

Helping Make Safe & Reliable Products
Because people count on your products everyday



ENVIRONMENTAL SIMULATION CHAMBERS PRODUCT GUIDE

www.cszindustrial.com

THE EXPERIENCE YOU NEED

CSZ is your one-stop solution for environmental chambers, industrial freezers, system upgrades/retrofits, preventive maintenance, and calibration services. We can also perform testing for you through CSZ Testing Services, our A2LA Accredited test laboratory.

CONTENTS

Tundra®	4
EZT-570S Controller	5
MicroClimate® Chambers	6
StableClimate® II Chambers	7
Z-Plus Temperature/Humidity Chambers	8-9
Custom Temperature Chambers	10
Remote Conditioners	10
Vibration Chambers	11
HALT/HASS Chambers	12
Benchtop Vibration Table	13
Altitude Chambers	13
Stability Walk-In Chambers	14
Modular Walk-In Chambers	14
Drive-In Chambers	15
Welded Walk-In Chambers	15
Thermal Shock Chambers	16
Liquid Thermal Shock Baths	16
Industrial Freezers	17
Custom Designed Chambers	18-19
Testing Services	20



Cincinnati Sub-Zero (CSZ) understands the pressures faced by R&D and Engineering departments to develop products that are both safe & reliable, outperform the competition and the need to bring these new products to market quickly. This is why we offer a broad range of standard and custom-designed environmental chambers tailored to meet your testing requirements.

We have been helping manufacturing organizations with their testing needs across multiple industries for over 75 years.

- Electronics
- Automotive
- Military/Defense
- Aerospace
- Consumer Products
- Chemical
- Industrial Equipment
- Metalworking
- Tooling
- Alternative Energy
- Packaging
- Test Labs
- Solar
- Telecommunications
- Computer
- Medical
- Pharmaceutical
- Life Science

We are an ISO-9001 certified company designing and manufacturing environmental chambers and temperature-controlled products of the highest quality, with a commitment to total customer satisfaction. Our years of experience combined with our knowledgeable Engineering, Sales and Service staff enable us to provide you with solutions designed to meet your needs.




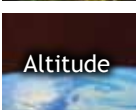

Why use environmental test chambers?

- Design Verification & Validation
- Manufacturing Test
- Production Sample Test
- Accelerated Stress Testing
- QA/QC Reliability
- Failure Analysis
- Life Testing

Testing your product in a CSZ chamber can provide the following benefits

- Reduce Product Development Time
- Increase Customer Confidence
- Ensure Product Quality & Reliability
- Forecast Life Expectancy
- Reduce Costs
- Increase Profitability

Chambers simulate a full range of environmental conditions

 Polar Cold	Mechanical refrigeration systems achieve temperatures as low as -84°C (-120°F). Optional LN2 available for temperatures as low as -184°C (-300°F) and for fast temperature change rates.
 Extreme Heat	High temperatures achieve $+190^{\circ}\text{C}$ ($+375^{\circ}\text{F}$). Higher temperatures are available in custom equipment.
 Humidity	Relative humidity ranges from 10% to 98% - even lower with our low humidity option.
 Altitude	Chambers can simulate conditions up to 100,000 ft (30,480 meters) and higher with standard options.
 Vibration	Combined test environments available with temperature, humidity, and vibration while interfacing to an electrodynamic or mechanical vibration shaker of your choice.



Tundra® Energy Saving Refrigeration System

Environmental chambers utilizing our patented Tundra refrigeration systems offer more performance and can save up to 54% in operating costs!

How can the Tundra help save operating costs?

Operating costs are reduced compared to a chamber with a cascade refrigeration system since there is only one compressor now needed to run temperatures as cold as -45°C and -50°C. This can provide your company with substantial costs savings.

What is the Tundra Refrigeration System?

- Conventional single-stage systems can reliably test product to -34°C (-30°F).
- The patented Tundra and new Tundra II systems can efficiently test product to -45°C (-49°F) or -50°C (-58°F) with a single compressor.

Tundra®

Tundra is a patented refrigeration system design that uses one compressor and can be used in any CSZ chamber from 3.5 to 15 HP. The Tundra is ideal for testing products down to -45°C.

Tundra® II

Expanding the original Tundra platform, the Tundra II is a unique refrigeration system design that also uses one compressor, available from 12 to 30 HP. The Tundra II is ideal for larger systems and accelerated testing down to -50°C (-58°F).

The Tundra system offers the following benefits:

- **Increased Performance Capacity** - The system offers even greater capacity with rapid temperature change rates and increased live load capability.
- **High Reliability** - Utilizing proven refrigeration system design that has a single compressor with fewer parts than a cascade system adds to the reliability of the Tundra system. CSZ provides a 3 year part & labor warranty on Tundra chamber compressors.
- **Reduced Maintenance Costs** - With few parts to service, maintenance cost will be lower.



EZT-570S Controller

Save valuable time with the ease of use of the EZT-570S featuring fewer steps to accomplish your daily testing needs while incorporating simplified operation and programming to test faster.

The Next Generation Controller with Smartphone Technology

Communications & Connectivity

- Remotely monitor and/or control the chamber for anytime, anywhere access from any device.
- Alarm notification system sends email and/or text phone messages in the event of a test chamber alarm, saving valuable tests while reducing downtime.
- Multiple chambers may also be managed using VNC or CSZ's optional EZ-View PC software to monitor & control multiple CSZ chambers and download profiles.



Profiling

- Profiling includes up to 99 steps and 1000 cycles.
- Program ramp steps entering time or °C/min.
- Easily review profile using trend chart or list of steps
- Profile status view displays current step, estimated start/stop date and time.
- Profiles may be transferred to different chambers via USB or optional EZ-View software.

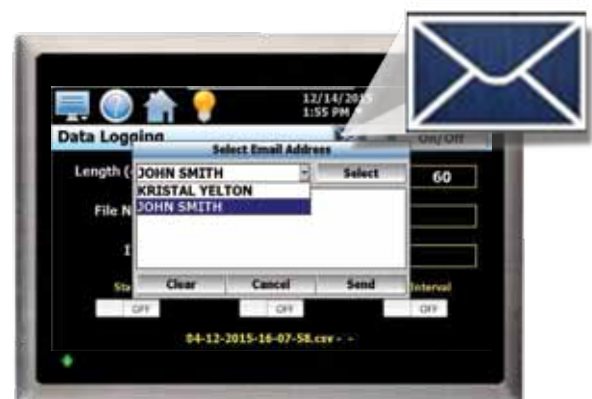
Data Logging

- Configurable log interval, data file length, filename, batch & lot information as well as an unlimited number of operator notes saved to the data file.
- Easily download profiles, alarm, audit trail and data files in a .csv format using USB. Files may also automatically backed up to server using FTP.
- Email data, alarm, audit trail files directly from controller. Also create and send new emails.
- Open and plot historical data files.



User Convenience & Flexibility

- Controller may be configured in any of one of 28 languages - one setting updates icons, menus and help screen.
- Selectable power failure/recovery options.
- Full system security allows up to 30 different users with four different levels of security.
- Audit trail files track changes in settings by each user.
- Import/export configuration settings to other controllers saving time.
- Configurable alarms and maintenance alerts.



Reach-In Chambers

MicroClimate®

Temperature/Humidity Chambers Compact chamber takes minimal floor space

MicroClimate chambers simulate a full range of temperature and/or humidity conditions. These chambers are designed to provide users with a compact chamber for testing small components and products. Two sizes are available which include a 1.2 cu. ft. (33 L) benchtop model and a 3 cubic ft. (84 L) floor models with casters. The floor model is available in three different models for faster heating & cooling performance.



Benchtop Model



MC-3 Model

Contemporary design combined with a small footprint, simple installation and economical price make these units the ideal choice for any laboratory.

- Small footprint saves valuable floor space in your laboratory
- Benchtop chamber incorporates a stackable design saves floor space and allows users to perform manual thermal shock tests
- 115V models provide easy installation with no special electrical connections needed.
- The MC-3 model is available in 115V or 230V with a selection of performance packages for faster ramp rates.
- Standard features include programmable controller, RS-232 computer interface, access port, and humidity water demineralizer on humidity models
- Economical

Workspace Volume	1.2 cu. ft. (34 L)	3 cu. ft. (85 L)
Temperature Range	Single Stage: -30°C to +190°C (-22°F to +375°F)	-
	Cascade: -70°C to +190°C (-94°F to +375°F)	
Optional Humidity	10% to 98% RH	

We understand the importance of having reliable and stable chambers to ensure tests are completed in a timely manner while complying with regulatory standards.

StableClimate® II

Stability Chambers

Stability chambers are ideal for ICH Q1A stability testing, shelf life, package testing, and accelerated aging for a variety of applications. Whether your testing is for R&D, clinical trials or ongoing stability, our chambers & rooms provide a uniform, temperature/humidity conditioned environment for worry-free operation with a control system that is easy to use and saves you time. Below are just a few key features of the product.

- Broad temperature & humidity range to meet a variety of test and storage conditions
- Horizontal airflow provides excellent uniformity
- Superb controller interface with features like data logging, alarm notification via text/email, full system security, audit trail, digital signatures, power recovery options and more
- Solid, slide-out stainless steel shelves for easier access
- 115V model is easy to install and ideal for any lab
- Single, double and triple door units available
- A variety of options available to customize for your needs



Model	ST(H)-24	ST(H)-52	ST(H)-82
Workspace	24 cu. ft. (680L)	52 cu. ft. (1473L)	82 cu. ft. (2322L)
Temperature Range	+2 °C to +70 °C		
Humidity Range	20% to 95% RH		

Reach-In Chambers

Z-Plus

Temperature/Humidity Chambers From basic to accelerated stress testing

Designed for ease-of-use, reliability and performance, this line of temperature and/or humidity chambers incorporates customer-requested features with extended performance packages for faster temperature change rates.

- EZT-570S Touch Screen Controller simplifies operations and reduces programming time. EZ-Tilt feature allows controller to be tilted up or down to accommodate users of different heights.
- Two 4" (10 cm) access ports are included on the left and right side of your chamber for ease of cable routing.
- Casters allow you to move the chamber throughout your lab with leveling legs to secure and level your chamber.
- One adjustable product shelf slides out to provide easier access to your product. The new shelf design is non-tipping and supports large product loads.
- A fog-free viewing window and interior light let you see what's going on inside the chamber. The chamber light is strategically located to better illuminate your product.
- Performance packages are available from 2 to 20HP with a selection of three refrigeration systems for a variety of test applications.
- Our high volume airflow system includes robust air circulator motors that provide better airflow to improve controllability within the chamber. Better airflow minimizes temperature gradients and accelerates temperature change rates of the device under test.
- Contemporary design compliments your laboratory with its sleek design and smooth sides.



EZ-Tilt Touch Screen Controller

Adjustable product shelf slides out for easier access.





Whether you need to perform basic temperature cycling or rapid cycling, the Z-Plus offers a variety of sizes, temperature ranges and performance packages that meet your testing needs with over 110 different models to select from with and without humidity.

	ZP(H)-8	ZP(H)-16	ZP(H)-32	ZP(H)-44	ZP(H)-64	ZP(H)-80
Workspace Volume	8 cu.ft. (230 L)	16 cu. ft (450 L)	32 cu. ft. (900 L)	44 cu. ft. (1250 L)	64 cu. ft. (1810 L)	80 cu. ft. (2265L)
Temperature Ranges	Single Stage: -34 °C to +190 °C (-30 °F to +375 °F) Tundra®: -45 °C to +190 °C (-49 °F to +375 °F) Cascade: -70 °C to +190 °C (-94 °F to +375 °F)					
Optional Humidity Range	10% to 98% RH Optional Low 5% RH					



Reach-In Chambers

CT-Series Custom Designed Temperature/Humidity Chambers

Customized, fast change rates for accelerated stress testing

CT-Series test chambers offer high performance with fast change rates for accelerated stress testing. Each chamber is tailored to meet your size and performance criteria with high volume airflow, large horsepower compressors, LN2 cooling and more. Explosion-proof test chambers are also available to meet Class 1, Div. 1 or Div. 2, and group D standards.



Workspace Volume	Customized to your needs	
Temperature Range	Single Stage:	-34 °C to +190 °C (-30 °F to +375 °F)
	Tundra®:	-45 °C to +190 °C (-49 °F to +375 °F)
	Tundra® II:	-50 °C to +190 °C (-58 °F to +375 °F)
	Cascade:	-70 °C to +190 °C (-94 °F to +375 °F)
Optional Humidity Range	10% to 98% RH Optional Low 5% RH	

RC-Series Remote Conditioners Temperature/Humidity Chambers

Two chambers for the price of one

Unlike competitive models, our remote conditioners provide two chambers in one. They deliver temperature-conditioned air to insulated enclosures through insulated ducts and also serve as independent temperature/humidity cycling test chambers.

Used for Multiple Applications:

- Temperature condition specimens during physical tests.
- Temperature condition moving devices in special fixtures that cannot be placed in conventional environmental chambers.
- Add equipment cooling air (ECA) capability to existing chambers.
- Use as a temperature test chamber for steady state or temperature cycling profiles.
- Options: Explosion-proof package, remote enclosures or hoods designed to meet your requirements.



ZPRC model featured above

	RC(H)-8	RC(H)-16	RC(H)-32	RC(H)-44	RC(H)-64
Workspace Volume	8 cu. ft. (230 L)	16 cu. ft. (450 L)	32 cu. ft. (900 L)	44 cu. ft. (1250 L)	64 cu. ft. (1810 L)
Temperature Range	Single Stage: -34 °C to +190 °C (-30 °F to +375 °F) -25 °C to +177 °C (-13 °F to +350 °F)* Cascade: -70 °C to +190 °C (-94 °F to +375 °F) -65 °C to +177 °C (-85 °F to +350 °F)*				
Optional Humidity Range	10% to 95% RH 20% to 80% RH* Optional Low 5% RH				

*Operated as a remote conditioner

Combined Environments

AV/CV-Series chambers offer rapid temperature change rates with combined temperature/humidity/vibration

Temperature/Humidity/Vibration Chambers

Combined environmental testing environments with flexibility for use with new or existing vibration systems

Systems are designed for compatibility with your choice of electrodynamic or mechanical vibration systems. This provides you with the flexibility to use your existing vibration shaker. Each model is manufactured to standard designs, but may be custom engineered to meet a wide range of stringent test requirements.



CV-Series



AV-Series

Our AV-Series AGREE (Advisory Group on Reliability of Electronic Equipment) chambers combine temperature/humidity and vibration for commercial and military testing. The AV-Series models have the optional capability to interface with both horizontal and vertical electrodynamic vibration systems with rear or vertical sliding doors.

AV Workspace Volume	14 cu. Ft. to 144 cu. Ft. (396 L to 4078 L)
CV Workspace Volume	8 to 64 cu. Ft. (227 L to 1812 L)
Temperature Range	Single Stage: -34°C to +190°C (-30°F to +375°F) Tundra®: -45°C to +190°C (-49°F to +375°F) Tundra® II: -50°C to +190°C (-58°F to +375°F) Cascade: -70°C to +190°C (-94°F to +375°F)
Optional Humidity Range	10% to 98% RH Optional Low 5% RH

Custom sizes available

Combined Environments

HALT/HASS Chambers

Quickly Discover Design Weakness

HALT & HASS Time Compressor chambers incorporate the highest level of technology and quality for the optimum in reliability testing. Our chamber design and the vibration table design by Dr. Greg Hobbs, inventor of HALT & HASS technology, combine to provide the broadest range of temperature and vibration capabilities in the industry which are key to both precipitation and detection of product defects. Time Compressor Chambers are state-of-the-art HALT and HASS systems for simultaneously subjecting products to all-axis broadband vibration and rapid thermal cycling.

- Superior reliability and thermal performance
- Significantly better high and low vibration limits (required for detection)
- Quiet operation
- Efficient LN2 and utility usage for greater ROI



	TC-2.0	TC-2.5	TC-3.0	TC-4.0
Temperature Range	-100°C to +200°C (-148°F to +392°F)			
Temperature Ramp Ranges	+70°C to +100°C/min			
Vibration Levels	1 - 90 GRMS		1 - 80 GRMS	
Table Size	24" x 24" (61cm x 61cm)	30" x 30" (76cm x 76cm)	36" x 36" (91cm x 91cm)	48" x 48" (122cm x 122cm)



Dual purpose for vibration testing or combined temperature and vibration.

Benchtop Vibration Table

Ideal for reliability testing of compact products and electronics

The benchtop vibration system may be used as a stand-alone vibration table for vibration testing or placed inside an environmental chamber for combined vibration & temperature testing offering flexibility and greater return on investment.



	TCB-1.3
Vibration Level	1 to 60 GRMS
Temperature Range (Base Only)	-70°C to +163°C When placed inside a new or existing chamber
Table Size	22"W x 23"D x 12"H (56cm x 58cm x 30cm)



Altitude Chambers with Temperature/Humidity

Simulating altitude and temperature for combined environmental testing

Our CA-Series Commercial Altitude Chambers combine temperature with vacuum to test basic components and sub-assemblies in a variety of industries. Your products can be tested simultaneously with temperature and altitude or may be used as a temperature/humidity cycling chamber with multiple uses. Chambers may be designed to meet RTCA/DO-160 test specifications for airborne equipment.

Workspace Volume	8 to 64 cu. Ft. (230 L to 1810 L)
Temperature Range	Single Stage: -34°C to +190°C (-30°F to +375°F) Tundra®: -45°C to +190°C (-49°F to +375°F) Tundra® II: -50°C to +190°C (-58°F to +375°F) Cascade: -70°C to +190°C (-94°F to +375°F)
Optional Humidity Range	10% to 98% RH Optional Low 5% RH
Altitude	100,000 Ft. (30,480 m) Standard 200,000 Ft. (60,960 m) Optional

Custom sizes available

Walk-in/Drive-in Chambers

Large capacity walk-in / drive-in chambers customized to meet your needs

Walk-In chambers are used for cold storage or testing products that require a large capacity chamber. Applications include full vehicle testing, automotive components, electronic components, packaging, stability testing, biological research and more. Chambers may be designed with options such as remote instrument consoles, custom-size doors, ramps and heavy-duty floors. Additional environments such as altitude, solar simulation, and vibration may also be included to meet your test requirements.



WMST Series Stability Temperature/Humidity Rooms

Controlled environments for stability testing/storage

Stability rooms are available in temperature and/or humidity with a temperature range of -20°C to $+60^{\circ}\text{C}$ (-4°F to $+140^{\circ}\text{F}$) and optional humidity from 10% to 95%. These rooms are designed with ceiling mounted conditioning systems and modular panel construction. All rooms have stainless steel interior and white embossed or optional aluminum embossed exterior. All CSZ stability chambers meet ICH Q1A guidelines.

WM-Series Modular Panel Walk-In Chambers

Offers flexibility for testing larger volumes at an economical price

Modular Walk-In chambers use pre-fabricated panels and offer flexibility to meet virtually any size or configuration. These chambers are easily assembled, installed and may also be expanded for future applications. Select from stainless steel, aluminum, or galvanized construction to fit your specific needs.



Size	200 to 8,000 cu. ft. and larger
Temperature Range	Single Stage: -30°C to $+85^{\circ}\text{C}$ (-22°F to $+185^{\circ}\text{F}$) Tundra®: -45°C to $+85^{\circ}\text{C}$ (-49°F to $+185^{\circ}\text{F}$) Tundra® II: -50°C to $+85^{\circ}\text{C}$ (-58°F to $+185^{\circ}\text{F}$) Cascade: -70°C to $+85^{\circ}\text{C}$ (-94°F to $+185^{\circ}\text{F}$)
Humidity Range	10% to 98% RH

Ideal for large capacity testing, designed to any size with a variety of options for enhanced performance or combined environments.

Drive-In Series Chambers

Designed for full vehicle testing - from small cars to full semi-trucks

Testing procedures include noise, vibration, climate conditions, suspension systems, shocks, squeaks and rattles. Every chamber can be tailor-designed to meet different requirements and specifications and can integrate with vibration systems.



Four post road simulator with temperature, humidity, vibration and solar simulation.



WW-Series Solid Welded Walk-In Chambers

Rugged construction with higher temperatures and faster cycling

WW-Series Welded Walk-In chambers are fabricated to allow wider temperature and humidity ranges with fast temperature change rates. These welded walk-in chambers consist of one solid piece that is constructed using a zinc coated exterior and a Type 304 stainless steel interior.

Size	200 to 8,000 cu. ft. and larger	
Temperature Range	Single Stage:	-34°C to +190°C (-30°F to +375°F)
	Tundra®:	-45°C to +190°C (-49°F to +375°F)
	Tundra® II:	-50°C to +190°C (-58°F to +375°F)
	Cascade:	-70°C to +190°C (-94°F to +375°F)
Humidity Range	10% to 98% RH	

Modular Plenum Conditioning System

Walk-In chambers feature our standard conditioning systems that include the refrigeration, air circulation, electrical components, instrumentation and optional humidification needed to control your chamber environment. Each conditioning system interfaces with an assembled Walk-In box for easy installation without taking up valuable workspace in your chamber. These conditioning systems may be ordered from CSZ with or without walk-in box.

Recommended Configuration

Benefit	Modular Panel	Solid Welded
Economical	X	
Easy Move-In & Assembly	X	
Easy Installation	X	X
Choice of Interior and Exterior Finishes	X	
Extended Temperature Range		X
Extended Humidity Range		X
Fast Change Rate		X
Altitude Simulation		X

Thermal Shock/ESS Chambers

Detect product defects before they get to your customer

Thermal shock / ESS chambers are capable of producing optimum stress levels for detecting product flaws by stimulating defects at the lowest level of assembly, before they get to your customer. The return on investment in both actual savings and customer confidence adds significant value.

Vertical Thermal Shock, Air-To-Air Chambers

Superior performance in a smaller footprint

Vertical Thermal Shock (VTS) chambers consist of separately controlled hot and cold zones. Product is transferred between these zones for rapid product temperature change. The refrigerated zone of the VTS Chamber will also perform as a fully functional, independent environmental test chamber.

Workspace Volume	1 to 9 cu. ft. (28 L to 255 L)
Temperature Range	Hot Chamber: +70°C to +210°C (+158°F to +410°F) Hot/Cold Chamber: -75°C to +190°C (-103°F to +375°F)

Custom Sizes Available



Double Duty Thermal Shock (Air-To-Air) Chambers

Thermally shock twice as much product with one chamber

Double Duty Thermal Shock (DTS) chambers consist of three zones: a hot chamber on each end with a cold chamber in the middle. This design allows product to be moved between the zones simultaneously with two product baskets for higher through put.

Workspace Volume	16 & 27 cu. ft. (453 L & 765 L)
Temperature Range	Hot Chamber: +70°C to +210°C (+158°F to +410°F) Hot/Cold Chamber: -75°C to +190°C (-103°F to +375°F)

Custom Sizes Available

TSB Thermal Shock Bath, Liquid-To-Liquid

Immediate temperature shock for faster testing

TSB-Series Liquid Baths provide immediate product exposure to thermal stresses. Vapor-tight construction and design minimizes expensive test liquid vapors from evaporating when the unit is opened for loading or unloading product.

Workspace Volume	2 lbs. & 5 lbs. (.9kg & 2.3kg)
Temperature Range	Hot Bath: +35°C to +160°C (+95°F to +320°F) Cold Bath: -75°C to +25°C (-103°F to +77°F)

Custom Sizes Available



Industrial Freezers

Production Chilling chambers are ultra-low industrial freezers designed with heavy-duty construction and are built-to-last. These freezers are available in front or top loading configurations.



V-Series Freezers

Industrial freezers for light-duty applications

V-Series are top-loading freezers designed for use as storage freezers for a variety of applications.

Workspace Volume	6 to 11 cu. ft. (170 L to 312 L)
Temperature Range	-84°C to -40°C (-120°F to -40°F) -184°C (-300°F) with LN2 Cooling

Optional Liquid Nitrogen Cooling

T-Series Freezers

Heavy-duty freezers built to last for decades

T-Series are top-loading freezers designed for high capacity and heavy-duty loads. Applications include use in the heat-treating industry for chilling steel to -84°C (-120°F) for transforming retained austenite to martensite, which relieves internal stress, increases hardness and durability of metal. Use the T-Series for age-hardening, stress-relieving, expansion assembly, and other heavy-duty industrial cooling applications.

Workspace Volume	13 to 96 cu. ft. (368 L to 2718 L)
Temperature Range	-84°C to -40°C (-120°F to -40°F) -184°C (-300°F) with LN2 Boost



TF-Series Front-Loading Freezers

Heavy-duty freezers with easy loading for industrial applications

TF-Series front-loading freezers offer side-by-side operation with batch-type heat-treating furnaces, heavy-duty rollers and guides to interface directly with most charge car load/unload mechanisms. It is also compatible with part baskets and trays used in other heat-treating mechanisms.

Workspace Volume	23 to 84 cu. ft. (651 L to 2379 L)
Temperature Range	-84°C to -40°C (-120°F to -40°F) -184°C (-300°F) with LN2 Boost

Custom Sizes Available

Custom-Designed Chambers

Do your test applications require special mechanical interface, modification of a standard chamber or unique testing requirements?

CSZ leads the market in custom-designed environmental chambers. Our experienced engineering and design team can create custom solutions for your highly specialized requirements. We have designed thousands of test chambers for special applications and have the expertise to custom-design virtually any type of environment simulation

Solar Panel Testing Chamber

Test chambers for testing various size photovoltaic modules and panels. These Chambers are designed for temperature and humidity cycling along with the ability to meet IEC 61646, 61215, and 61208 climatic tests for temperature cycling, damp heat and humidity freeze tests. Chambers also designed to meet UL and ASTM test specifications for photovoltaic panel testing.

Rain / Ice Chambers

Provides an environment to test insulating values and weight support of a product that may be used in an outdoor environment with rain and ice.



Sand and Dust Chambers

Provides an environment to test the exposure of automotive and electronic components to concentrated levels of dust in order to validate the seal integrity of a product.



Cold Storage Chambers

BioStore Freezer Rooms address cold storage concerns of reliably storing material at consistently low temperatures. Ideal for the storage of genetic material (DNA), donor tissues, and allografts for surgical



transplantation, these life science cold storage facilities contain individual freezer compartments with temperatures from -75°C up to -40°C (-103°F to -40°F).

These Freezer Rooms consist of hallways with multiple freezer compartments on both sides. Ideal for large capacity storage to replace upright freezers with a single unit.

Accelerated Stress Test Chambers

Chambers are designed for fast product temperature change rates up to 30°C per minute.



BioStore Freezer Rooms

Tensile Test Chambers

These chambers expose materials to temperature and/or humidity environments while interfacing with a variety of destructive and non-destructive test equipment.



Liquid Chillers / Conditioners

Conditions heat transfer fluids at a wide range of temperatures.



Wire Benders

These chambers are used for stressing materials used in the manufacturing of wire coatings and hoses. Cold bend specifications require sub-zero exposure and bending material.



Other Custom-Designed Chambers

Temperature cycling units may be designed to interface with your equipment such as automated conveyors for use in the manufacturing process, or combined with testing systems for electronics or disk drives. Explosion proof chambers are also available.



Options for flexibility and performance

All units have optional features that offer flexibility and enhanced performance requirements. Below is a partial list of these options:

- Stainless Steel Exterior
- Windows-Based Software
- Access Ports
- Chart Recorder
- Additional Product Shelves
- Dry Air Purge
- Liquid Nitrogen Boost
- Recirculating Water System
- Low Humidity
- Extended Temperature Ranges

Custom product test stands/ fixtures are available such as product racks and slide-out shelves are designed for optimum airflow around your product.

CSZ is committed to your satisfaction every step of the way.

We are dedicated to our customers from the initial point of contact, fully understanding your unique needs, developing the right solution and delivering outstanding products and post-sale support.



CSZ has two manufacturing facilities in Cincinnati, OH with world-wide sales and service.

Your one stop solution for Environmental Chambers

- Temperature Cycling
- Humidity
- Stability Cabinets & Rooms
- Thermal Shock
- Stress-Screening
- Altitude
- AGREE Vibration
- HALT/HASS
- Freezers
- Liquid Chillers
- Wind & Rain
- Sand & Dust
- Other Temperature Management Solutions

Sizes range from benchtop to full walk-in/drive-in chambers.

Services

- Refrigeration Retrofits
- Controller Upgrades
- Preventative Maintenance
- Calibration Services

Testing Services

CSZ Testing Services is an A2LA Accredited Test Laboratory utilizing the latest test technology. We are your one stop source for all of your environmental simulation testing needs. Our testing laboratory is here to help with your product qualification testing, overflow testing and /or third party product validation. Testing capabilities include Temperature, Humidity, and/or Vibration, Thermal Shock, Burn-in, Radiator Testing, Altitude, Vibration, HALT/HASS, Shock, Salt Spray, Cyclic Corrosion test and Drop Testing. Serving you from two locations in Cincinnati, OH and Sterling Heights, MI.

FOR MORE INFORMATION please call CSZ Testing headquarters at 513-793-7774 or visit www.csztesting.com.



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