



Leaders in Temperature Forcing Technology

Dual-Stage Air Forcing Systems
for Testing Electronic
Components and Assemblies



ThermoJet™ Temperature Forcing System



Improve test productivity by 20%-30%

ThermoJet is the only temperature forcing system that maintains -80°C at 20 SCFM (full range $+225^{\circ}\text{C}$ to -80°C) to deliver faster testing. With ThermoJet, you can:

- Achieve target temperature faster
- Test larger and higher powered components at consistently low temperatures

Dual Stage Refrigeration for Unmatched Cooling Power and Longer Life

ThermoJet is the only temperature forcing system that features powerful DualCool™ dual-stage refrigeration. Unlike single-stage compressor systems, ThermoJet can maintain ultra-low temperatures at 20 scfm, even in 24/7 operating environments. Single-stage systems strain to maintain low temperatures at higher flow rates (see graph), which can lead to premature failures and shortened life.

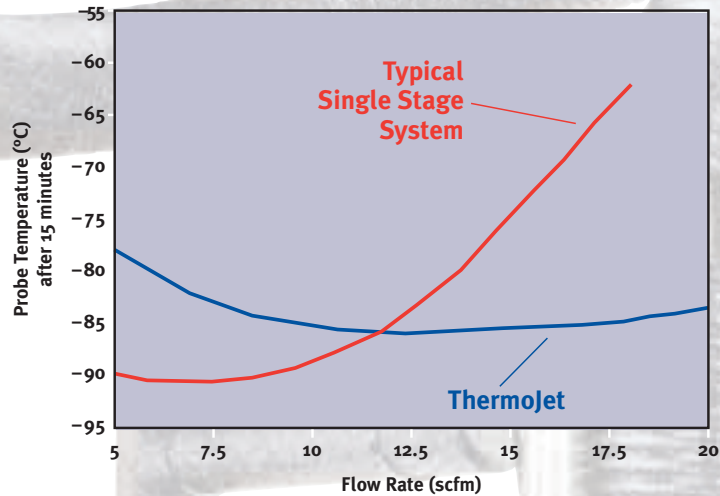
ThermoJet's DualCool design features excess refrigeration capacity so it handles these demanding applications with reliability and ease. The DualCool refrigeration system is backed by a **3-year warranty**.

Operator Convenience

ThermoJet features a user-friendly detachable touchscreen controller providing unmatched configuration options and flexibility.

- Remove the touchscreen to control operations remotely from your bench or a shielded room
- Swivel the screen for visibility
- Detach the screen and relocate the refrigeration system when floorspace is at a premium
- One-touch controls and user-friendly pop-up keypads make operation and programming a breeze
- Controls software is a robust, industrial grade platform. Can be shut-down immediately using EMO (unlike Windows-based systems)

ThermoJet Sustains Lowest Temps at High Flowrates



ThermoJet Applications

- Testing components, MCMs, modules, PCBs, and assemblies
- LN₂ replacement
- Failure analysis
- Design verification
- Thermal shock
- Thermal fixtures
- Handler temperature control



Other ThermoJet features:

- Smallest footprint available (up to 34% smaller than other brands)
- External DUT sensor enables precise case temperature control and optimized transition rates
- Autotuning feature to optimize control algorithm for DUT mass
- Pneumatically operated head up/down positioning
- RS232 or GPIB interfaces
- Create, save & load 48 temp/ramp/soak test profiles
- Major components are accessible for low-cost, on-site maintenance and repair
- Static eliminator for ESD protection
- Uses readily available CFC and HCFC free refrigerants
- Ultra-quiet operation
- Optional motorized arm
- Dry air purge to protect test site
- Typical temperature transition rates:
 - +200°C to -65°C in <10 seconds
 - -80°C to +200°C in <10 seconds



AirJet® XE Benchtop Temperature Forcing System

Full Mil-Spec temperature range in a benchtop platform

AirJet XE is the only benchtop temperature forcing system that exceeds full mil-spec temperature range (actual range -75°C to $+225^{\circ}\text{C}$).

The AirJet XE fits under your bench and offers fast transitions, from $+125^{\circ}\text{C}$ to -55°C in 20 seconds. AirJet XE is ultra-quiet and features reliable DualCool dual-stage mechanical refrigeration.

And AirJet offers the convenience of operating on standard 110 volt power (or 220 V).

“I couldn’t tell the AirJet XE was running when I walked into the lab. It is by far the quietest system I have used.”

– Semiconductor R&D Manager

Other AirJet XE Features

- 1 to 6 scfm airflow
- External DUT sensor enables precise case temperature control and optimized transition rates
- Autotuning feature to optimize control algorithm for DUT mass
- Pneumatically operated head up/down positioning
- GPIB or RS485 interfaces
- Create, save & load up to 48 temp/ramp/soak test profiles
- Rack mountable

AirJet XE Applications

- Research and development
- Device characterization
- Failure analysis
- Design verification



AirJet XE shown in mobile integrator configuration.

Thermal Testing Accessories

FTS offers a full line of standard and custom accessories, including:

- Thermal Caps
- Shrouds (conductive and non-conductive)
- Adapter Hoses
- Custom thermal test enclosures
- Silicone rubber insulating sheets (conductive and non-conductive)

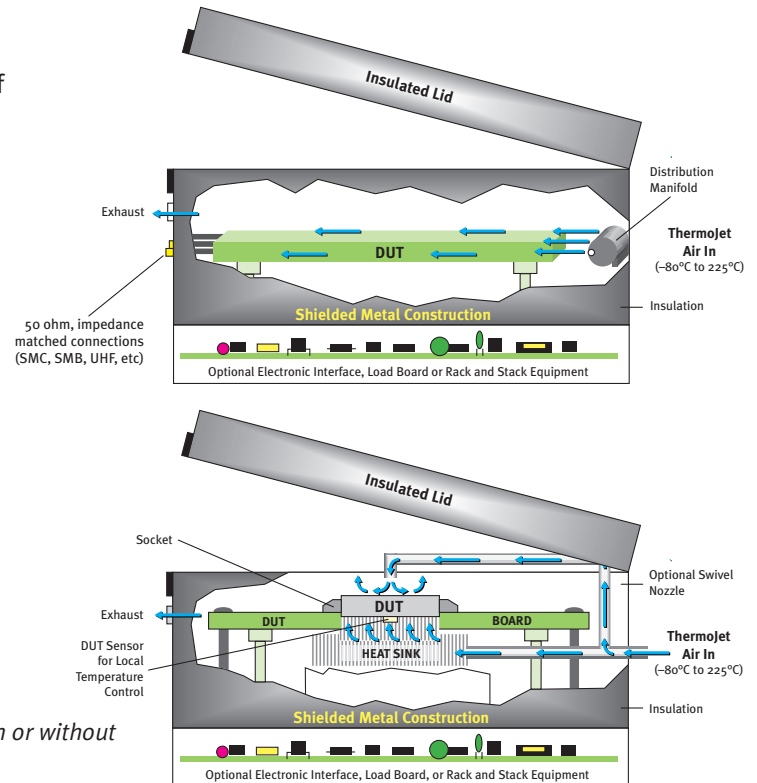


Frost-Free Thermal Test Chambers

Custom designed thermal test chambers overcome some of the traditional challenges of extended low-temperature testing. Specifically, an FTS designed chamber will:

- Prevent frost and moisture build-up under and around the DUT board or fixture
- Protect DUT from external signal noise and “antenna effect” caused by long lead lengths
- Thermally isolate the DUT from the rest of the circuit to ensure valid and accurate test results
- Improve test productivity through use of thermally efficient materials, concentrated temperature and avoidance of frost
- Extend load board life and reliability.
- Test larger components, PCBs and assemblies

Chambers are available with or without viewing window.



FTS Systems delivers more than 30 years of experience in ultra-low temperature testing technology and thermal engineering. With a worldwide network of temperature

testing application experts, FTS stands ready to help improve your R&D and production testing.

Other Ultra-Low Temperature Systems from FTS



Full line of Recirculating chillers
(to -90°C)



Eliminate LN_2 and dry ice with
MultiCool baths (100°C to -80°C)



FlexiCool immersion probes
(ambient to -80°C)

FTS also specializes in custom system configurations to meet end-user needs
or in partnership with original equipment manufacturers.

FTS Systems is ISO 9001 registered.

Thermojet and Airjet XE use only non-proprietary, CFC-free and
HCFC-free refrigerants



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