Vibration and more ...

Vötsch Industrietechnik

... dynamic and climatic safety testing

Temperature and climatic test chambers in combination with vibration
Our VTV & VCV series with up to 15 K/min temperature change rate

You can rely on it ...

Minimize safety risks with the help of mechanical / thermal testing ...

Vötsch testing systems enable you to simulate dynamic processes, i.e. mechanical as well as thermal loads, affecting components and equipment.

The loads on materials and components occurring during transport in cars, buses and lorries are of complex nature. Moreover, loads occurring during transport via railroad and ship as well as through aeronautic transport also have to be considered.

Performance tests can be carried out both during and after the dynamic load.

For most applications, the required test conditions are defined in standards such as e.g. MIL, IEC and DIN.

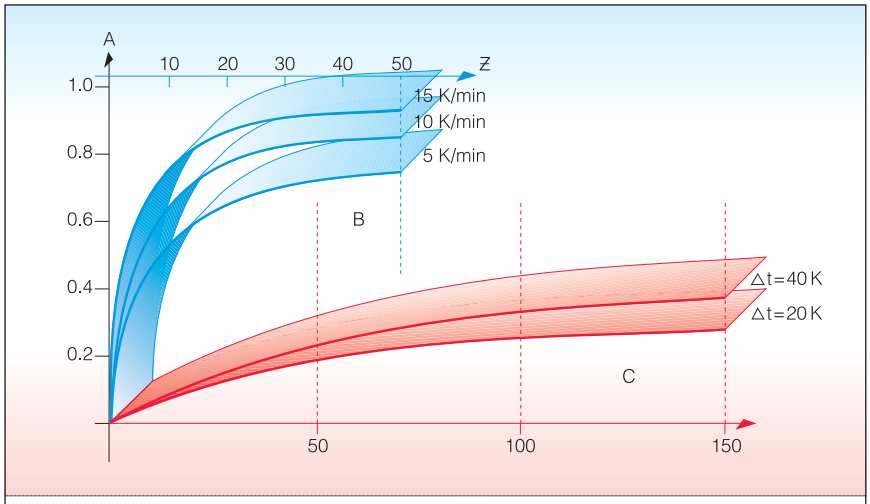
Vötsch Industrietechnik offers a large number of standardized test systems for dynamic loads.

A total of 36 test chambers in 3 sizes with volumes of 600 l, 1200 l and 2200 l, two temperature ranges from -40 and -70 to +180 °C and temperature conditioning performances of 5, 10 and 15 K/min - both with and without climate conditioning - represent the broad performance range of test systems made by Vötsch Industrietechnik.

... and this is how tests are performed:

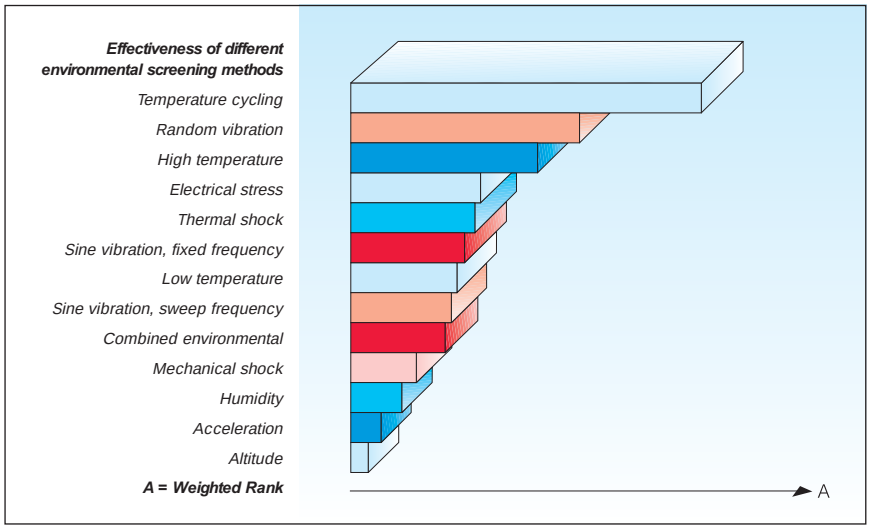
Testing of new materials, e.g. for weight reduction in the automobile industries, is part of the responsibility of the research and development department, whereas combined vibration testing as an ESS procedure (Environmental Stress Screening) is increasingly being used within manufacturing processes.

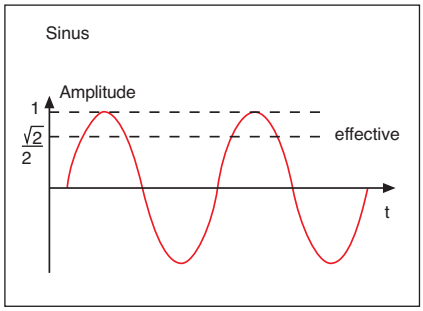
ESS testing aims at generating premature failure of products during the production stage. This actually means ESS is a procedure which is used to separate acceptable from inferior parts.

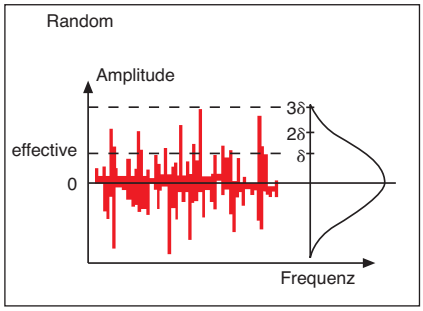


Effectiveness of thermal cycles and of high temperature storage for preconditioning of circuit boards

A = Effectiveness, B = Thermal cycles, C = High temperature storage, Z = Cycles, t = Time
Δt = Increased temperature to max. temperature for use







It is also possible to implement sinusoidal waves and random noise both horizontally as well as vertically in combination with temperature and climatic testing.

Both temperature and climate influence the vibration behaviour of materials. For this reason, constant as well as cyclically changing temperatures and climates are important during vibration testing.

Unambiguous ambient conditions during testing with sine excitations, noise, sine on noise or even shock testing lead to solid results considerably faster.

Vibration test systems by Vötsch Industrietechnik are characterized by well thought-out constructions and straight industrial design.

The proven results obtained from the temperature and climate test systems form the basis for our high quality standard.

Practical use with lots of possibilities ...

Optimum integration of various vibration systems thanks to modular chamber design

On the basis of the stress screening systems for temperature and humidity, Vötsch Industrietechnik offers a large number of standardized test systems for dynamic loads.

For supplying/measuring connection to your modules/devices thermally decoupled entry ports fitted into the chamber side walls can be utilized.

The test chamber with its vapour-tight welded stainless steel container can be turned into a fully functional climatic test chamber with the help of exchangeable floor elements.

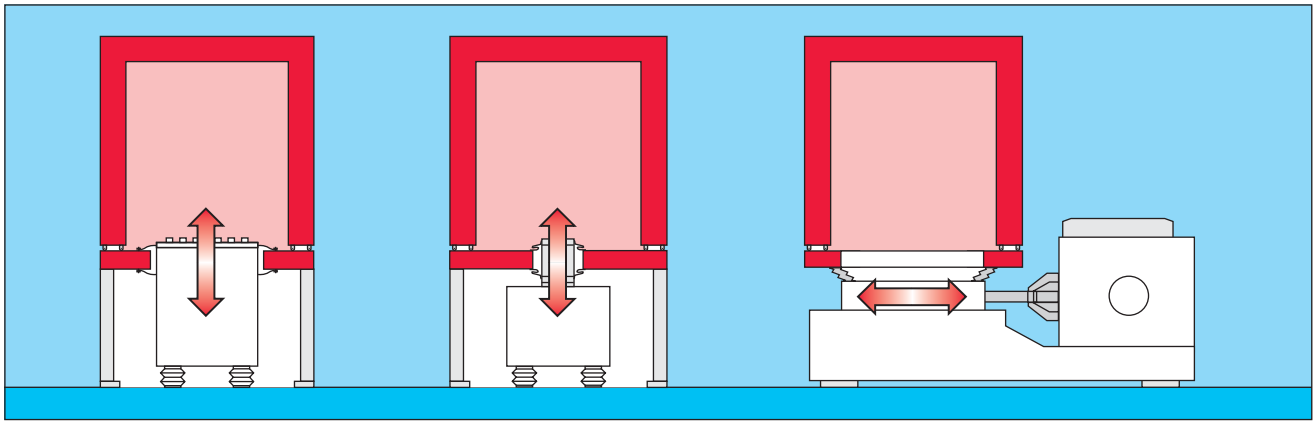
The design of our special seals for doors, floor elements and vibrator ducts are based on decades of experience.

The optimized airflow, which has been specially developed for this application, ensures rapid temperature cycles and a high heat compensation.

This ensures consistent temperature conditioning for the specimen along with minimum deviations in temperature distribution.

Important features:

- Modular construction creates ideal conditions for easy handling.
- Modular system in both size and capacity.



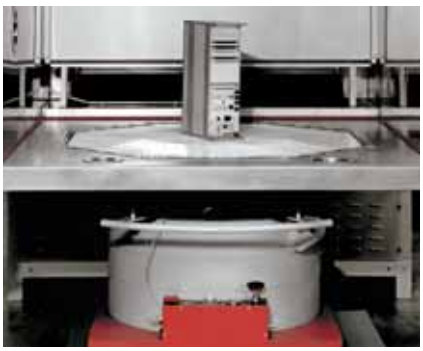
Various technological solutions for individual tasks

Regardless of whether your application requires mechanical, hydraulic or electro-dynamic vibration systems, we can integrate products by all renowned vibrator manufacturers.

In order to ensure trouble-free adaptation of the test chamber to the shaker, the test chamber is adjusted to the respective height of the shaker.

Subsequent adjustment to different heights at the customer's premises is possible without any problem.

The self-supporting test chambers offer the advantage of free accessibility. There is no obstructing metal frame which might hamper the execution of the work activities necessary in the working range.



Communicating and documenting on the highest level

A powerful 32-bit control system (SIMCON/32*-NET) forms the basis for monitoring and controlling the test equipment.

The removable, graphics enabled colour touchpanel has a menu-guided user interface. Processes, system status information as well as other process charts are depicted by self-explanatory graphics.

Comprehensive test programmes can be developed, saved and reactivated in a safe and easy manner. All it takes is one touch and the required functions are triggered.

Of course, external control via the RS 232 interface is also possible.

The communications interface to the device contains the basic functions on / off, specimen protection (min / max), serial and parallel interface, analog and digital port for in- and output signals.

The SIMPATI* control software (optional) enables you to use your systems even more effectively. Further information is available in the SIMPATI* brochure (order no. VIT-E 10/11).

Dreams come true ...

- SIMPATI* (optional) for integrated operation and control of the systems
- Free access within the working range
- Adjustment to different vibrator heights
- Integration of all renowned vibration systems
- Ethernet Interface (optional)

An overview over the technical data ...

Vibration test systems

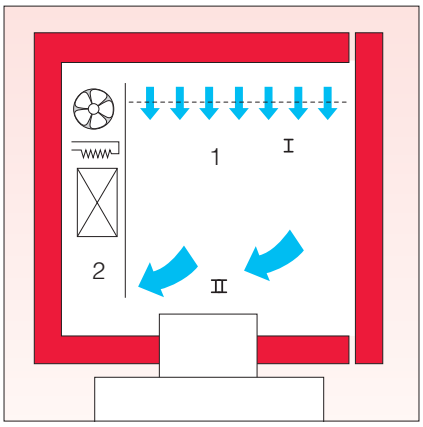
VTV & VCV 5 K/min

Type		VTV/VCV	4060-5	7060-5	4120-5	7120-5	4220-5	7220-5
Test space volume		litres	600	600	1150	1150	2160	2160
Performance for temperature tests								
Temperature range		°C	-40/+180	-70/+180	-40/+180	-70/+180	-40/+180	-70/+180
Temperature deviation in time		K	±0.1 to ±0.5				±0.1 to ±0.8	
Temperature deviation in space		K	±0.5 to ±2.0					
Temperature gradient [1]		K	1 to 4					
Temperature rate of change [1]	Cooling	K/min	5.5	5.0	5.5	4.5	6.5	6.0
	Heating	K/min	5.0	5.0	5.5	5.5	6.0	6.0
Heat compensation	at +20 °C	W	5000	5000	5000	5000	5000	5000
	at -20 °C	W	2000	5000	2000	5000	2000	5000
Temperature calibration values			+23 °C and +80 °C					
Performance for climatic tests			**only VCV**					
Temperature range		°C	+10 to +95					
Temperature deviation in time		K	±0.1 to ±0.3					
Temperature deviation in space		K	±0.5 to ±1.0					
Temperature gradient [1]		K	1 to 2					
Humidity range		% RH	10 to 95					
Humidity deviation in time		% RH	±1 to ±3					
Dew point range [2]		°C	+4 to +94					
Heat compensation [3]		W	500					
Climatic calibration values			+23 °C / 50 % RH and +95 °C / 50 % RH					
Test space dimensions	Width	mm	800	800	1100	1100	1400	1400
	Depth	mm	800	800	1100	1100	1400	1400
	Height	mm	950	950	950	950	1100	1100
External dimensions	Width	mm	1225	1225	1525	1525	1825	1825
	Depth	mm	2890	2890	3205	3205	3570	3570
	Height	mm	2150	2150	2150	2150	2300	2300
Free height under test space	min/max	mm	660/1380		660/1380		660/1380	
Entry port for vibrator	Ø max.	mm	710		1000		1280	
Entry port for vibrator	□ max.	mm	700/700		1000/1000		1200/1200	
Noise level - 1 m distance from the front [4]		dB(A)	68	71	75	76	76	77
Electrical connection			3/N/PE AC, 400 V ±10 %, 50 Hz					
Rated power		kW	11	14	21	24	26	34
Cooling water consumption, tw = +28 °C, Δt = 5 K		m^3/h	2.2	2.7	3.3	3.8	4.1	6.6

Performance data refer to +25 °C ambient temperature. [1] according to IEC 60068-3-5 [2] The data are valid for operation with plain floor.

A fresh breeze ...
...in vibration test systems

1 Test chamber
2 Air conditioning
I Supply air
II Return air



Perfect basic equipment ...

- Colour touchpanel
- Microprocessor monitoring and control unit SIMCON/32*-NET
- Digital I/O, potential-free
- Independent adjustable temperature limiter t_{min}/t_{max}
- Adjustable software temperature limiter min./max.
- Humidity input and display in % rel. humidity *)
- Serial interface RS 232
- Potential-free contact for switching-off of test specimens
- Water-cooled refrigeration unit
- Capacitive humidity measuring system *)
- Water supply tank for humidification water *)
- Automatic water replenishment with low water alarm *)
- Calibration of 2 temperature values
- Calibration of 2 climate values*)
- Removable floor with entry port
- 2 Entry ports Ø 50 mm and Ø 125 mm

*) only VCV

Subject to technical alterations.
Some of the illustrated systems contain optional extras.

VTV & VCV 10 K/min

VTV & VCV 15 K/min

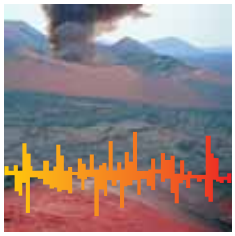
4060-10	7060-10	4120-10	7120-10	4220-10	7220-10	4060-15	7060-15	4120-15	7120-15	4220-15	7220-15
600	600	1150	1150	2160	2160	600	600	1150	1150	2160	2160
-40/+180	-70/+180	-40/+180	-70/+180	-40/+180	-70/+180	-40/+180	-70/+180	-40/+180	-70/+180	-40/+180	-70/+180
±0.1 to ±0.8						±0.1 to ±0.8					
±0.5 to ±2.0						±0.5 to ±2.0					
1 to 4						1 to 4					
12.0	10.5	11.5	10.5	11.5	11.0	17.5	14.5	17.0	14.5	16.0	15.5
9.5	9.5	12.0	11.0	10.5	10.5	15.5	16.5	16.0	16.0	15.0	15.0
8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
3000	8000	3000	8000	3000	8000	3000	8000	3000	8000	3000	8000
+23 °C and +80 °C						+23 °C and +80 °C					
only VCV						**only VCV**					
+10 to +95						+10 to +95					
±0.1 to ±0.5						±0.1 to ±0.5					
±0.5 to ±1.0						±0.5 to ±1.0					
1 to 2						1 to 2					
10 to 95						10 to 95					
±1 to ±3						±1 to ±3					
+4 to +94						+4 to +94					
500						500					
+23 °C / 50 % RH and +95 °C / 50 % RH						+23 °C / 50 % RH and +95 °C / 50 % RH					
800	800	1100	1100	1400	1400	800	800	1100	1100	1400	1400
800	800	1100	1100	1400	1400	800	800	1100	1100	1400	1400
950	950	950	950	1100	1100	950	950	950	950	1100	1100
1225	1225	1525	1525	1825	1825	1225	1225	1525	1525	1825	1825
2890	2890	3590	3590	3950	3950	2890	2890	3590	3590	3950	3950
2150	2150	2150	2150	2300	2300	2150	2150	2150	2150	2300	2300
660/1380		660/1380		660/1380		660/1380		660/1380		660/1380	
710		1000		1280		710		1000		1280	
700/700		1000/1000		1200/1200		700/700		1000/1000		1200/1200	
74	75	76	77	76	77	74	75	76	77	76	77
3/N/PE AC, 400 V ±10 %, 50 Hz						3/N/PE AC, 400 V ±10 %, 50 Hz					
16	20	24	26	35	44	20	24	30	32	54	65
3.5	4.2	6.6	6.6	8.4	8.3	6.1	6.3	8.4	8.3	10.0	10.1

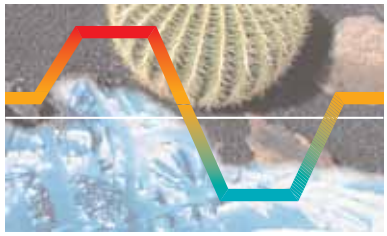
[3] At +25 °C to +90 °C, humidity up to max. 90 % RH is maintained. [4] At free field measurement according to DIN 45635, part 1, accuracy class 2.

The most important options

- S!MPATI* Software
- Vertical adjustment
- Plain floor element
- Additional floor element for horizontal or vertical vibration
- Mobile design (forward and back or left- and right-hand side)
- Adjustable circulating air quantity
- Analogue transducer card I/O
- Ethernet Interface
- Temperature measuring on test specimen
- Independent measuring sensor for temperature and humidity measuring *)
- Interface converter RS 232 ↳ RS 422/485 or IEEE 488
- Interface RS 422/485 (Network card for test cabinet)
- Printer
- GN_2 / Compressed air connection
- Compressed air dryer
- Demineralization unit *)
- Shock cooling with LN_2
- Insert shelves
- Additional entry ports
- Door with window
- Notch
- Special voltages
- Other options upon request







Almost everything is possible ...

... we plan, design and construct tailor-made solutions of any type.

Vötsch Industrietechnik

Vötsch Industrietechnik GmbH
Umweltsimulation · Wärmetechnik

Environmental Simulation

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

No. VIT-E 6/02 2C 06.07 VN - SV

Deutscher Kalibrierdienst DKD-K 19501

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