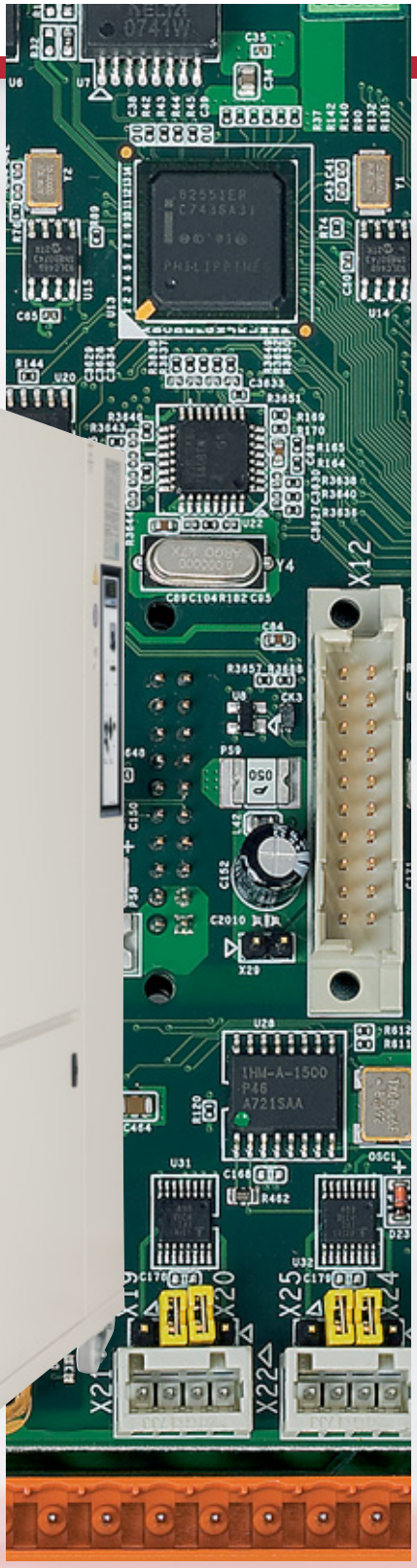
Climate in Perfection ...

Vötsch Industrietechnik



Temperature test chamber VT³
Climatic test chamber VC³

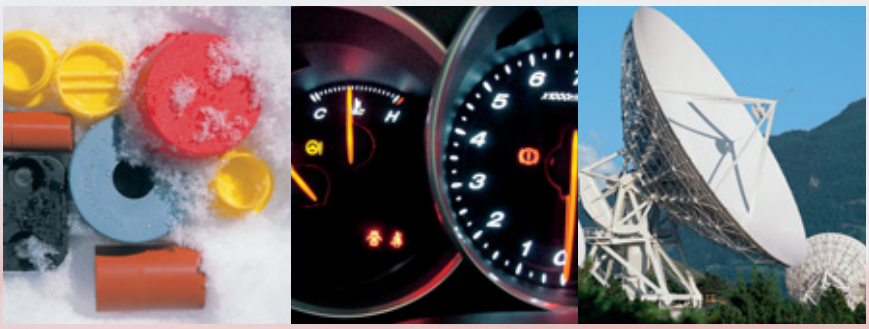
Competence in temperature and climate

Vötsch was founded in Berlin in 1929 and has produced at today's location in Balingen-Frommern since 1944.
We at Vötsch develop and build test systems for quality assurance at the state of the art of technology and taking the future into account.

With our products, we also take on responsibility for the safety and quality of products in many branches of industry. Since 1995, Vötsch has been a member of the Schunk Group. Combined know-how is the basis for trend-setting developments.

Temperature test chambers VT^3 and climatic test chambers VC^3

The impressive results of our device development convince people again and again. The temperature and climatic test chambers of series VT^3/VC^3 are an example for the engagement of engineers and designers.



Distinctive details and outstanding technical equipment are the foundation

- Highly efficient 32 bit control and monitoring system SIMPAC* with integrated measurement data recording
- CONTROLPAD* with actual value display of temperature and humidity, start/stop, on/off of the lighting, fault indication – combined with 8” or 12” touchpanel
- 8” colour touchpanel with menu-guided surface
- USB and Ethernet interface
- Remote control and remote monitoring via intranet or internet
- Autoadaptive control system with continuous self-optimisation
- Safety device for test specimens with independent temperature measurement t_{min}/t_{max}
- Outstanding spatial temperature distribution through aerodynamic air flow
- High air circulation rates for uniform temperature and humidity distribution in the test space
- Reliable test values even with high environmental temperatures
- Stainless steel entry ports
- Water tank and supply connections are easily accessible
- Low noise level

Design and equipment in detail

Stainless steel test space

Entry ports in the side wall

Humidity sensor

Access to water tank

Workmanship at the highest level

The highly polished stainless steel tank is welded vapour-tight, has no adhesive points, rounded edges and stamped supporting rails. It has proven itself resistant to corrosion and can be cleaned easily.

The entry ports through the side walls (approx. 50 mm Ø left and approx. 125 mm Ø right), such as for measuring cables, are made of stainless steel in the critical areas and are leak-proof even under extreme conditions. Slotted plugs made of tempered silicone effectively seal the openings, even with passed-through cables.

Innovative tempering system

The aerodynamic air flow results in an excellent spatial temperature distribution, and the direct tempering and climatic systems with their high efficiency ensure that the energy used is completely converted into test performance.

The tempering systems offer high change speeds in the range of -75 to +180 °C. High air circulation rates ensure uniform temperature and humidity distribution in the test space while complying with common temperature and climatic test standards.

Exact measurements

The robust psychrometric system for humidity measuring has a continuously wetted, easily accessible humidity sensor. This type of wetting results in self-cleaning of the sensor and so to an enormous extension of its operating life, i.e. the sensor cannot dry out. Other humidity measuring systems are possible as options.

Optimal handling

All supply connections are easily accessible and centrally arranged. The water tank can be filled easily and without problems. The separate electrical compartment can be easily reached and is therefore very easy to maintain.

Environmentally conscious design

We are convinced that our environment should be burdened as little as possible. This attitude shows up in design and production with a solvent-free powder-coating, an asbestos- and CFC-free mineral-fibre insulation, chloride-free refrigerant and a guaranteed recycling system.
An essential element of the climatic system is the humidification bath. This technology guarantees economical water consumption, quick reaction times and high long-term stability.

Operation and documentation

Easy operation

The VT3 and VC3 are equipped standard with an 8” colour touchpanel. In addition, an easily readable CONTROLPAD* is integrated into the door. The CONTROLPAD* allows to start and stop test cycles, and to display actual values for temperature and humidity. With the integrated process visualisation, the device function is explained in a way that is easy to understand.

Numerous ways of networking

Control is governed by the 32-bit-I/O system with integrated soft-PLC. A webserver can place test and diagnostic information into the intranet via Ethernet, if desired. The devices can be reached and operated from almost any place in the world. All it takes is network access to the device's webserver in the intranet or in the internet, if activated accordingly.

Standard interfaces are Ethernet 100/10 megabit and USB for external storage of measurement data on a USB stick. Four potential-free outputs and four inputs (24 V DC) are available for test specimen control.

8” colour touchpanel + CONTROLPAD* / standard

Fully developed software

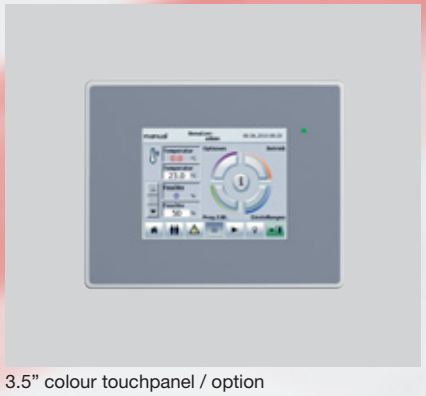
With the optionally available SIMPATI* software, you have the optimal system for operation and control of the test system. The software not only permits evaluation and documentation of the test sequences, but also allows problem-free integration of the system into a PC network. Archiving of the data and parameters is always ensured with the SIMPATI* software.

Alternatively equipped with 12” or 3.5” Panel

As an alternative, the test chamber can be equipped with a 12” colour touchpanel. The 12” panel contains an industrial PC including the Windows software package SIMCONTROL*, which transforms the test chamber into a pure communication marvel. Simulation programs and test results are stored on the integrated hard disk and can be easily exchanged via USB interface. All test information can be called up by touch. Tests can be programmed without complication using a graphic editor.

In an additional option, the device can be equipped with a 3.5” colour touchpanel. The panel is integrated in the door in place of the CONTROLPAD* and is delivered with the SIMPATI* program tool for simple control of the test chamber. The 3.5” colour touchpanel thus ensures optimal operation of the system at a favourable price.

12” colour touchpanel + CONTROLPAD* / option


3.5” colour touchpanel / option

Basic equipment

Main switch, test specimen protection and interfaces

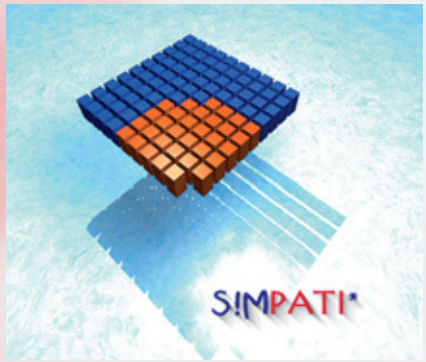
VT³ Temperature test chamber

- Powerful 32 bit control and monitoring system S!MPAC*
- 8” colour touchpanel
- CONTROLPAD* in the door
- Digital I/O
- Potential-free contact for switching off of test specimen
- USB and Ethernet interface
- Adjustable software temperature limiter min./max.
- Independent, adjustable temperature limiter t_{min}/t_{max}
- Dehumidification during heating cycle
- Entry ports made of stainless steel 1 x approx. 50 mm Ø, 1 x approx. 125 mm Ø with slotted plug made of foam-silicone and complete silicone plug
- 1 shelf made of stainless steel
- Air-cooled refrigeration unit
- WKD calibration of 2 temperature values

VC³ Climatic test chamber additional

- Psychrometer, continuously wetted and self-cleaning
- Connection for automatic water supply
- Cyclic water exchange guarantees constant quality of humidification water
- WKD calibration of 2 climatic values

Options



Control software

VT³ Temperature test chamber

- 3.5” colour touchpanel with S!MPATI* program tool/CONTROLPAD* omitted
- 12” colour touchpanel with industrial PC and software S!MCONTROL*
- Software S!MPATI*
- Interface RS 232
- Interface RS 232/485 or RS 232/IEEE 488
- Interface RS 485/422
- Analogue transducer card I/O (for 4 Pt100 sensors)
- Additional digital I/O
- Temperature measurement on the test specimen
- Temperature control on the test specimen
- Independent sensors for temperature measurement
- Adjustable circulating air quantity (adjustable fan speed)
- Fresh air for keeping the air in the test space clean
- Door with large observation window and optimised test space lighting
- Mobile design
- Additional entry ports approx. 50, 80 and 125 mm Ø
- Additional shelves
- Lead-through pad or notch
- Water-cooled refrigeration unit
- Printers
- Special voltages
- Spatial WKD or DKD calibration

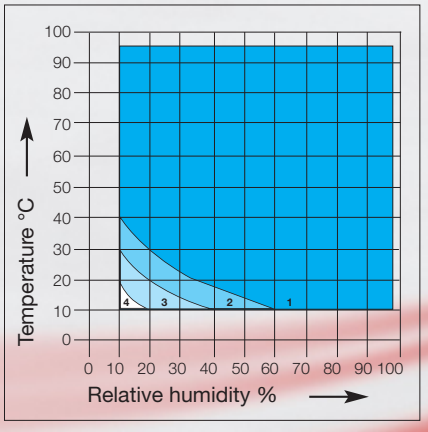
VC³ Climatic test chamber additional

- Independent sensors for temperature and humidity measurement
- Humidity control via capacitive humidity measuring system
- Deep dehumidification for negative dew points
- Demineralization unit

Subject to technical changes. Some devices are illustrated with options.

Temperature Test Chambers		**Type**	**VT3**	**VT3**	**VT3**	**VT3**	**VT3**	**VT3**	**VT3**	**VT3**	**VT3**	**VT3**
Climatic Test Chambers		**Type**	**VC3**	**VC3**	**VC3**	**VC3**	**VC3**	**VC3**	**VC3**	**VC3**	**VC3**	**VC3**
			4018	7018	4034	7034	4060	7060	4100	7100	4150	7150
Test space volume		litres	190	190	335	335	600	600	990	990	1540	1540
Performance for temperature tests												
Temperature range		°C	-42 +180	-72 +180	-42 +180	-72 +180	-45 +180	-75 +180	-45 +180	-75 +180	-45 +180	-75 +180
Temperature deviation in time [1]		K	±0.1 to ±0.5									
Temperature homogeneity in space, relative to the set value [2]		K	±0.5 to ±1.5									
Temperature rate of change [3]	Cooling	K/min	4.0	3.0	4.0	3.0	3.0	2.5	3.0	2.5	2.5	2.3
	Heating	K/min	4.0	4.0	3.2	3.0	4.0	4.0	4.0	4.0	3.5	3.5
	linear [8]	K/min	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Heat compensation max.		W	2300	1500	2300	1500	2500	2500	4500	3000	4200	3000
Temperature calibration values			+23 °C and +80 °C									
Performance for climatic tests – only VC3			(see diagram)									
Temperature range		°C	+10 to +95									
Temperature deviation in time [1]		K	±0.1 to ±0.3									
Temperature homogeneity in space, relative to the set value [4]		K	±0.5 to ±1.0									
Humidity range		%	10 to 98									
Dew point temperature range		°C	+4 (-3 °C [7]) to +94									
Humidity deviation in time [1]		%	±1 to ±3									
Heat compensation max. [5]		W	400	400	400	400	500	500	500	500	500	500
Climatic calibration values			+23 °C / 50 % RH and +95 °C / 50 % RH									
Test space dimensions	Width	mm	580	580	580	580	800	800	1100	1100	1100	1100
	Depth	mm	450	450	765	765	800	800	950	950	1475	1475
	Height	mm	750	750	750	750	950	950	950	950	950	950
Overall dimensions	Width	mm	870	870	870	870	1090	1090	1390	1390	1390	1390
(Can be reduced by	Depth	mm	1550	1550	1860	1860	1960	1960	2155	2155	2680	2680
dismounting of components)	Height	mm	1800	1800	1800	1800	1995	1995	1995	1995	1995	1995
Electrical connection			3/N/PE AC, 400 V ±10 %, 50 Hz – other special voltages as option									
Rated power		kW	4.1	4.9	4.1	4.9	7.8	9.1	11.5	13.8	11.5	13.8
Noise level [6]		dB (A)	56	57	56	57	61	62	62	63	62	63
Weight, approx.		kg	470	540	515	585	620	680	840	955	1020	1130

The performance values refer to +25 °C ambient temperature.
[1] in centre of test space [2] in temperature range t_{min} to +150 °C [3] in accordance with IEC 60068-3-5 [4] for humidity values > 20 % RH [5] in the range of +25 °C to +95 °C and to max. 90 % RH [6] measured in 1 m distance from the front and in 1.6 m height at free field measurement acc. to EN ISO 11201 [7] discontinuous operation [8] between +125 °C and -25 °C for types VT3/VC3 40.., between +125 °C and -40 °C for types VT3/VC3 70.. .



Humidity graphs

1 Standard range
2 Dewpoint range +4 °C to -3 °C discontinuously
3 Dewpoint extension from -3 °C to -12 °C controlled (Option compressed air dryer)
4 Dewpoint extension to -20 °C controlled (Option compressed air dryer and capacitive system)

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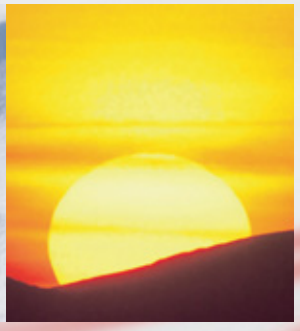

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