

30- by 60-Foot Tunnel

The Langley 30- by 60-Foot Tunnel is a continuous-flow, open-throat, double-return tunnel powered two 4000-hp electric motors, each driving a four-blade 35.5-ft-diameter fan. The tunnel test section is 30 ft high and 60 ft wide and is capable of speeds to 100 mph. The tunnel was first put into operation in 1931 and has been used continuously since then to study the low-speed aerodynamics of commercial and military aircraft. The large open-throat test section lends itself readily to tests of large-scale models and to unique test methods with small-scale models. Large-scale and full-scale aircraft tests are conducted with the strut mounting system. This test method can handle airplanes to the size of present-day light twin-engine airplanes. Such tests provide static aerodynamic performance and stability and control data, including the measurement of power effects, wing pressure distributions, and flow visualization.

Small-scale models can be tested to determine both static and dynamic aerodynamics. The captive test methods include conventional static tests for stability and control, performance, and forced-oscillation tests for aerodynamic damping. Dynamically scaled subscale models, properly instrumented, are also freely flown in the large test section with a simple tether to study their dynamic stability characteristics at low speeds and at high angles of attack.

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