

Emissions ...

Vötsch
Industrietechnik



VCE Emission Test Chambers

to Characterize Volatile Organic Compounds - VOC

Environmental test equipment to characterize ...

Materials can be affected by environmental influences. However, under these influences, the materials can be harmful to the environment also, e.g. by emissions from the materials into the air.

These emissions are particularly relevant in closed rooms. They can affect other available materials and of course also human beings.

The relevant factors and their effect on the emission behaviour of materials in connection with suitable measuring methods can be used to evaluate emission together with the Vötsch chamber.

Analytical investigations, system calibration and olfactometric studies are possible with suitable measuring equipment.

Volatile organic compounds (**VOC**) from indoor materials and products are determined under practical conditions.

Scientific measurement and product testing aimed to limit organic emissions indoors, for the purpose of improved consumer protection, can be evaluated.

Exposure to indoor air pollution caused by volatile organic compounds (**VOC**) must be further reduced resp. indoor air quality improved - for several reasons:

- An increased use of polymer hydrocarbon compounds in indoor materials and products results in a growing number of emitting sources
- Energy saving insulation reduces the ventilation rates in buildings which leads to an accumulation of pollutants indoors
- Reduction of the environmental pollution of technical devices (greenhouse effect, ozone layer depletion)



- Increased sensibility of the human organism to the influence of minute concentrations
- Modern people spend about 90 % of their time indoors

Requirements/fulfilment

The technical requirements of the environmental test equipment were defined by specialists from industry and science and then successfully put into practice:

- A test equipment with a low emission (purity in molecular range)
- Excluding contaminations from the vicinity
- Particle measurement
- Minimizing adsorption effects
- High desorption temperatures (> 200 °C)

- High parameter accuracy
- Ventilation
- Tests with and without air exchange
- Standard analytical equipment can be used
- Networking and documentation possible

Two emission test chambers with standard test space sizes of 200 and 1000 litres are available. An ideal practically oriented solution.

Special sizes on request.



Possible fields of application

Testing of all consumer products and materials indoors, passenger cars, electronic equipment, varnish, dyes, modern objects of utility and all types of clothing.

Following investigations can be conducted with suitable measuring equipment

- Qualitative analysis
- Quantitative analysis
- Adsorption effects analysis of the walls
- Recovery rates analysis
- System calibration
- Olfactometry

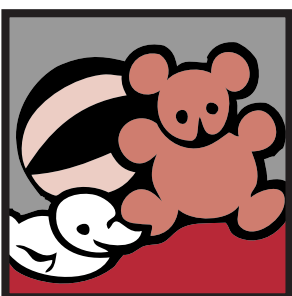
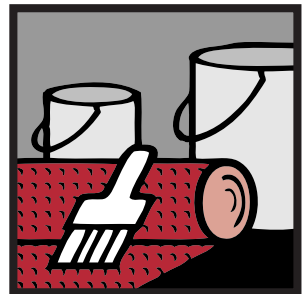
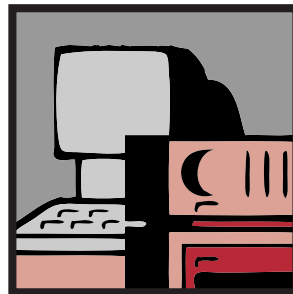
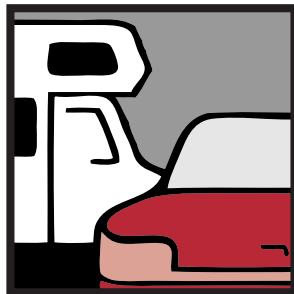
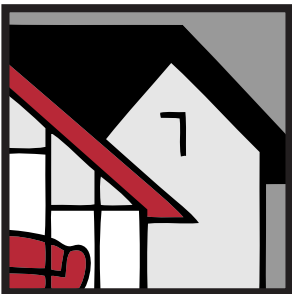
Application in many branches ...

- Test houses and research
- Automotive industry
- Electronics industry
- Aviation and space industries
- Plastic processing industries
- Clothing industry, manufactures of sports articles
- Chemical industry
- Paints and coatings
- Building material industry



Extract of trade specific test standards / test methods

- **Automotive industry**
e.g. VDA 276, GS 97014-2 ...
- **Building materials, interior fitting items, furniture**
e.g. ISO 16000-9 ...
- **Building products, furnishings**
e.g. prEN 13419-1 ...
- **Electric devices, electronic equipment, HiFi, TV, Video, DVD, ...**
e.g. ECMA-328 ...
- **Floor coverings, interior fittings, furnishings**
e.g. prEN 15052, GEV ...
- **Wood-based products**
e.g. ASTM D ...
- **Interior fitting, furnishing**
e.g. ASTM D ...



Basic equipment

- Test space stainless steel, electro polished and pressure proof to ± 10 mbar
 - Air-jacket conditioning
 - Carrier gas conditioning for climate
 - Carrier gas massflow control via massflow controller
 - Desorption and rinsing procedure
 - Special ventilation with a dry mounted magnetic clutch
 - Connection for discharging quantities of gas for analysis
 - Entry port septum
 - Water storage container (humidification water) of stainless steel with automatic water replenishment
 - Microprocessor control and monitoring system
 - Colour touchpanel
- Options and user-specific solutions on request.

Technical Data

Type		VCE 200	VCE 1000
Test space volume (useful)	l	240 (208)	1000 (916)
Carrier gas		purified compressed air, on-site	
Performance range for temperature testing			
Conditioning		air jacket principle	
Temperature range	°C	+20 to +130	
Temperature deviation in time ¹⁾	K	± 0.1 to ± 0.3	
Temperature homogeneity in space ²⁾	K	± 0.5	
Temperature rate of change ³⁾			
Cooling	K/min	0.3	0.3
Heating	K/min	1.0	0.4
Performance range for climate testing			
Conditioning		Carrier gas conditioning with climatic modul with evaporation system	
Temperature range	°C	+20 to +130	
Humidity range	%	5 to 95	
Dew point range	°C	+5 to +60	
Humidity deviation in time	%	± 1 to ± 3	
Carrier gas exchange rate		0.1 to 1.8 chamber volume per hour	
Conditions of carrier gas		min. +10 °C / 50 % RH max. +32 °C / 80 % RH	
Performance range for desorption			
Temperature of desorption		up to max. +240 °C, adjustable	
Test space surface temperature		between +220 °C and +240 °C	
Rinsing procedure		max. 4 m ³ /h	
Dimensions test space	Width	mm	610
	Depth	mm	610
	Height	mm	560
Test space door	mm	530 x 520	670 x 670
External dimensions	Width	mm	1250
	Depth	mm	1700
	Height	mm	2350
Sound pressure level ⁴⁾	dB(A)	61	63
Rated power	kW	9,0	10,0
Electrical connection		3/N/PE AC 400 V ± 10 %, 50 Hz	

Admissible ambient conditions: temperature +15 °C to +35 °C, humidity max. 75 %, max. dew point +20 °C - ¹⁾ measured in the middle of test space, ²⁾ relative to the set value, ³⁾ in accordance with IEC 60068-3-5, ⁴⁾ measured 1 m distance from the front and in 1.6 m height at free field measurement according to EN ISO 11201.

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

Comfortable, user-friendly operation ...

Computer Integrated Control

Our test chambers are equipped with an integrated industrial computer system with a 8" colour touchpanel to facilitate operation, monitoring and documentation.

Control is governed by the 32 Bit I/O system with integrated soft PLC. A web server can place test and diagnosis information in the intranet via Ethernet if desired.

Online-Service

The units have an online service function, enabling our specialists to establish an online data link to the unit via internet or mobile telephone. The online link provides our experts with all the data they require.

Remote control and monitoring

Safe operation of the overall system requires the test cabinet to be reliably integrated. Enables, warning messages and fault signals are defined in a safety matrix with the customer and the safety officers.

Units can be reached and controlled from practically anywhere in the world by simply accessing the unit webserver in the intranet via the network or enabling in the internet.

Networking

Compatible with SIMPATI* software package

Technical Data

- Touch screen 800 x 600 pixel
- Multilingual software

Interfaces

- Ethernet 100/10 megabit
- RS 232 (Option)
- USB for stick

Customer inputs/outputs

- 4 potential-free outputs for test specimen control
- 4 inputs (24 V DC)

Options

Additional measuring technology

- Independent temperature and humidity measuring

USB-Stick

- For external saving of measuring data

SIMPATI*

Our software SIMPATI* dictates the optional operating parameters for system and test samples. This software, just like known Windows standards, can also be integrated into networks.

Operation of the test system is simple and time-saving. Integrated monitoring routines makes for more reliable system operation. The evaluation and documentation of test cycles as well as the integration of special measuring data guarantees a higher quality standard.



VCE 200

Ascertaining volatile organic emissions **VOC**
from small assemblies, samples, etc.
for interior components of motor vehicles

Test space volume 200 litre
Temperature range +20 °C to +130 °C
Humidity range 30 to 95 % RH
Desorption +240 °C

including equipment package to
'Test methods' Automotive

- Globe valve
- Reinforced test space container ± 0.1 bar
- Optimized cooling and heating performance
- Volume compensation Tedlar-bag
- FID measuring gas extraction / feed back
- Adjustable circulating air quantity



VCE 1000 classic

Ascertaining volatile organic emissions **VOC**
from interior components of motor vehicles,
door coverings, dashboards, head covering

Test space volume 1000 litre
Temperature range +20 °C to +130 °C
Humidity range 30 to 95 % RH
Desorption +240 °C

including equipment package to
'Test methods' Automotive

- Globe valve
- Reinforced test space container ± 0.1 bar
- Optimized cooling and heating performance
- Volume compensation Tedlar-Bag
- FID measuring gas extraction / feed back
- Adjustable circulating air quantity



Examples for application ...



VCE 1000/S

Ascertaining volatile organic emissions **VOC** from interior components of motor vehicles

Test space volume approx. 1000 litre
Temperature range +20 °C to +130 °C
Humidity range 30 to 95 % RH
Desorption +240 °C

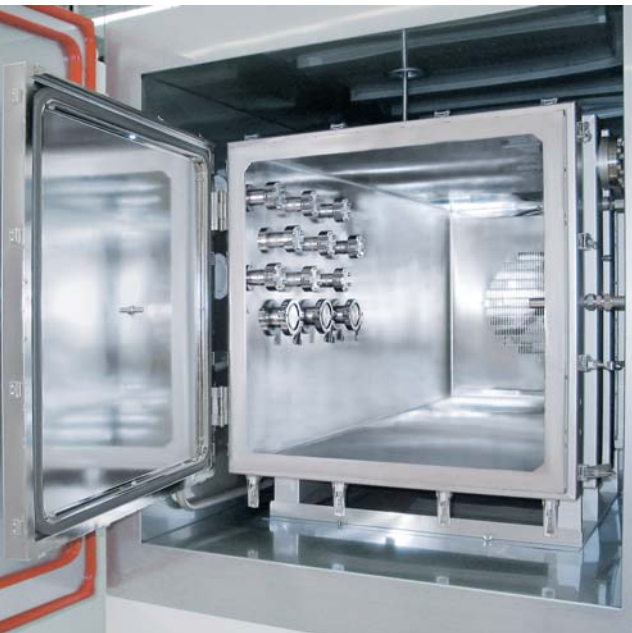
including equipment package to
'Test methods' Automotive

- Globe valve
- Reinforced test space container ± 0.1 bar
- Optimized cooling and heating performance
- Volume compensation Tedlar-Bag
- FID measuring gas extraction / feed back
- Adjustable circulating air quantity

and additional

Emission analysis of energy storages,
accumulators, ...

- Highly modified test space container with special entry ports
- Connection to energy storage tester
- Customised „Safety device“ energy storage



Further additional accessories

- Distribution system for taking samples
- Adjustable circulating air quantity
- Measuring sensor for humidity measurement
- Emission-free port hole with external located socket

VCE 5000/S

Ascertaining volatile organic emissions **VOC** from motor compartment of a motor vehicle

Test space volume approx. 5000 litre
Temperature range +20°C / +130 °C
Humidity range 30 to 95 % RH
Desorption +240 °C

including equipment package to
'Test methods' Automotive

- Globe valve
- Reinforced test space container ± 0.1 bar
- Optimized cooling and heating performance
- Volume compensation Tedlar-Bag
- FID measuring gas extraction / feed back
- Adjustable circulating air quantity

and additional

Ascertaining **VOC** from motor compartment, complete engine block with gearing (and tank)

- Safety device for avoiding an explosion
- Safety concept with external sensors
- UEL-monitoring for air jacket system
- Measuring sensor with intrinsically safe measuring circuit

Further additional accessories

- Insert cabinet with reinforced floor load 850 kg
- Distribution system for taking samples
- Equipment for uninterrupted power supply



Examples for application ...

VCE 8000/S

Ascertaining **VOC** from interior equipment (furniture, office equipment) and electric / electronic equipment of a bureau (printer, PC, ...)

Test space volume approx. 8000 litre
Temperature range +20 °C to +130 °C
Humidity range 30 to 95 % RH
Desorption +240 °C



including
equipment package to

Building materials ISO 16000-9
Electric devices ECMA

- Increased carrier gas exchange rate
- Carrier gas conditioning with multi-stage filter unit
- Equipment for ozone, particle and very fine particle measuring



Emission Test Chambers for Euro VI and better



The introduction of the Euro VI and Euro V emission regulations require stringent tests of vehicle emissions.

The temperature and climatic controlled SHED chambers from Vötsch comply with the latest

European and US standards. Protecting your investment now and in the future ...



SHED chambers for any application

RL-SHED to determine the fuel emission of a vehicle while driving.

ORVR-SHED to determine the fuel emission while refuelling a vehicle.

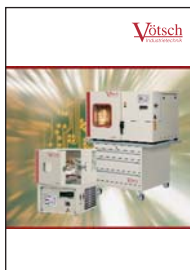
VT-SHED in accordance with regulations such as CARB, EPA and EU.

These chambers are hermetically sealed and use volume compensation bags to accommodate tests at various temperatures without pressure equalisation respective to the atmosphere.

Further detailed brochures ...



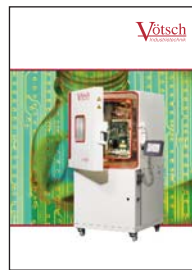
Image Brochure
Vötsch



Minis ...
VT & VTM ...



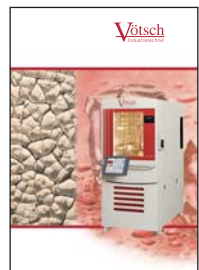
VT 3050
Temperature



Laboratory Scope ...
VT 4011 - VT 7021



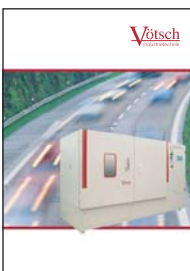
VTL & VCL Equip-
ment for Laboratories



VT³ & VC³
Reproducible Climate



Constant Climates
VC³ 0...



XXL Systems for
High Quality



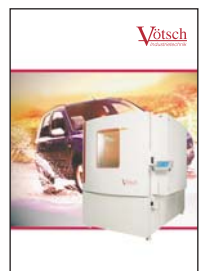
High Speed ...
Stress VTS & VCS



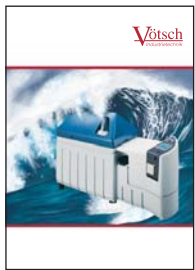
Vibration and more
VTV & VCV



Lightning Speed ...
Shocktest Chambers



Splash Water
System VT 0800/S



Corrosion
Salt spray



Air Pollution
& Emission



VLM Cabinet
VBT Cabinet



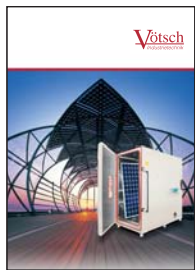
Walk-In
Chambers



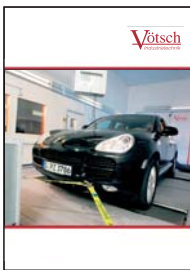
Guaranteed Safety
DKD / Calibration



Communication ...
Software SIMPATI*



Solar technology
in endurance testing



Testing Solutions for
Automotive Industry



EMC Minis
VT 4002 EMC

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

VIT-E 9/7 0M 03.10 N VIT



www.dkd-temperatur-feuchte.de