Lightning Speed ...

Vötsch
Industrietechnik

... superb acceleration rates with
temperature shock test chambers

Systems for Rapid Temperature Cycling…

ESS - Environmental Stress Screening
... tested for absolute reliability!

When performing qualification tests on materials and components, the application of tests applying high and low temperatures do not always bring about satisfactory results. For rating the reliability of materials and components, additional stressing applying rapid temperature changes often offers better results.

Environmental Stress Screening (ESS) is a process to provoke latent flaws in a product before it leaves the factory. Hence, ESS is always applied if the reliability of a product must be enhanced.

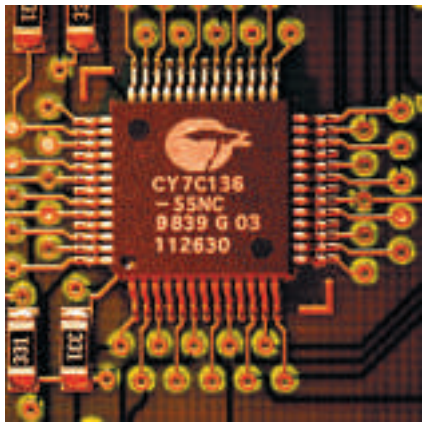
Our shock test systems for ESS allow the realisation of this process.

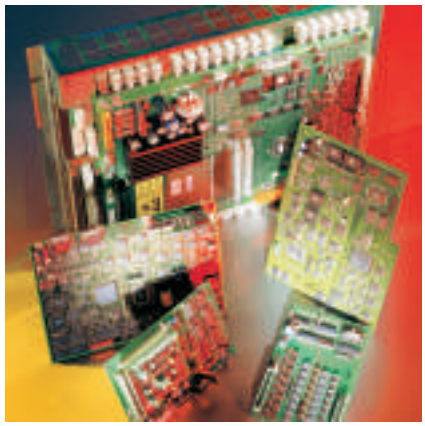
We can simulate all natural temperatures which, when considering the fields of aviation and aerospace, range between -65°C and +180°C.

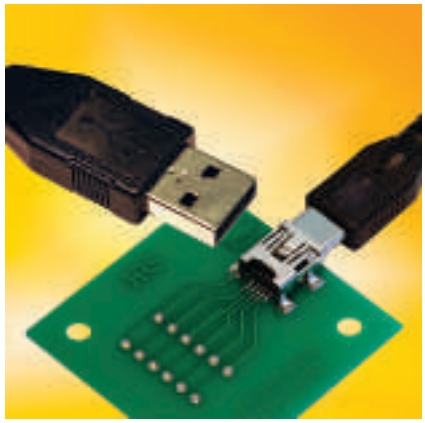
Rating with regard to stressing caused by changes of temperature is possible by applying the methods stipulated in IEC 60068-2-14, Test Na (rapid change of temperature).

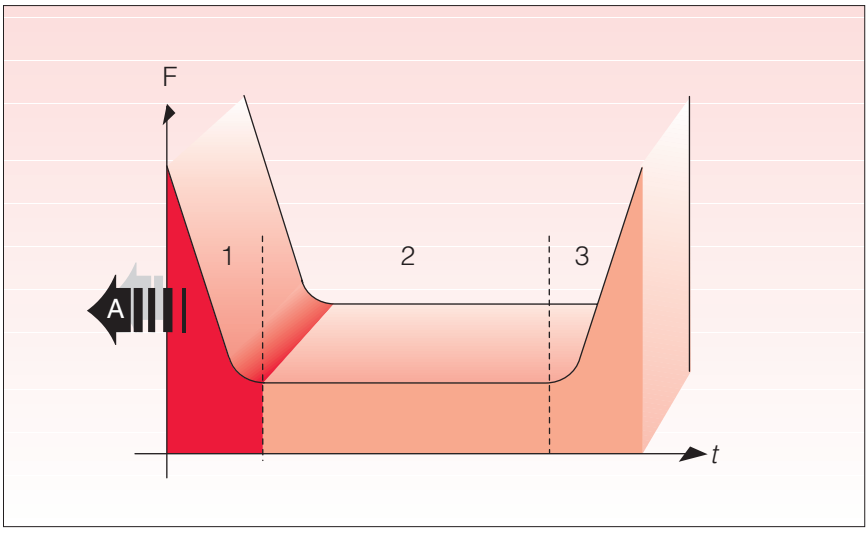
However, one must consider that the selection of extreme temperatures must be optimized (test tailoring).

The application of rapid temperature cycling is the most effective manner of creating premature failures of products in the production phase. This means that ESS is a process for screening out passed/ failed components.









Life time graph of electronic components
A = ESS moves these failures from field to factory, F = Failures
t = Time, 1 = Infant mortality 2 = Operational lifetime 3 = Wear out phase

.... VT 7012 S2 Temperature shock test chamber
New design and increased performance

Our latest shock test chamber type VT 7012 S2 brings a fresh breeze into the field of environmental simulation.

The modern appearance of this new system positions Vötsch Industrietechnik, once again, a step ahead of the rest.

The smooth and continuous "evolution" of our products contra a hasty "revolution" has resulted in a system offering performance features that are far above standard.

- Cradle load: new 50 kg
- A system that not only offers high performance but that is also extremely quiet, a sound level of 58 dB(A)
- 20 % higher temperature changing rate for fulfilling the most crucial standards
- Ports that are 20 % bigger for the supply/measurement of specimens
- Temperature conditioning of the hot zone from +50 °C to 220 °C (optional to +250 °C) Temperature conditioning of the cold zone from -80 °C to +70 °C
- Entry port 80 mm Ø
- Volume compensation system for long-term operation integrated in the machine compartment
- High resolution colour touch-panel with graphical display for the easy processing of environmental simulation programs
- Additional features and equipment such as air cooled refrigeration cycle and larger-sized ports are available upon request

Shock test-systems - 2-zone design ...

Temperature shock test chambers VT 7012 S2 & VT 7030 S2

In addition to temperature stressing, extremely rapid temperature cycling rates in the range of -80 °C to +220 °C result in the extremely high mechanical stressing of test specimens. If electronic components are exposed to this severe temperature cycling, weak points are revealed rapidly.

By assigning our shock test chamber, you not only reduce the number of premature failures but also increase the reliability of your products. It goes without saying that our systems fulfil the requirements of international testing standards such as DIN, IEC and MIL.

The principle of the vertical arrangement of the test zones of our shock test chamber has proved to be highly successful. A ball spindle drive ensures reliable guidance of the cradle.

Air guidance facilities, designed according to experience gained from the field, combined with high air circulating rates result in rapid temperature cycles and a uniform distribution of temperature in the test space.

1000 cycles are possible **without defrosting**. This means we can guarantee virtually constant availability of the system.

The specimens in the cradle with removable guards on all sides are as well protected as in a safe. The integrated safety systems wrap up the image of this application-oriented shock test system (e.g. only 1.9 m^2 storage area etc.).

Thanks to appropriate design techniques (water cooling, sound insulation), a relatively low noise level for this type of system has been achieved.

Besides the 120 l test system we also supply (especially for the screening of assemblies) a 300 l system - a unique system offer-ing a most favourable costbenefit ratio.

Our test systems allow you to expose 50 kg test specimens to thermal stress.

Other Features:

- Minimum energy consumption
- No compressed air required
- Chloride-free refrigerant
- Multifunctional application: **The hot chamber** may also be utilized as temperature

  storage chamber and **the cold chamber** utilized as chamber for rapid temperature changing tests.

... 3 -zone design

Temperature shock test chamber VT 7012 S3

So as to employ former test results, as in the past, tests in accordance with MIL-STD 883 C, method 1010.5 are performed.

Our test system type VT 7012 S3 offers you many favourable ad-van-tages. Our positive experience gai-ned from the 2-zone de-sign has been integrated into this system e.g. the well-proved vertical arrangement of the test zones.

Contactless sensors ensure exact limit positions and guarantee per-fect tightness between the individu-al zones and thus very low energy consumption.

All test zones may be operated as individual systems. The middle zone allows the preconditioning and post conditioning of speci-mens.

Comfortable and practicable operation ...

The control and communication system provides the highest level of operating convenience, and the bus is also already included.

A high-performance 32 bit control system provides the basis for the monitoring and control of the test systems.

The SIMCON/32*- NET control system opens the possibility to shorten test duration consider-ably. The dwell time required by test regulations at the desired specified temperatures are, naturally enough, adhered to.

The SIMCON/32*- NET control system offers 3 operating modes:

- **Normal mode**
- **Optimized time mode**
- **Economy mode**

The colour touchpanel has a graphics LCD-display with backlighting and with 1/4 VGA resolution.

Process cycles, system states and other process diagrams can be represented as graphs thanks to self-explanatory picto-grams and can be designed and operated intuitively in a manner so far not possible.

Extensive test programs can be easily and reliably created, safe-guarded and reactivated.

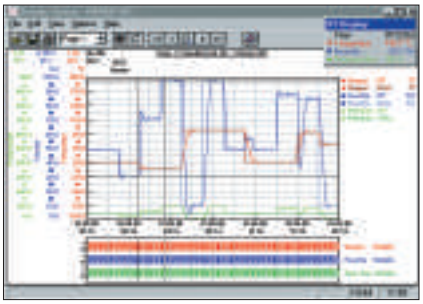
A touch is sufficient and the desired functions are actuated.

The communication link to the unit contains the basic functions emergency OFF, test specimen protection (min/max), serial and parallel interface and analogue and digital port for I/O signals.

S!MPATI*

What would a highly developed, high-performance system be without software which is clear and easy to operate, enabling you to master the flow of infor-mation. It is called S!MPATI* and determines the optional operating parameters for system and test specimens. In addition to the well-known Windows standards, the software can also be integrated into networks.

Operation of test systems beco-mes simple and time-saving. System operating reliability is assured, thanks to the integrated monitoring routines. Evaluation and documenting of test cycles and the integration of special measuring data guarantees an improved standard.



Standard equipment

- Colour touchpanel
- Microprocessor monitoring and control unit SIMCON/32*-NET
- Temperature control using movable sensor in cradle or alternatively fixed sensor in warm or hot zone
- Digital I/O, 4 inputs/outputs
- Stored programmes
- Independent adjustable temperature limiter t_{min} / t_{max} in cradle
- Adjustable software temperature limiter min/max.
- Door with window in hot zone, (for S3 in the middle door)
- Test space illumination
- Chloride-free refrigerant
- 1 ultra-lightweight shelf incl. rails
- Entry port
- Max. loading capacity of cradle 50 kgs (for VT 7012 S3 = 20 kgs)
- Serial interface RS 232
- European socket
- Potential-free contact for switching-off of test specimens
- Water-cooled refrigeration unit
- Trend display
- Cradle in loading position locked
- Defrosting cycles automatic and programable
- Dwell time start programable
- Operating hour counter, cycle counter, total no. of cycles/remaining run time
- WKD Calibration of 2 temperature values

We reserve the right of changes in contruction resulting from technical progress.
Some of the illustrated systems contain optional extras.

Technical data

Temperature shock test chamber		Type	VT 7012 S2	VT 7030 S2	VT 7012 S3
Test space volume		Litre	125	300	120
Amount of zones			2	2	3
Temperature range	hot zone	°C	+50 to +220	+50 to +220	+50 to +220
Temperature range	middle zone	°C	----	----	-10 to +90
Temperature range	cold zone	°C	-80 to +70	-75 to +70	-80 to +70
Temperature deviation in time		K		±0,3 to ±1,0	
Temperature deviation in space		K		±0,5 to ±2,0	
Temperature gradient[1]		K		1 to 4	
Calibrated values	cold zone	°C	-40	-40	-40
	hot zone	°C	+125	+125	+125
	middle zone	°C	--	--	+25
Test space dimensions	Width	mm	470	770	470
	Depth	mm	650	650	650
	Height	mm	410	610	400
External dimensions	Width	mm	970	1290	960
	Depth	mm	2350	1800	2150
	Height (...)[2]	mm	1985 (2450)	2220 (2885)	2130 (2625)
Machine unit	Width	mm		800	
	Depth	mm	integrated	1850	integrated
	Height	mm		1900	
Loading capacity, max.		kg	50	50	20
Sound pressure level [3]		dB(A)	58	65	70
Refrigeration unit			water-cooled		
Electronical connection			3/N/PE AC 400 V ± 10 % , 50 Hz		
Rated power		kW	10	30	13.5

Standards - VT 7012 S2 + VT 7030 S2

MIL STD 883 E, method 1010.7, severity of test A, B, C, D [4],F - MIL STD 810 E, method 503 MIL STD 202 F, method 107 G - IEC 60068-2-14, test Na - BS 2011 - DIN 40046, test Na, JESD22 - A101 - A

Standards - VT 7012 S3

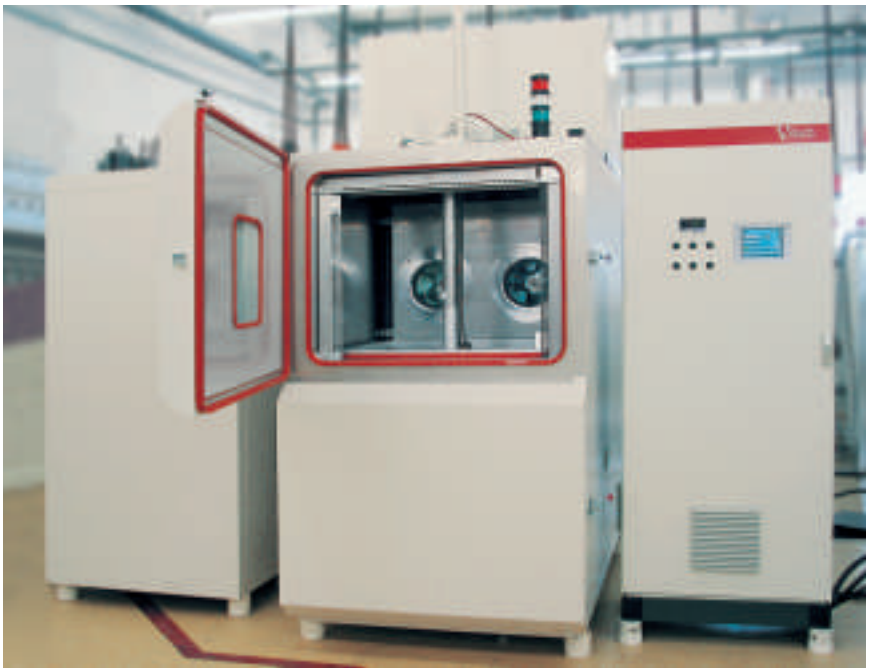
MIL STD 883 C, method 1010.5, severity of test A, B, C, D, G - MIL STD 202 E, method 107 D Of course as well all standars of two-chamber versions are met.

[1] in accordance with IEC 60068-3-5 - [2] height of installation room necessary for operation of chamber - [3] free field, 1 m distance from the front, as per DIN 45635, part 1, accuracy class 2 - [4] only VT 7012 S2

Options

- Software SIMPATI*
- Analogue transducer I/O
- Temperature measuring on test specimen
- Temperature range extension to +250 °C (only VT 7012 S2)
- Interface RS 232 <--> IEEE 488 or RS 232 <--> RS 422/485
- Interface RS 422/485 (network card for test cabinet)
- Ethernet interface (only together with Option SIMPATI*)
- Various printers
- Wire mesh and insert shelves
- Additional entry ports (only S2)
- Connection for nitrogen-inertisation/compressed air dryer
- Shock cooling with LN_2
- Compressed air unit (for S3)
- Air-cooled refrigeration unit
- Special voltages
- Spatial WKD or DKD calibration

Special designs ...



We plan and manufacture tailormade solutions to meet all requirements.

For all requirements in environmental test technology we are your partner.

Power-Versions VT 7030 P2 & VT 7012 P2

... efficient shock test chambers with high capability to maintain temperature stability of the specimen

Vötsch Industrietechnik

Vötsch Industrietechnik GmbH
Umweltsimulation Wärmetechnik

Umweltsimulation

Beethovenstraße 34
72336 Balingen-Frommern
Germany
Telefon: +49 (0) 74 33 / 303-0
Telefax: +49 (0) 74 33 / 303-41 12
info@v-it.com
www.v-it.com / www.voetsch.info

Nr.: VIT-E 5/10 5C 10.05 N SV

Deutscher Kalibrierdienst DKD-K 19501

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