

Proven

More than 80 years of de-icing experience. One of only a few icing wind tunnels available for outside testing in the world.

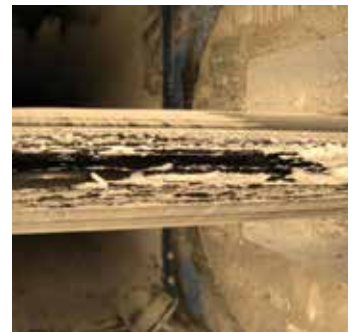
Goodrich Icing Wind Tunnel Uniontown, Ohio, U.S.A.

In 1930, then known as BFGoodrich, we set out to design and manufacture the world's first pneumatic de-icers. We knew the integrity of our products relied upon the quality of our testing which led to one of the world's first icing wind tunnels. The relationship between testing and product performance is no different today. As aircraft designs continue to become more complex, the need for advanced methods to test their components becomes more critical.

One of only a few icing wind tunnels available for outside test services in North America, our state-of-the-art facility was originally developed to meet customer test requirements and later opened for outside testing in 1988. Whether customers test independently or rely on UTC Aerospace Systems' on-site technical support experience, our Icing Wind Tunnel provides the accuracy of micro-processor controlled testing for fixed wing and rotorcraft applications.

Full automation, combined with a quick cool-down time of under 30 minutes, allows us to change conditions rapidly and operate with a single control technician. Re-creating precise in-flight icing conditions demands attention to detail. Our Icing Wind Tunnel is capable of reproducing nearly the entire flight envelope (14 CFR Part 25, Appendix C).

- Available for outside test services
- Test independently or with assistance on-site technical support
- Fully automated
- Quick cool-down time under 30 minutes, allowing rapid change to conditions
- Capable of reproducing nearly the entire flight envelope (14 CFR Part 25, Appendix C)
- State-of-the-art laser-based Phase Doppler Interferometer (PDI) calibration
- Tunnel is calibrated per SAE ARP 5905 "Calibration and Acceptance of Icing Wind Tunnels"
- All instrumentation compliant with AS9100C and calibrated to NIST-traceable standards
- Hot air-generating apparatus with pressure and temperature control for use when testing bleed-air anti-icing systems
- Additional services provided, including electrothermal heaters, access to machine shop and on-site office space for long-term testing
- Flexible scheduling, competitive rates



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Uniontown, Ohio

General Specifications

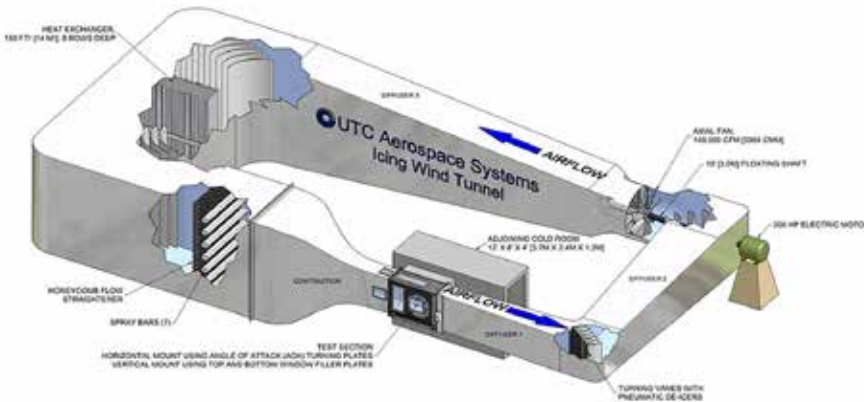
Temperature	Microprocessor controlled within $\pm 1^\circ\text{F}$ Icing Wind Tunnel Range 32°F to -22°F / 0°C to -30°C
Velocity	Wind speeds range from 30-230 mph / 48-370 km/h
Cloud Control	Droplet sizes 5-50 microns Liquid water ranges from 0.1-3 grams per cubic meter Seven spray bars, three types of air- atomizing nozzles
Cold Room	Capable of temperatures as low as -65°F / -54°C Located adjacent to icing wind tunnel making it possible to transfer materials and collect ice shapes directly from the tunnel without exposing them to temperatures above freezing
Precision Monitoring	Equipped with a variety of advanced instrumentation and data recording devices, including: <ul style="list-style-type: none"> • An optical displacement follower that can monitor ice accretion in real time • Capable of monitoring hundreds of sensors every fraction of a second

Data Acquisition & Control	Customized format per customer specifications Closed circuit, remote control video system available to film all testing AC/DC power supplies with automated time and temperature control for de-icers and anti-icers
Test Section	22" wide x 44" high / 56cm wide x 152cm high test section Features drop-out bottom for full width access to test area Heated, hinged windows ease access from the sides and improve visibility; floor and ceiling of test section also equipped with heated windows Test models can be mounted horizontally onto aluminum turning plates capable of rotating the test article 360° to simulate changes in angle of attack

Depending on size, article can also be mounted vertically onto fixed plates or extend fore and aft inside the tunnel

In some cases, test model may be permitted to protrude outside the tunnel walls

Clear acrylic insert plates, adaptable to a variety of test models, improve visibility during testing and allow more time on testing rather than installation



For additional information:
1555 Corporate Woods Parkway, Uniontown, OH 44685 U.S.A.
Tel: +1 800 DE-ICERS (800 334 2377)
Fax: +1 330 374 2290
deicers@utas.utc.com

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