Environmental Testing & Thermal Processing Equipment

commitment: ADAPTABLE SOLUTIONS
MARKETS

ONE SOURCE FOR THERMAL PROCESSING—
NO OTHER COMPANY OFFERS AS WIDE A RANGE OF PRODUCTS
Industries

• Aerospace
• Automotive
• Automotive Components
• Ceramics
• Computer Peripherals
• Defense
• Die Casting
• Electronic Applications
• Environmental Processing
• Fabricated Metal
• Fiber Optics
• Industrial Processing

Applications

• Afterburning
• Aging
• Alternative Fuels
• Altitude
• Annealing
• ASTM Tests
• Automotive Component Cure
• Burn-In
• Continuous Cure
• Controlled Atmosphere
• Conveyors
• Curing
• CZ Crystal Growth
• Depyrogenation
• Die Attach Cure

• Die Coat Cure
• Drill Bit Curing
• Drying
• Encapsulation Cure
• Heat Sink Attach Cure
• Ink Mark Cure
• Machined Silicon Parts
• Medical Component Cure
• Mold Cure
• Optics
• Optoelectronic Cure
• Photo Resist
• Post Mold Cure
• Pre-Heat
• Print Cartridge Cure

• Research
• Shelf Life
• Solar Cells
• Stability
• Steady State
• Sterilization
• Stress Relief
• Temperature/Humidity
• Thermal Cycling
• Thermal Shock
• Underfill Cure
• Vacuum
• Vivariums
TPS THERMAL PRODUCT SOLUTIONS IS COMMITTED TO INNOVATIVE PRODUCTS SPECIFICALLY DESIGNED FOR THE NEW ENERGIES MARKETS.

WIND GENERATION COMPONENT TESTING
Tenney provides a full line of environmental rooms and chambers to accommodate humidity and temperature extremes.

FUEL CELL TESTING
The Tenney line of environmental chambers and rooms provides solutions for testing fuel cells.

SOLAR PANEL TESTING
The ETCU series chambers were designed specifically for solar panel testing.
BATTERY TESTING
No matter what type of battery you need to test, TPS Thermal Product Solutions has the standard or custom thermal processing oven or chamber for you. We use the most up-to-date technology and engineering to build equipment to test a wide variety of batteries, from small battery cells to large lithium ion battery packs.

Got NIMH, lead acid, or lithium ion batteries of any shape or size? We say, bring it on.
ENVIRONMENTAL

TEMPERATURE/HUMIDITY CYCLING
Every Tenney temperature/humidity chamber draws on a tradition of engineering excellence and features vapor-tight construction, precision controls, and reliable programming and monitoring functions.

ALTITUDE/VACUUM TESTING
Tenney altitude and vacuum chambers simulate a wide range of atmospheric conditions. Simulate altitude to 200,000 feet with an overall temperature range of -70°C to +177°C, humidity capabilities of 20% to 98% RH, and workspace volumes from 5 to 64 cubic feet.
STABILITY/SHELF LIFE
The Tenney chambers can be applied to a wide range of uses. Applications include ICH general stability conditions for room temperature storage; intermediate storage; accelerated shelf-life studies; steady-state, reliability, and stability testing; burn-in; curing; controlled temperature storage; clean room and bio-medical research testing; and production processes.

THERMAL SHOCK
Tenney’s thermal shock chambers cycle through a temperature range between 200°C to 70°C in less than ten seconds.

WALK-IN ROOMS
Tenney’s expertise in environmental control allows you to specify a room that can simulate altitude, humidity, and temperature in any configuration to perfectly fit your needs.

VIBRATION
Tenney vibration chambers feature a sound-friendly design that exhausts operating air and noise out the top of the unit. Units come with the widest selection of standard compressor packages to meet your testing requirements.

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Blue M's convection ovens are ideal for constant-temperature work and for applications requiring fast run-up and cool-down rates. The heavy-gauge stainless steel interiors and exteriors combine a fully welded and sealed construction with four inches of fiberglass insulation to minimize heat loss.

**MECHANICAL CONVECTION OVENS**

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**BATCH AND INLINE CURING OVENS**

Blue M inline curing ovens exhibit cure process control, improved equipment reliability, and reduced maintenance requirements. The batch ovens feature four inches of fiberglass insulation to minimize heat loss, an adjustable exhaust system, and exclusive Blue M heating elements with low-watt density for longer service life.
**SOLUTIONS**

**TENNEY JUNIOR COMPACT TEMPERATURE TEST CHAMBER**
The Tenney Junior environmental test chamber is a popular choice for reliable temperature testing. Can be used for testing materials from -75°C to +200°C.

**BLUE M 146 SERIES CLEAN ROOM MECHANICAL CONVECTION OVENS**
Multiple model options for custom test needs. High quality design and simple operation. Horizontal air flow assures uniform thermal performance under all loading conditions.

**146 SERIES CONVECTION OVENS**
Ideal for a number of applications, including ASTM testing, epoxy curing, and moisture components and devices.

**BLUE M 146 SERIES INERT GAS MECHANICAL CONVECTION OVEN**
Prevents oxidation. Impervious barrier between the process chamber and the insulation material.

**BLUE M FRICTION AIRE SAFETY OVEN**
- Controlled heat source eliminates atmospheric explosions and ignitions when working with Class I, Group D materials.
- Ideally suited for testing and processing of hazardous materials, paints, solvents, and lacquers.
- Maximum temperature uniformity.
- Natural temperature interlock and built-in overtemperature protection provides added safety to users and product.
- Economical design that endures years of use.
The need for speed doesn’t go without its safety precautions. The thousands of components that work to get us where we need to be have to be functioning at their absolute best. The mechanics, rubber material, levers, latches, and even cup holders need to be processed through temperature and pressure tests to assure quality performance for miles.

Reliable and low cost solutions to vehicle testing are provided by TPS. Whether hardening metal parts or testing them against environmental factors, we have the materials you need to create industry-leading products.
HOW WE GO THE EXTRA MILE

- Temperature, altitude, humidity, and vacuum tests determine how vehicles will perform under the most relentless conditions.

- Solvent-venting and explosion resistant chambers assure safe product testing.

- Curing and convection ovens harden metal components and paints in the vehicle production process.

- Battery-testing solutions assure high-performance quality in a safe atmosphere.

COMPONENT TESTING

Whether it’s the automotive paint, rubber tires, metal chassis, battery, fuel cells, or windshield glass, these test chambers are designed for performance.

ENVIRONMENTAL ROOMS

Tenney’s expertise in environmental control allows you to specify a room that can simulate altitude, humidity, and temperature in any configuration to perfectly fit your needs.

ENVIRONMENTAL CHAMBERS

We provide efficient and environmentally friendly chambers to address the widest possible range of temperature and humidity for your laboratory.

BATTERY AND FUEL CELL TESTING

Tenney battery solutions test products against environmental factors and heavy use.

Safety ovens allow testing of possible hazardous material, assuring product and user protection.

Standard and convection ovens harden and analyze metals used in battery production.

Thermal shock and stress solutions check performance limitations.
To maintain class 100 quality throughout the process chamber, HEPA filters are installed in the air intake, exhaust, and recirculation wall. The HEPA filters are a minimum 99.97% efficient at 0.3 microns.

Gruenberg Oven Company designs and manufactures a complete line of standard and custom pharmaceutical sterilizers and depyrogenation ovens. Configurations include laboratory, cabinet, truck-in, pass-through, and continuous arrangements.

The Gruenberg Vivarium Sterilizer provides the animal care market equipment to sterilize animal habitat cages with dry-heat sterilization. These sterilizers are designed and built for lab animal science applications.

Class 100 Sterilization Drying
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Vivariums—Dry-Heat Sterilizers
The Gruenberg Vivarium Sterilizer provides the animal care market equipment to sterilize animal habitat cages with dry-heat sterilization. These sterilizers are designed and built for lab animal science applications.

Granulation Dryers
Gruenberg Oven Company designs and manufactures a complete line of standard and custom pharmaceutical granulation dryers with capacities from 15 to 800 cubic feet.
SOLUTIONS

This line of sterilizers use forced-air convection technology for reduced energy consumption.

STERIDRY™ DRY HEAT
STERILIZER

We can design and manufacture a custom pharmaceutical oven for you.

CUSTOM OVENS

We can design and manufacture a custom pharmaceutical oven for you.

S-SERIES CLASS 100
STERILIZERS

The S-Series is designed to comply with cGMP requirements. Rated for 260°C depyrogenation.

INTUATOUCH CONTROL SYSTEM

• Multifunction programmable controller
• Color touchscreen
• Real-time data with recipe setup and storage
• SCADA compliant

*Patent Pending
INDUSTRIAL

Blue M Gruenberg

BATCH
BENCH
BURN-IN
CABINET
CONVEYOR

EXPLOSION RESISTANT
INERT GAS CONVECTION
MECHANICAL CONVECTION
POWDER COATING

SAFETY
SOLVENT VENTING
TOP-LOADING
TRUCK-IN
CUSTOM INDUSTRIAL OVEN SOLUTIONS
Since 1932, Gruenberg has supplied innovative, high-quality industrial ovens for heat processing. By delivering uncompromised performance, we have emerged as a leading manufacturer of thermal processing equipment.

Gruenberg’s custom engineering group has designed and manufactured thousands of ovens for integration into customer-unique processes. Our experience includes specialty atmospheres, exclusive material handling and chamber arrangements; special heating and cooling rates; unique air-flow configurations; special venting and recirculation accommodations; and proprietary controls. Ovens can be integrated into the customer’s process or stand alone, have various air flows, be continuous or batch-type configurations, and are available with maximum temperatures to 1500°F.
CONTINUOUS PROCESS

Blue M blends innovative technology, global vision, customer awareness, and advanced manufacturing capabilities to provide the ultimate in thermal inline curing solutions. If floor space is an issue, Blue M offers several vertical inline curing ovens.

Gruenberg manufactures custom continuous process curing ovens that incorporate various temperature ranges for a multitude of applications.
The continuous process curing ovens include state-of-the-art digital controllers, uniform airflow, safety features, and rugged construction.

Our inline curing solutions feature improved reliability and reduced maintenance requirements. When integrated into manufacturing, Blue M ovens decrease total throughput time and decrease the total cost of ownership.
Before you make a capital investment in new equipment, let TPS design an oven, furnace, or environmental chamber to your exact specifications.

Our dedicated engineers and designers have improved hundreds of chamber and oven designs for environmental, pharmaceutical, photovoltaic, and continuous process applications.

DESIGNING THE PERFECT PRODUCT
Our EDS department can help you get exactly what you need for your application.
THE PERFECT FIT
We create innovative new designs or customize our ovens and chambers to fit your needs, in any environment:

- Military and aerospace
- Consumer product testing
- Clean room applications
- Explosive and inert gas atmospheres
- High temperatures and vacuums
- Small footprint designs
- Robotic load/unload
- Web-based management

EDS BENEFITS:
- Direct access to our engineering staff
- Create innovative designs to help you accomplish your testing and manufacturing needs
- Evaluate current process with a goal of saving time and costs
- Collaborate with your staff to develop solutions that match your exact processes
- Create a competitive edge for you by improving time to market

EDS POSSIBILITIES:
- Proof of concept and proof of process
- Development of test platforms and prototype units
- Finite analysis and simulation design
- Optimizing production processes
- Photovoltaic materials research and testing
- Alternative fuel process research and testing
- Environmental control and clean processes
- Processes requiring inert gas and vacuum applications
- Pharmaceutical process research and testing
- Custom process controls to solve manufacturing challenges

TPS CUSTOM ENGINEERED PRODUCTS CAN INCLUDE:
- Space-saving designs
- Continuous process
- Energy savings
- Web connectivity
- Validation of results
- Special atmospheres
- Integration with existing production and testing
- Advanced PLC technologies

Test chambers from benchtop to walk-in rooms.
ENERGY

FUELING INDEPENDENCE
In Pennsylvania and much of the country, the natural gas and petroleum industry has found renewed hope in the possibility of being independently sustainable. With specific requirements necessary to their success, they need custom testing and processing technologies that understand their operation.

TPS has a variety of testing ovens that are specifically calibrated to the gas industry. Accurate simulations of drilling conditions are a useful advantage to engineers and electronic or component testing prevents costly malfunctioning. No matter what the need, TPS understands and supports the industry.
WELL THOUGHT OUT SOLUTIONS

- Custom ovens calibrate electronic logging instruments and drilling equipment.
- Designed for burn-in, calibration, and downhole simulation specific to the industry.
- Quality construction provides worry-free use and modular opportunity for convenience.
- Safety and solvent-venting ovens protect workers from volatile materials and dangerous reactions.

COMPONENT TESTING

- Pipe racks
- Mud tanks
- Drill lines
- Casing heads
- Crown blocks
- Kelly hose
- Traveling blocks
- Rotary tables
- Derricks
- Pumpjacks
- Drill floors
- Blowout preventers
- Hooks
- Drill bits
- Shale shakers

PETROLEUM PRODUCTION
Drilling component curing ovens and environmental simulation chambers.

HARSH ENVIRONMENT TESTING
Whether you need to test a pumpjack for a rig in the bitter Alaskan cold or a drill line that will be submerged a mile deep into the Bearing Sea, our custom environmental test ovens are designed to prove the integrity of a product in a safe, controlled environment.
MEETING OUR CUSTOMERS’ NEEDS IS MISSION CENTRAL AT TPS

- EXPERTISE
- QUALITY
- DEPENDABILITY
- INNOVATION
- FAST DELIVERY OF PRODUCTS
- DEDICATED SUPPORT: USA, EUROPE, AND ASIA

- Excellent support and service
- Single source for thermal processing
- Access to engineering expertise
- Proven track record
PREVENTIVE MAINTENANCE
Programs are available to assure your equipment will be ready when you need it.

TRAINING
Our equipment comes with one-on-one training with our expert engineers.

QUALITY
TPS serves its customers through a responsive quality system by designing, selling, and delivering products that meet or exceed performance and expectations. Open, active communication and training throughout all levels of the company provide the forum for ensuring understanding, implementation, and maintenance of the quality policy.

TLC PROGRAM
The TPS TLC program keeps your equipment tuned, calibrated, and running efficiently.

REPLACEMENT PARTS
TPS supplies replacement parts for all the equipment manufactured at its facilities.

RESPONSIVE, WORLDWIDE SERVICE AND SUPPORT IS THE STANDARD AT TPS.

RETORETS AND UPGRADES
TPS can retrofit and upgrade all its equipment with modern controls and systems, saving you time and money.
Specifications and Product Information are subject to change without notice.