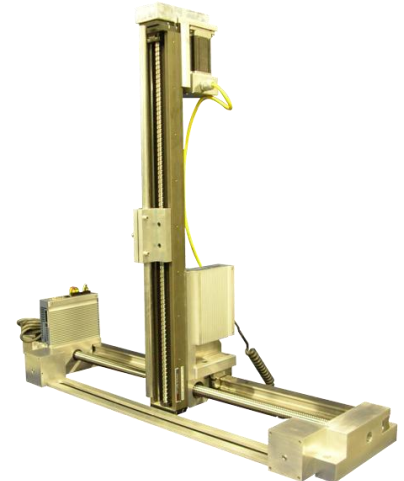
Internal "Sting" Force/Moment Balance

Model Positioning Systems

- each system is custom-made to meet specific requirements
- several options available including motorized control, reduced backlash gearboxes and movement ranges

Test Section Traverse System

- highly accurate, repeatable position changes
- handmade to customer-defined specifications
- automated Y – Z plane adjustments
- absolute encoders for homing-free operation



Test Section Traverse System

Test Models

- full machine shop capabilities with 90+ years of combined experience
- solid modeling capability with in-house CNC machining
- custom models available, contact AEROLAB for details

Probes

- Pitot-static, yaw and wake pressure probes available
- temperature probes
- custom probes by special order, contact AEROLAB for more detail

Smoke Generator

- electrically powered
- 45 minute maximum runtime

Pressure Transducer Array

- available in 12, 18 and 24 input arrangements
- stand-alone "plug and play" device with only two wires!!
- Piezoelectric pressure transducers
- multiple units can be "daisy chained" together
- interfaces with any AEROLAB Data Acquisition, Display and Control System



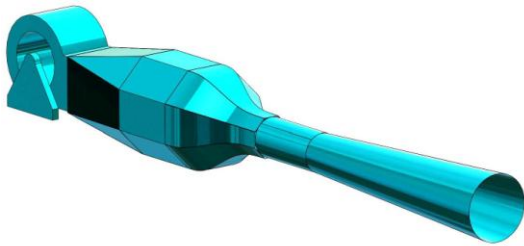
Pressure Transducer Array

Optional features for Open Circuit Wind Tunnels

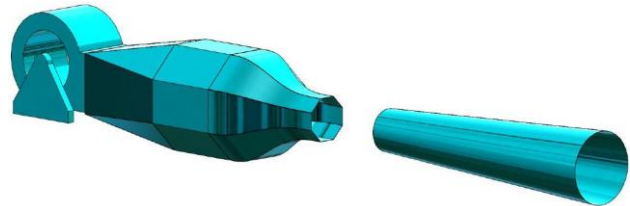
Open Circuit Wind Tunnels are a great choice when space or budget is limited.

Open Circuit Wind Tunnel Configurations

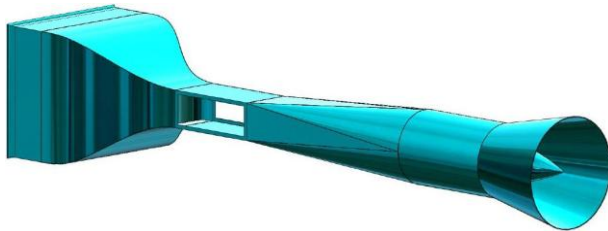
blow-down



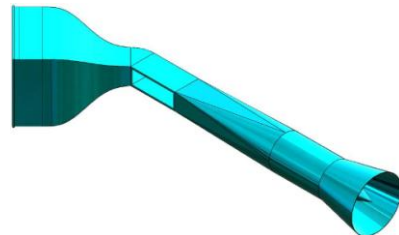
freejet



conventional



cascade

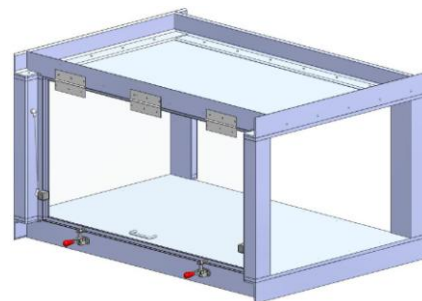


Exit Cone / Motor Nacelle / Noise Attenuator

- double-walled construction with sound-deadening materials
- reduces aerodynamic noise generated by the fan
- increases fan efficiency by smoothing exit flow



Noise-attenuating Exit Cone with Motor Nacelle



Standard Test Section Module with Side Doors

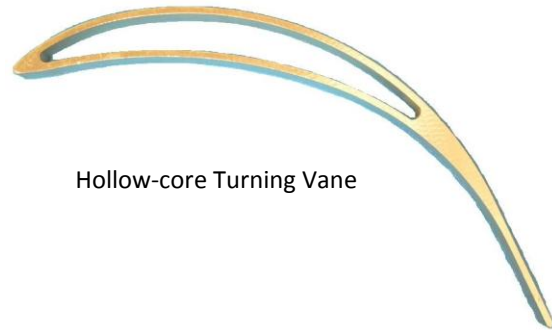
Optional features for Closed Circuit Wind Tunnels

Turning Vanes

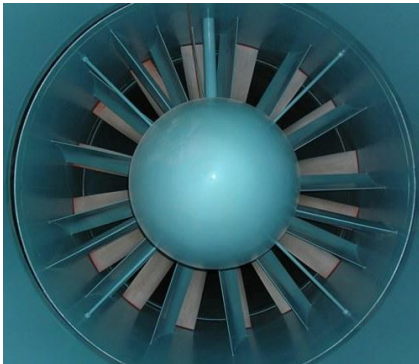
- extruded aluminum
- hollow-core for optional chilled water cooling
- AEROLAB proprietary design

Cooling System

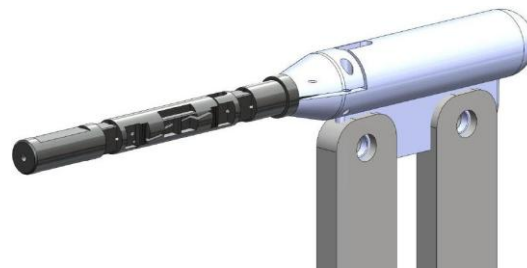
- finned heat exchanger
- chilled turning vanes
- forced air motor cooling jacket



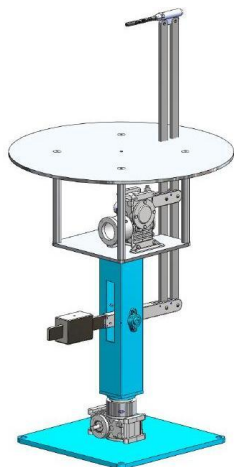
Hollow-core Turning Vane



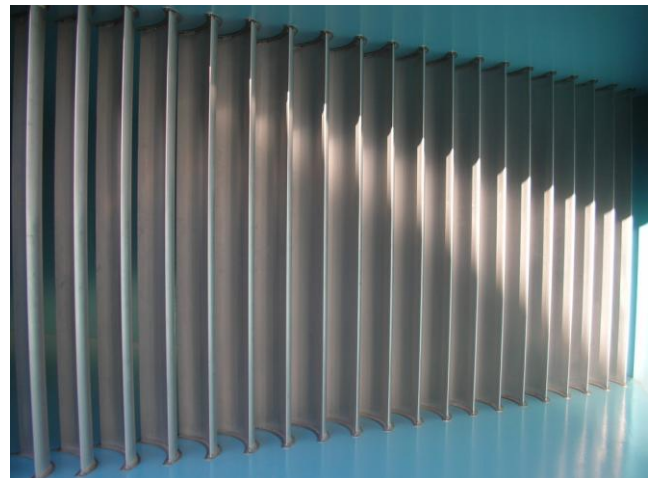
Fan with Motor Nacelle



Internal Sting Balance on Custom Mounting



Model Positioning System



Corner Turning Vane Cascade

Custom Design

AEROLAB specializes in custom design and fabrication. Whether a single-purpose test device or an all-around research facility is needed, AEROLAB's team of engineers and fabricators is available to meet the challenge. Contact AEROLAB for a free quotation, today!!

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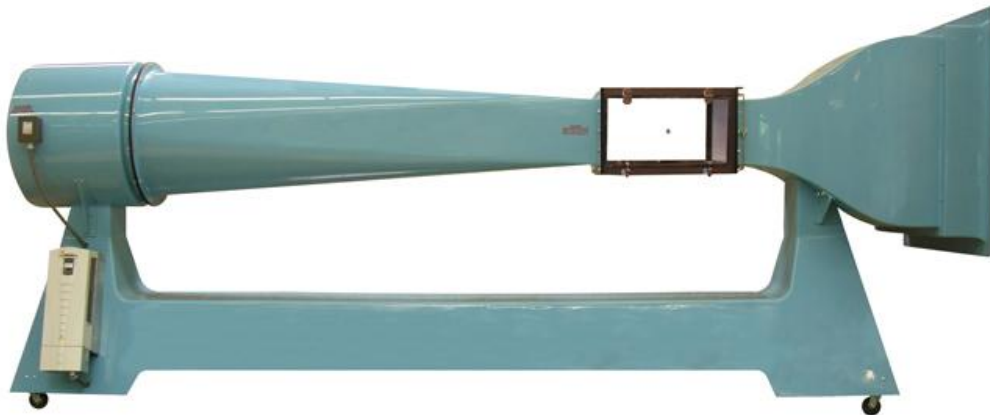
Contact AEROLAB for ***all*** of your wind tunnel needs!!

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12-inch molded tunnel with casters

We proudly employ



hardware and



software.