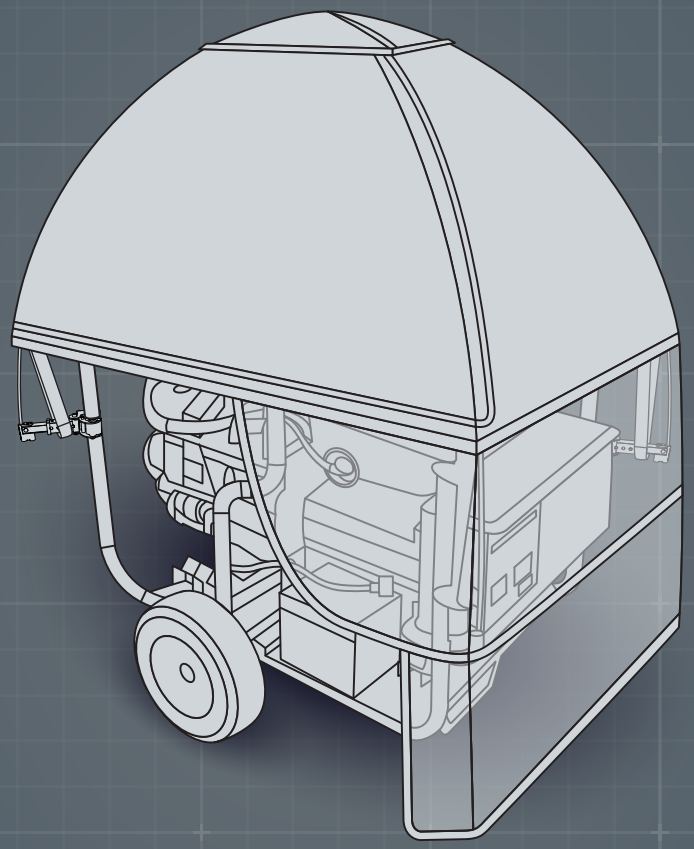
GenTent® Safety Canopies



CERTIFIED PERFORMANCE

Weather, Material, Independent, and Storm Testing Analysis

2025

12/09/2025

GENTENT INDEPENDENT PRODUCT TESTING

The GenTent product line has undergone extensive internal testing since the first prototype, with thousands of hours devoted to continual improvement informed by customer feedback. GenTent solutions now offer protection for more than three thousand generator models across nearly two hundred generator manufacturer brands.

As portable generator usage increases across residential, commercial, and emergency response applications, the need for validated weather protection and fire-resistant running covers has never been greater. The GenTent Performance Analysis and Certifications consolidate third-party testing conducted over multiple years, including evaluations by 360 Product Testing, Vartest Laboratories, and engineering teams working in alignment with PGMA G300, UL2201, and NFPA guidelines. This report reflects new and expanded testing completed in 2025, including updated claims validation, enhanced wind and precipitation testing, new flammability certifications under NFPA 701 and UL 94, and compatibility evaluations ensuring safe generator operation under a wide range of environmental stressors.

GENTENT HAS BEEN TESTED BY:

YAMAHA · CAT · CHAMPION POWER EQUIPMENT · FIRMAN POWER EQUIPMENT · BRIGGS & STRATTON · Westinghouse · Cummins · DuroMax · PGMA Portable Generator Manufacturers' Association

GenTent continues to invest in recurring multi-year certification cycles because safety validation is not a one-time event. Product families evolve, generator technologies advance, and consumer expectations grow. This document presents the most current evidence demonstrating the performance and safety characteristics of the GenTent systems.

GenTent has also submitted its materials and components to comprehensive performance validation through multiple accredited testing bodies. These assessments include Vartest Laboratories, an ISO/IEC 17025 accredited facility, which performed NFPA 701 and UL 94 material flammability testing on GenTent canopies and hardware components in 2019, 2020, 2024, and 2025. In addition, complete GenTent products were evaluated by 360 Product Testing, a specialized firm focused on independent product claims testing. Novatio Engineering Solutions further conducted testing within Department of Defense laboratories, emergency management agencies, and utility partners to assess GenTent system performance in challenging remote weather conditions, particularly for forward observers.

This combination of laboratory testing, field validation, and interoperability evaluation provides the most comprehensive dataset available for any generator running cover on the market today.

360° Product Testing · UL Solutions · VARTEST® · NOVATIO ENGINEERING, INC

GENTENT DEMONSTRATED SIGNIFICANT WEATHER PERFORMANCE CAPABLITIES:

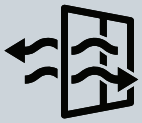
The evaluations carried out by 360° Product Testing encompassed critical product claims of generator-cover performance, including wind survivability, heavy rain exposure, snow-load capacity, cooling interference analysis, obstruction of generator air intake, and the auto-ignition resistance of GenTent materials. In September 2025, retesting of updated components indicated improved capabilities across several key performance criteria. GenTent submitted a Westinghouse WGen5300c and a WEN DF680iX inverter for these evaluations.

Ensured moisture protection of the control panel and outlets; effectively shielded against heavy rain and water exposure (equivalent to 18 inches of rain per hour. An increase of 6 inches perhour over previous testing.)

Supported 60 LBS of canopy pressure (equivalent to 20" of snow), providing durable coverage during heavy snowfall. (An improvement of 4.5 pounds or 2" of snow over previous testing.)

Survived sustained forecast wind speeds of ≥110 MPH from all four sides, with no detachment or damage to the generator or the GenTent system — the equivalent of category 2 hurricane force winds. (An improvement of 40 MPH over previous testing.)

Shown no discernible temperature difference of the generator during operation, indicating that the GenTent did not interfere with the generator's cooling profile or performance standards.



Not impeding the generator air intake in any significant way, allowing for proper ventilation and exhaust of the portable generator.

Confirmed to have materials that will not auto-ignite even when exposed to high temperature surfaces typical of a hot muffler, ensuring flame retardancy and compliance with strict safety standards. Tested with lower emissions, high temperature exhaust output from UL2201 compliant generators.

Proven to exhibit no compromise or false shutdowns when installed alongside G300 or UL2201 carbon monoxide sensors. This ensures the effective utilization of the GenTent with industry-compliant sensors, providing reliable and accurate detection of carbon monoxide

NFPA 701 FLAME RESISTANCE TESTING

Flame resistance is a critical requirement for portable generator tents and running covers due to the heat produced during generator operation. GenTent canopies are constructed from a sewn marine grade vinyl coated polyester chosen specifically for its fire resistant characteristics. Independent testing by Vartest Laboratories, an ISO/IEC 17025 accredited facility, evaluated the GenTent canopy material under the NFPA 701 2019 standard for flame propagation of textiles. The material achieved a full PASS rating.

Testing demonstrated an average after flame duration of 0.0 seconds, an average drip burn duration of 0.0 seconds, and an average percent weight loss of 15.92 percent. No ignition was sustained at any point during evaluation. These results confirm that the GenTent canopy fabric is self extinguishing and does not support flame spread when exposed to an ignition source under the NFPA 701 protocol.

The NFPA 701 results reinforce the importance of using certified flame resistant materials in generator running covers. The GenTent Universal and Inverter systems both demonstrated exceptional performance within the NFPA standard, validating their suitability for safe use around heat generating equipment. See the full NFPA 701 test report for additional detail.

NFPA

AFTER-FLAME AND DRIP BURN DURATION OF 0.0 SECONDS

GENTENT MOUNTING HARDWARE FLAME RESISTANCE TESTING

GenTent has subjected all hardware components across both legacy and current product lines to comprehensive flammability evaluation under the UL 94 standard for plastic materials. GenTent's newest universal clamp system incorporates steel and aluminum hardware which are inherently nonflammable materials.

Testing was performed by Vartest Laboratories, an ISO/IEC 17025 accredited facility, and all components achieved a UL 94 V 0 rating. This includes polycarbonate FR3 molded parts, glass filled nylon adapters, rod holders, EPDM rubber inserts, and all inverter system components.

During testing, no component exhibited burning, no flaming particles were produced, and no cotton ignition or flame propagation occurred. These results confirm that GenTent components are self-extinguishing and do not support combustion when exposed to flame under UL 94 test conditions. Full documentation for each part, including continued updates and expanded testing, is available in the supporting flammability report.

UL®

V-0

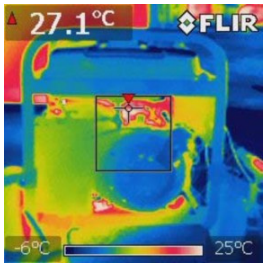
ALL COMPONENTS ACHIEVED A UL 94 V-0 RATING.

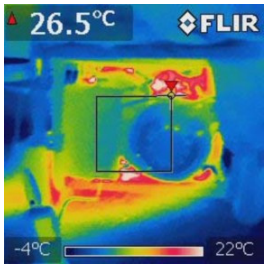
GENERATOR COOLING INTERFERENCE TESTING

360 Product Testing loaded a test generator by a 3,000-watt load and operated with and without the GenTent installed to determine if the GenTent might affect generator cooling. Thermocouples were located at alternator and engine air inlet and outlet ports. The thermocouples were connected to an Omega HH309 Data Logger Thermometer to record temperatures while the generator was operating. In addition, a Flir i7 thermal imaging camera was utilized to capture thermal images.

The generator was operated while supplying power to a 3,000-watt load both with and without the GenTent installed, for a period of at least thirty minutes, while temperatures were recorded and thermal images were obtained. Thermocouples were located at the following ports: T1. Engine cooling air port, T2. Alternator cooling air port at engine end, T3. Cooling air port on alternator at cover end, T4. Alternator cooling air underneath cover.

The tested 3,000-watt load consisted of two oil-filled space heaters. Each heater was connected to a different generator receptacle to ensure a balanced load for the generator, then set to its highest heat setting. Power consumed by the heaters was confirmed with a *Watts Up? Pro* power analyzer. With GenTent, engine cooling air was slightly higher, but did vary ±3-4 °F operating in either configuration.





Running temperature With (above) and Without GenTent

GENTENT WAS FOUND TO HAVE NO APPECIABLE EFFECT ON THE OPERATING TEMPERATURES OF THE GENERATOR.

OUTLET MOISTURE PROTECTION TESTING

The WGen5300c generator and DF680iX inverter equipped with an installed GenTent were subjected to simulated heavy wind driven rain using an Orbit 58674 Turret wand and a Shop Vac B3331.0 Power Blower. A Productive Alternatives Stratus RG202 Magnifying Rain Gauge measured the volume of simulated rainfall. The simulated rain and wind were directed at the GenTent covered generator and inverter from various directions for >10 minutes.

18” per hour simulated rain

ALL 110V OUTLETS, PANEL CONTROLS AND 220V OUTLETS REMAINED DRY.

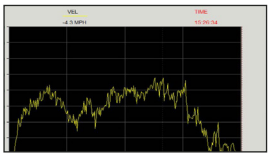
WIND SURVIVABILITY TESTING

To evaluate wind survivability, 360 Product Testing secured both a frame generator and an inverter, each equipped with GenTent systems, near the rear of an open 6' x 12' utility trailer. The trailer was then towed on a highway at ground speeds exceeding 70 MPH to determine the ability of the GenTent to maintain structural integrity under sustained high wind exposure. This method directly correlates tow-vehicle ground speed to forecast wind speed using established boundary layer wind conversion formulas.

Digital video documentation was captured using a Muitune QHD 2.7K 56MP camcorder positioned forward of the generator at eye level and a Sprandom V20 2.7K 42MP camera positioned to the side of the covered assembly. Supplemental footage was recorded using a Samsung S25+ smartphone and a BlackVue DR970X-2CH dash camera. An Extech HD350 Pitot Tube Anemometer was mounted approximately two feet from the generator at canopy height to monitor and record wind speed applied directly to the GenTent.

Due to the dynamic airflow around the tow vehicle, the test environment contained turbulence, crosswinds, and vortices. Only wind traveling parallel to or directly into the pitot tube was measured, which explains why some lateral canopy movement did not correspond to a spike in anemometer readings. In several orientations, the canopy was exposed to wind from multiple directions including front, rear, left side, and right side.

GenTent secured to an open 6' x 12' trailer and exposed to sustained wind speeds in excess of 70 MPH.



Previous testing subjected the GenTent to sustained ground speed winds of up to 45 MPH (equivalent to 70 MPH forecast winds). Testing was performed with the standard electrical apron as well as the clear apron accessory.

This new round of testing subjected the GenTent with updated universal clamp mount for portable generators, and separately, the GenTent with ratchet buckle mount for inverter generators, to ground speed winds measured at the canopy consistently exceeding 70 MPH. These speeds are representative of forecast winds in the 110 MPH range, recognizing that forecast winds are measured at 10 meters above ground level. Using standard wind profile calculations, a 70 MPH vehicular ground speed correlates to approximately 110 MPH forecast wind speeds above the boundary layer.

WHEN SUBJECTED TO SUSTAINED FORECAST WINDS of 110 MPH, THE GENTENT STAYED FIRMLY ATTACHED IN ALL INSTANCES.

During testing, these extreme winds were sufficient to momentarily lift sections of the canopy. On the inverter, high winds tilted the canopy backward, forcing the rear supports to press against the trailer floor, particularly on the side without the control panel and skirt. On the frame generator, the broad side of the canopy proved more susceptible than the short side, although the canopy remained structurally attached throughout testing.

Under 110 MPH forecast winds, the GenTent remained firmly secured with no detachment of components. These speeds fall within the Blizzard classification and represent the upper limit of Category 2 hurricane force winds, described as extremely dangerous and capable of causing structural damage to buildings, uprooting trees, and contributing to widespread power outages.

SNOW LOAD DURABILITY TESTING

The sloped geometry of the GenTent canopy is engineered to discourage snow accumulation across its surface. While a limited amount of snow may collect at the center of the canopy, previous evaluations consistently show that snow on the remaining surface area sheds easily due to the canopy's steep angles and smooth material.

Snow weight varies significantly depending on weather conditions. Colder temperatures tend to produce lighter, low-density snow, while snow formed in warmer air or snow that has undergone cycles of melting and refreezing tends to be heavier. Because of these variations, snowfall is often evaluated by converting accumulated snow depth into a water equivalent measurement. In the United States, the snow to water ratio for newly fallen snow typically ranges from 8:1 to 20:1, with the National Weather Service standardizing 13:1 as a general conversion factor when direct melt measurements are not available.

GenTent withstanding ~60 LBS of weight, equivalent to 20" of snow

To replicate the weight of extreme snow accumulation, 360 Product Testing drilled a clearance hole through a nominal 2 by 8 inch board weighing 5.1 pounds. This board was placed over the GenTent center connector, and a 53-pound kettle bell was set on the board, creating a combined load of 58.1 pounds. Distributed across the 799 square inch surface area of the GenTent canopy, this weight corresponds to 1.994 inches of water at zero degrees Celsius. Using a conservative 10:1 snow to water conversion ratio representative of heavy wet snow, this mass equates to approximately 20 inches of accumulated snow.

During testing on the frame generator, the flexible fiberglass rods bowed under the load and the clamps deflected, but the GenTent assembly supported the weight without structural damage. Once the load was removed, all frame rods and clamps returned to their original shape and form factor. Testing on the inverter configuration produced similar results. Although the angle braces slid to the ground under the applied mass, 360 Product Testing restored the braces to their original positions and observed no permanent deformation or damage.

GENTENT SUPPORTED THE WEIGHT WITH NO DAMAGE TO THE CLAMPS AND FIBERGLASS SUPPORT RODS.

These evaluations confirm that the GenTent system can support snow weight equivalent to approximately twenty inches of heavy wet snow while maintaining structural integrity and without compromising the canopy's long-term resilience.

GENERATOR AIR INTAKE IMPEDENCE TESTING

In their testing, 360 Product testing noted the air intake for the generator tested was approximately a 5/8" x 3" slot at the right bottom of the air cleaner cover. Impediment of the intake was determined by using an EXTECH HD350 Pitot Tube Anemometer to measure the pressure drop near the center of the air filter created when the generator was operating with a 3,000 watt load. An increased pressure drop would indicate the air intake was impeded.

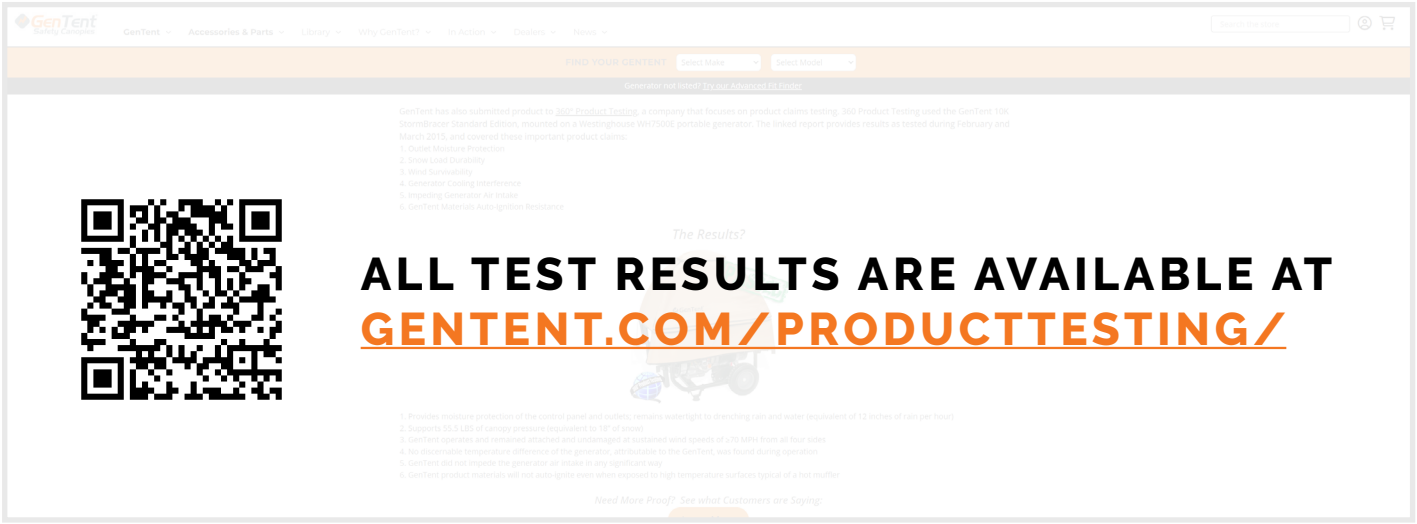
PVC tubing was connected to two ports of a tee fitting that was epoxied into the "weep hole" at the bottom of the air cleaner cover and secured near the center of the air filter (as shown above). An additional length of PVC tubing connected the tee to the HD350. During operation with and without the GenTent, the pressure drops with a 3,000-watt load ranged between 0.30 and 0.34 in/H2O. For reference, when approximately 20% of the air intake slot was manually covered, the pressure drop increased to 0.70 to 0.75 in/H2O.

In addition, throttle position was monitored by attaching a stiff wire to the throttle linkage. An increase of throttle position would indicate that it was more difficult for the generator to obtain air when supplying power to the same load.

Intake vacuum with (above) and without GenTent

NO APPRECIABLE DIFFERENCE OF THROTTLE POSITION WAS OBSERVED WITH OR WITHOUT THE GENTENT INSTALLED.

In addition, throttle position was monitored by attaching a stiff wire to the throttle linkage. An increase of throttle position would indicate that it was more difficult for the generator to obtain air when supplying power to the same load.



FLAME RETARDANCY - NFPA 701 FR COMPLIANCE & MATERIALS TESTING

GenTent's marine-grade vinyl coated polyester canopy materials are independently tested by **Vartest Laboratories** for NFPA-701 FR compliance, cold crack, and UV-treated fabrics were tested for resistance to UV fading including treatment used in adhering the GenTent logo to the canopy. The listed GenTent kit components use NFPA 701 FR compliant materials.

VARTEST®	Component Tested	NFPA 701 FR[1]	Cold Crack Rating[2]	UV Colorfastness[3]
	Canopy Fabric (Extreme)	PASS	-45 °F PASS	PASS
	Canopy Fabric (Plus)	PASS	-25 °F PASS	PASS
	Canopy Fabric (Standard)	PASS	-15 °F PASS	not treated/tested

1 - Material samples had test flame applied. Pass indicates no observed char length greater than 41.2 in., or portions or residue that drip, fall to the floor and burn for more than 2 seconds.

2- Material samples were brought to the temperature listed and inspected for fracture or visible cracking. Pass indicates none were detected.

3- Material samples of products with UV treatment were exposed to xenon UV irradiance and hot/cold cycling from 50 °C to -40 °C for 120 hours prior to evaluation. Pass indicates no "noticeable change."

GENTENT OPEN FRAME KIT COMPONENTS

GenTent's universal clamp body and rod extension is made from nonflammable steel or aluminum. All rubber components are made from EPDM FR rated rubber. All listed components including the clamp knob, rod holder and center connector are independently tested and rated for UL-94 V-0 compliance.

GENTENT INVERTER KIT COMPONENTS

GenTent's ratchet buckle is made from nonflammable steel, and the Kevlar® strap is flame retardant. All rubber components are made from EPDM FR rated rubber. All listed components including the angle braces, extender arms and center connector are independently tested and rated for UL-94 V-0 compliance.

LEGACY COMPONENTS AND TESTING

Components previously offered in GenTent kits, including GTU mounting adapters, legacy GenTent clamp, knob, rod extention and carriage pin were previously independently tested and rated for UL-94 V-0 compliance. All rubber components were made from EPDM FR rated rubber.

GENTENT: A FIELD-TESTED EMERGENCY RESPONSE TOOL

GenTent has established itself as a trusted solution for various critical government installations and operations. This includes flightlines for both the U.S. Air Force and Army, as well as U.S. Naval base installations. GenTent has also been implemented at various government laboratory testing sites and remote locations managed by the U.S. Forest Service Department.

Following successful field testing, GenTent was contracted by the U.S. Army and Air National Guard to equip their CERF-P disaster response efforts and flightlines with GenTent's Safety Canopies. Remarkably, this contract has remained in service for over a decade.

The CERF-P (Chemical, Biological, Radiological, Nuclear, and Explosive Enhanced Response Force Package) is a National Guard initiative aimed at integrating existing National Guard units into the broader federal and local civilian emergency response framework, particularly in the event of CBRNE disasters.

NOAA (National Oceanic and Atmospheric Administration) has also relied on GenTent solutions in various locations to support its Hurricane Hunters and GRAV-D initiative, which measures gravity data across the country. GenTent serves as a protective measure for power equipment used in remote and wet environments.

GenTent offers an effective solution for government agencies, with manufacturing based in the United States and the capability to customize solutions for more than three thousand generators. Agencies like the National Guard, FEMA, and other emergency response organizations can benefit from a turnkey solution to enhance their toolkits for mitigating additional property damage, injuries, and fatalities associated with portable generator hazards during emergency scenarios, especially those exacerbated by adverse weather conditions.

Additionally, GenTent products are supplied to the Department of Defense as a joint supplier agreement with Novatio Engineering. After successfully passing DOD testing requirements, the agreement enables Novatio to fit to their custom, multi-fuel Ex-Power generator models for future government bids.

GenTent® Safety Canopies

Trusted supplier for industry leaders and several government agencies

Westinghouse

CHAMPION POWER EQUIPMENT

DuroMax

Cummins

SPACEX

NNSA National Nuclear Security Administration

NHS AWARDS Best in Show

RETAILERS' Choice AWARDS

Authored by GenTent Safety Canopies Staff:
Mark Carpenter, Brian Thomas, Justin Manteuffel

FOR FURTHER INFORMATION, CONTACT:

Brian Thomas, Director of Sales & Marketing
99 Pine Road
Brentwood, NH 03833

(781) 334-8368 x1001
brian.thomas@gentent.com