Quality is more than a word

ESPEC

Non-Nitrogen HALT System

QUALMARK | RELIABILITY TEST TECHNOLOGY

ESPEC NORTH AMERICA, INC.

Accelerated Testing with Mechanical Refrigeration

This new HALT system with ESPEC cascade refrigeration eliminates the need for liquid nitrogen, making basic HALT testing possible for customers and locations where traditional HALT systems just aren't feasible.

EQZ4

EQGNZ27

Features

HALT testing without using Liquid Nitrogen

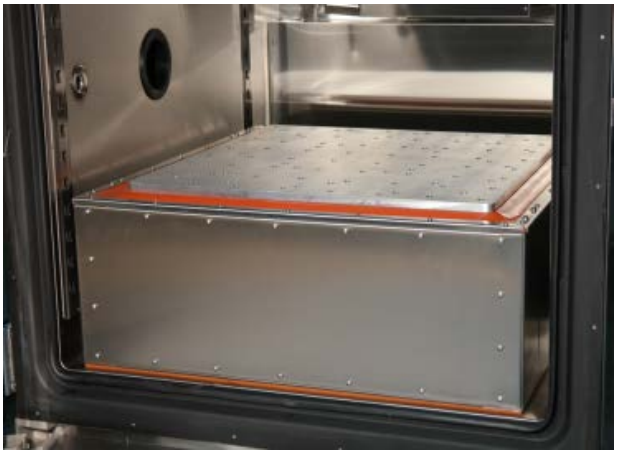
These HALT systems eliminate the need for liquid nitrogen, making basic HALT testing possible for customers and locations where traditional HALT systems just are not feasible. Whether liquid nitrogen is too difficult or costly to attain and maintain, or just not possible, this is your answer. (This system has an option for liquid nitrogen boost, by just using it during rapid thermal ramps, but can let the refrigeration take over for soak steps.)

The repetitive-shock table creates a combined environment needed for full HALT testing. This all-in-one system brings together the proven, quality technologies from ESPEC and Qualmark product lines.

EQZ4 interior with 18" x 18" repetitive shock table

Standard features

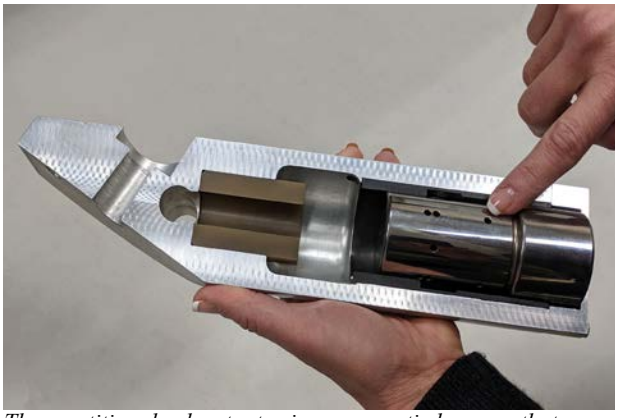
- All stainless steel construction
- P-300 touch-screen controller
- Product temperature control
- Cascade refrigeration with scroll compressors and electronic expansion valve control
- Dry-air purge for dryness and positive pressure during cycling (nitrogen purge may be substituted)
- Vibration table with six-degree-of-freedom, repetitive-shock. OmniAxial broadband distribution and improved the Power Spectral Density (PSD) stability.
- Emergency stop button
- Left-hinged door with window and LED lighting



EQGNZ27 interior with 30" x 30" repetitive shock table

Air-cooled models available

High performance test chambers usually mean water cooling utilities are required. The 3 or 6 hp chambers are available with integrated air-cooling. Chambers with higher power refrigeration are available with a remote air-cooled condenser instead of water-cooling.



The repetitive shock actuator is a pneumatic hammer that repeatedly impacts the table to create random vibration stress to your test sample.

Performance

Temperature cycling up to 15 degrees per minute

Temperature cycling rates of up to 15°C/min. are possible without liquid nitrogen.

Temperature cooling is via cascade refrigeration with high reliability Scroll compressors. Two models have built-in air cooling, others require cooling water. These expand the options for implementing HALT testing where liquid nitrogen isn't available.

Repetitive shock performance

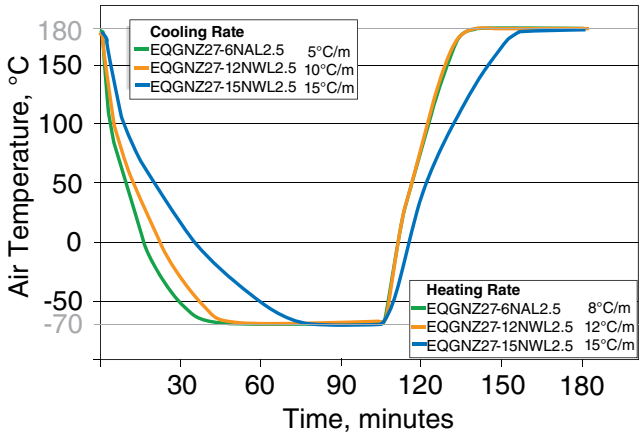
Our accelerated stress test systems have six-degree-of-freedom (6DoF) repetitive-shock vibration tables. The table delivers low frequency energy for penetrating complex products, while maintaining high frequency energy that effectively exposes weak solder joints and surface mount problems.

The complex engineered system that generates high and low frequency excitation also simultaneously generates rotational stress. This results in true 6DoF stresses (roll, pitch and yaw around three axes, plus X, Y and Z vibration) for effective HALT testing.

Get a performance evaluation to help select your model

For better assurance of performance for the temperature cycling part of your application, ESPEC can provide a guaranteed performance calculation based on your submitted requirements.

Please use these questions (at right) as a guide to define your test plan. You can then give this information to your local sales representative, or submit at www.espec.com, for review by an ESPEC engineer. A recommended model with appropriate refrigeration size will be returned.



Questions for performance evaluation request:

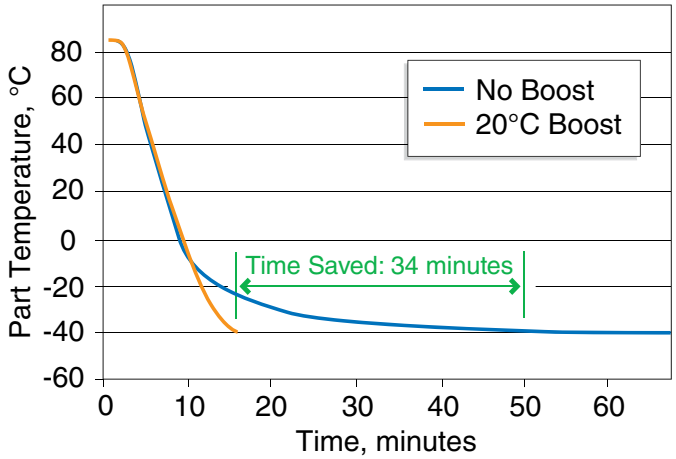
1. Chamber type
Desired size: 4 or 27 cu. ft.
Local power: 60Hz

2. Your Sample
Sample description and type of material(s)
Total mass per test, including any fixturing or cabling
Heat output of samples, in watts, if powered during test
Known harmonic frequencies of sample

3. Your Test Plan
Test method, if a published standard (e.g. JEDEC JESD22-A104C)
Start temperature for cycling
End temperature for cycling
Ramp rate or time allowed between start and end temperatures
Ramp rate measured in the air or on the product
Repetitive-shock vibration gRMS range

Advanced Control

The console includes the P-300 programmer, USB port, product temperature protector, and chamber light.



Product temperature control generates faster ramp-rates for test samples, as well as significant time savings for soak periods.

Enhanced performance and USB access with P-300 touch-screen controller

The exclusive ESPEC P-300 programmer/controller brings energy savings, user-friendly operation, and expanded data access to our chambers. Tabs on the updated user interface allow faster access to any screen. Standard USB and optional Ethernet interfaces make programming and data acquisition much simpler. In addition, improved algorithms make operation more energy efficient, and temperature ramping faster, smoother and more repeatable..

- Store up to forty programs, as well as three constant-mode configurations.
- Multilingual display in English, Japanese, Chinese, or Korean.
- Alarm history and diagnostics, plus a 'back trace' feature for troubleshooting.

Standard USB port for upload/download of programs and test data. Test programs can be edited and stored on a PC using included software, then uploaded via USB. Operation data can be downloaded for review, graphing, or exporting to Excel. Limited capabilbites with vibration data.

Included: The Web Controller add-on allows remote operation, programming, and data-logging via a web browser or API. See page 7 for more details.

Included: product temperature control

- Controls product temperature
- Enables faster product change rates
- Shortens testing time

During normal cycling tests, product temperature can lag behind air temperatures up to 20 degrees. The product temperature control is a valuable feature for high performance testing This feature drives faster change rates by directly monitoring product temperature and automatically boosting air-temperature setpoints until the sample approaches the desired temperature.

Specification

	EQZ4-3NAL1.5	EQGNZ27-6NAL2.5 EQGNZ27-6NWL2.5	EQGNZ27-12NWL2.5	EQGNZ27-15NWL2.5
Temperature Range	-70 to 180°C (-94 to 356°F)			
Interior Dimensions (W X D X H)	21" x 21" x 16" (534 x 534 x 407 mm)	39.4" x 45" x 26" (1000 x 1143 x 663 mm)		
Table Size	18" x 18" (457 x 457 mm)	30" x 30" (762 x 762 mm)		
Table Actuators	4 actuators	8 actuators		
Exterior Dimensions (W X D X H)	53" x 35" x 77" (1338 x 893 x 1943 mm)	50.7" x 98.3" x 76" (-6NAL height 89.7") (1288 x 2497 x 1930 mm)		
Performance Example -70 to 180°C (-94 to 356°F)				
Heating Rate	9°C/m	8°C/m	12°C/m	15°C/m
Cooling Rate	8°C/m	5°C/m	10°C/m	15°C/m
Repetitive-shock	5 - 60 gRMS (10 Hz to 5000 Hz)	5 - 75 gRMS (10 Hz to 5000 Hz)		
Site Requirements				
Power Supply	208/230V 1Ø 60Hz, 60A	460V 3Ø 60Hz, 45A	460V 3Ø 60Hz, 70A	460V 3Ø 60Hz, 100A
Compressed Air	85-100 psi (37 CFM)	85 psi (83 CFM)		
Air Cooling	35,000 BTU/hr	60,000 BTU/hr	-	-
Water Cooling	-	14 GPM	27 GPM	32 GPM

**Ramp rate and gRMS are measured with an empty chamber.*

EQZ4-3NAL1.5

EQGNZ27-6NAL2.5

Options

Instrumentation options

- Computer Interfaces (RS-232, GP-IB, RS-485)
- Time signal for power control of test samples.
- Adhesive-mount accelerometers for easy placement of sensors directly to the product under test. Kit includes a 10mV/G accelerometer with a BNC connector.
- Qualmark Spectrum Analyzer can acquire, process and display six channels of vibration data in time and frequency.
- QDaq data acquisition system allows dynamic charting and analysis capabilities of up to 32 thermal and 8 vibration channels.

QDaq is our specialized data acquisition system, combining temperature and vibration test data for analysis.

Operation options

- Liquid Nitrogen (LN2) to boost the temperature cooling rate, by direct injection.
- Gaseous Nitrogen purge (replaces dry air purge) – minimizes moisture in the chamber.
- HALT fixture kit & PCA fixture kit are a set of standard parts that hold down products to the table.

Fixture kits are cost-effective set of parts for mounting your samples on ESPEC's repetitive-shock vibration tables.

Cabinet options

- Cable ports cables and other wiring into the chamber, available in sizes of 1", 2", 4" or 6" round ports.
- Seismic bracing for locations with earthquake code requirements.

Included Feature: ESPEC Web Controller

The Web Controller leapfrogs competitive remote access solutions by hosting the software remotely, at the chamber. No local software to install, just a web browser and access to the LAN is required. No need for a USB thumb-drive either, as all data files can be downloaded and uploaded from the web browser. New features include:

- RESTful API for easy integration with other equipment and applications.
- Network View lets you see all your chambers with Web Controllers on one screen.
- Same user interface and API for ESPEC and Watlow controllers
- New Macro Editor that has Custom emails with data attachment, Data downloads, and HTTP calls or Webhooks.

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DANGER

Not for use with specimens which are explosive or flammable, or which contain such substances. To do so could be hazardous, as this may lead to fire or an explosion.

ESPEC EQ

November 2020