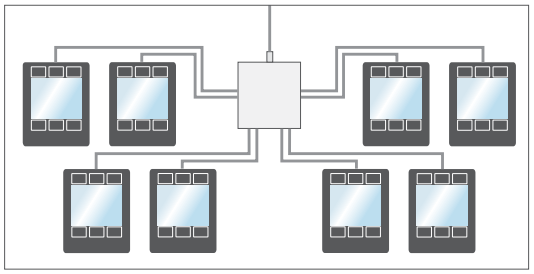
Advanced in vitro exposure systems



Product News

2019

VITROCELL® SYSTEMS

VITROCELL® VC 1 S-TYPE Smoking Machine / Vapestarter Rack

Manual smoking machine for chemical analysis and *in vitro* experiments

Configuration: chemical analysis „e-cigarettes / NGPs“

1 Control Box with Syringe Drive
2 Filter Holders
3 Examples of e-cigarettes
4 Integrated Button Actuators

This new Smoking Machine uses proven technologies from the Automated Smoking Robot VC 10 S-TYPE and the manual Smoking Machine VC 1.

Up to 5 e-cigarettes, NGP's and conventional cigarettes can be tested for chemical analysis under ISO, Health Canada or CRM81 smoking regimes.

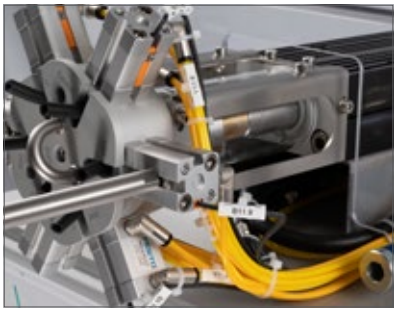
In the ***in vitro*** configuration 4 test articles of the same specification can be smoked under ISO and 2 under Health Canada or CRM81 smoking regimes.

Change parts and very easy cleaning assure no cross-contamination in product change. Small dead volumes make the machine an ideal testing tool.

The test articles are mounted in the Vapestarter Rack. This versatile unit allows for a safe fixation of all kinds of electronic cigarettes. The angle of use can be individually adjusted between 0 and 90°. Integrated button actuators for all geometries of devices are linked to the VC 1 S-TYPE software for a precise syncronisation according to the smoking regime. Cambridge filters in all available sizes can be fitted.

Vapestarter Rack with button actuators

Holder system for Cambridge filter housings



Powerful syringe drive by linear motor

Standardized holder system for ENDS products

VITROCELL® Powder Atomizer

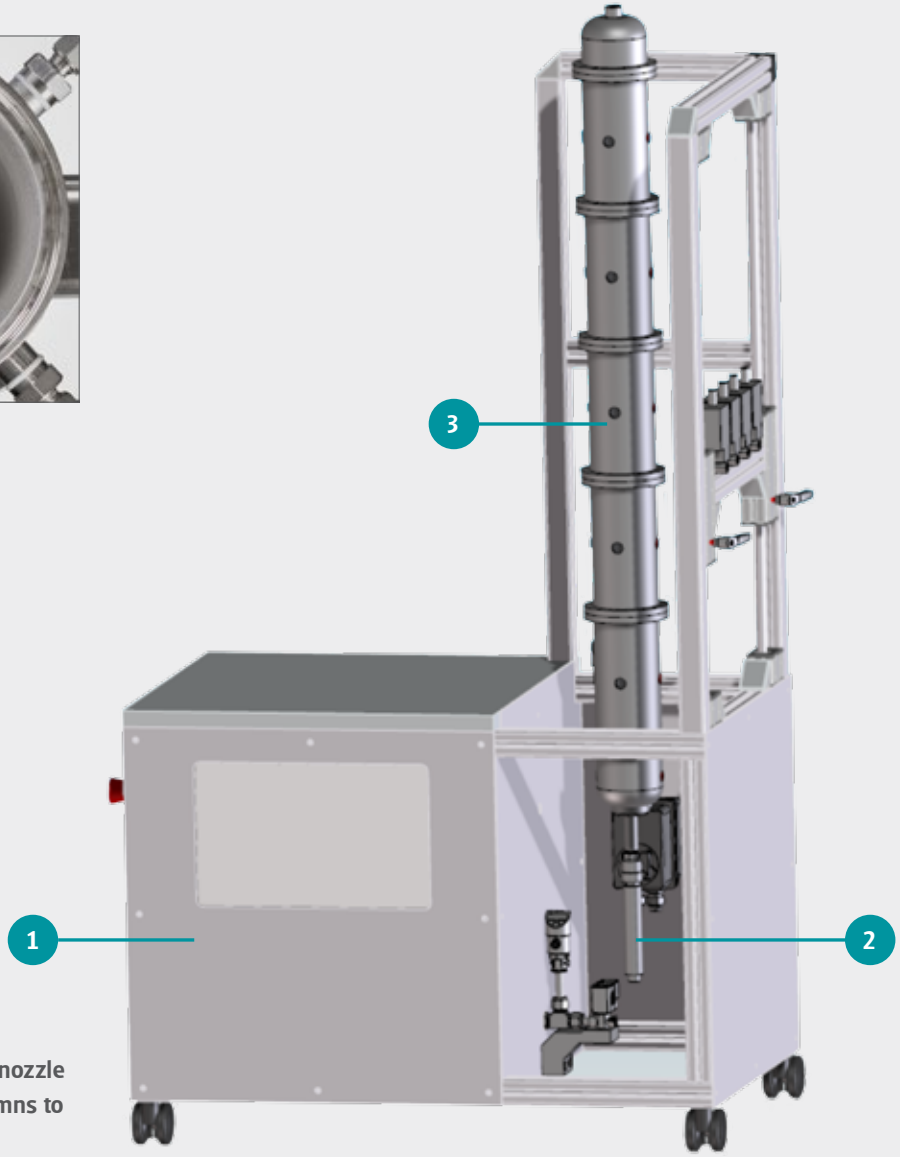
Aerosolisation of dry powders

This joint development with the University of Zaragoza / Spain addresses the need for controlled aerosolisation of small quantities of dry powder with an efficient deagglomeration.

The Powder Atomizer is able to disperse a wide range of different particles to controlled concentrations. The produced aerosol with particles in the nano-range is available up to several hours.

This computer-controlled system can be modified with variable multi-stage columns for different volumes of aerosol.

4-fold sampling system

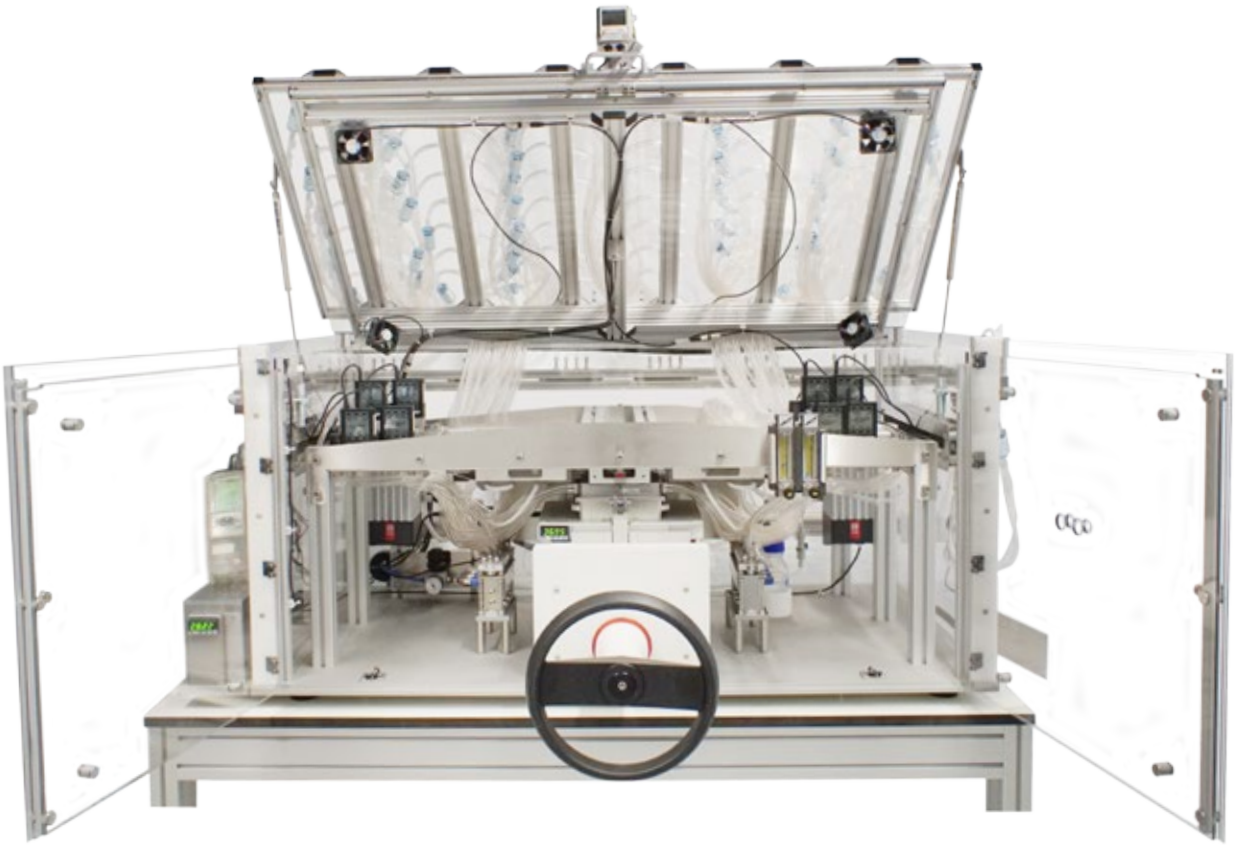


1 Pneumatic controls
2 Powder reservoir with jet nozzle
3 Variable, multi-stage columns to modify aerosol volume

VITROCELL® SYSTEMS

VITROCELL® 24/48

Extended Climatic Chamber



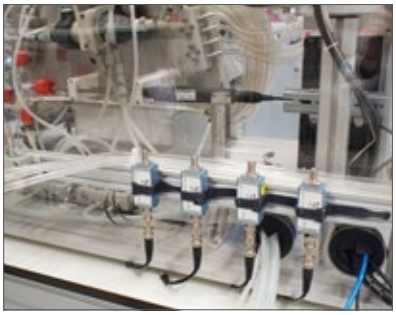
VITROCELL® 24/48

The new generation of Climatic Chambers is enlarged to accomodate all required components for the operation of the VITROCELL® 24/48 System.

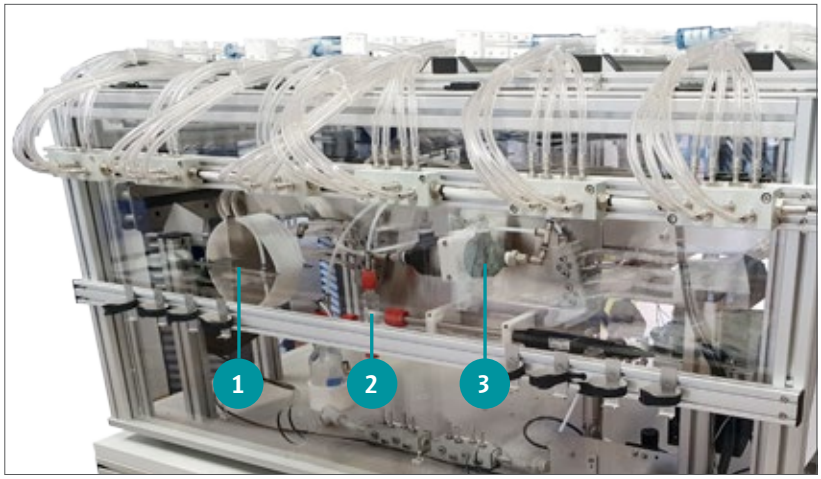
More space faciltates the handling of dosimetry tools inside the chamber.

The extended version features an integrated humidification system with pre-heating of dilution air. The flow controllers are moved to the inside of the chamber for constant temperature and increased humidity output.

Integrated supports for flow controllers



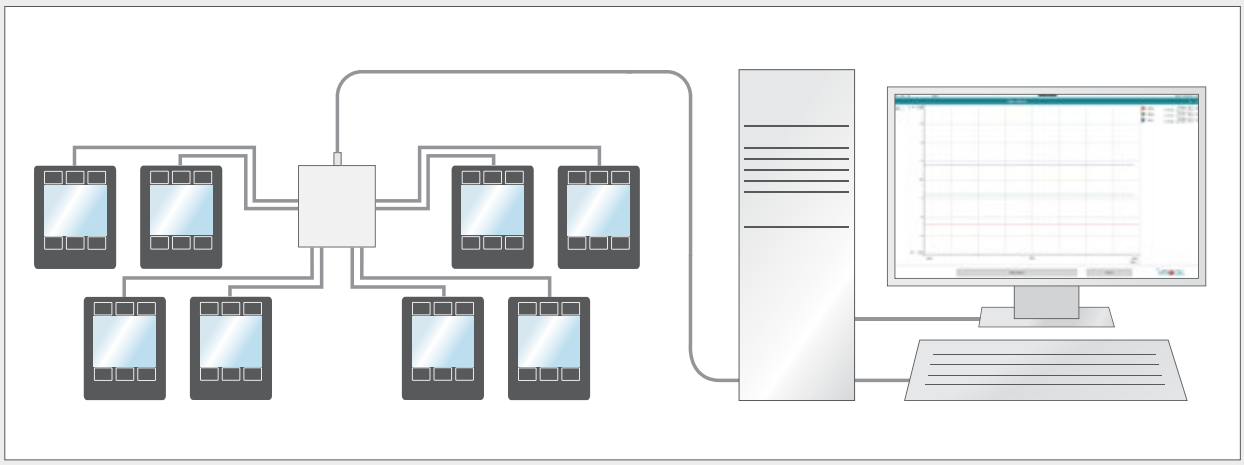
Holders for oscillators of microbalances



1 Pre-heating of air
2 Temp./RH sensor
3 Humidifier

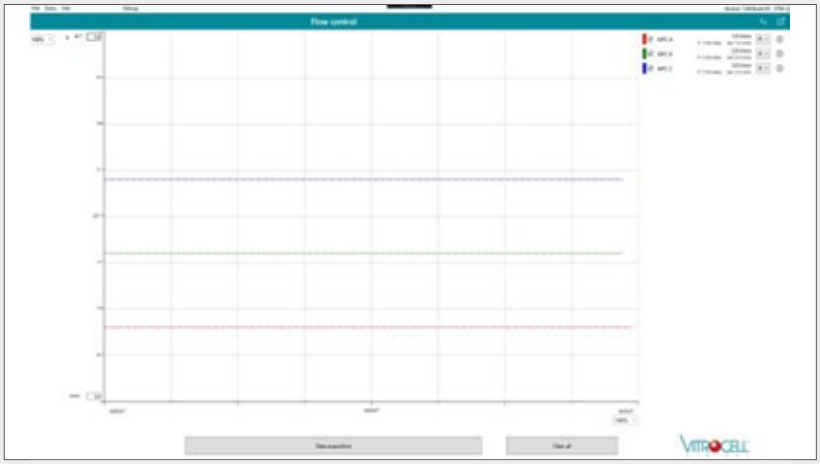
VITROCELL® Flow Control Software

Setting and monitoring of dilution air flows



In previous installations flow controllers had to be set manually. With the integration of the controllers into the VITROCELL® Monitor Software setting of target flows and reporting of actual flows is made easy.

Existing installations can be supplied with cable sets, distribution hub and a plug-in for the Monitor Software.



VITROCELL® SYSTEMS

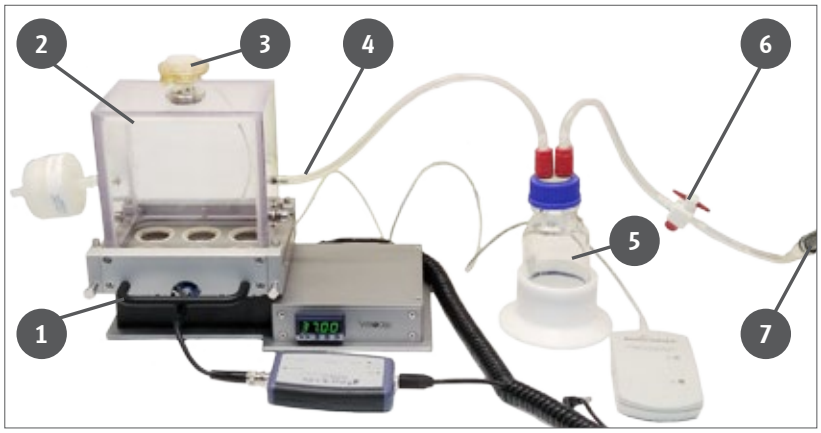
VITROCELL® Cloud PowerVent

Evacuation of residual gaseous compounds

This new member of the Cloud family is designed for the work with hazardous compounds.

The Cloud exposure top is connected airtight to the base module.

After nebulisation and sedimentation, the vacuum pump is activated and potentially remaining gaseous substances are evacuated.



1 **Locking mechanism for airtight sealing**
2 **Exposure top**
3 **Nebulizer**
4 **Evacuation tubing**
5 **Liquid trap**
6 **Valve**
7 **To vacuum pump**

VITROCELL® Cloud MAX

Smallest nebulization volumes and high deposition efficiency

The VITROCELL® Cloud MAX is designed for lower nebulization volumes and very high deposition efficiency.

This is important when only small quantities of material are available or when expensive test substances need to be tested.

The non-cell exposed area is reduced significantly by direct nebulization into exposure chambers with reduced chamber volume.

A set of 3 nebulizers allows for simultaneous testing of 3 concentrations, or a combination of Microblance, control liquid and suspension of the test substance.

3 positions can be exposed while 3 positions are prepared

Different chamber volumes available

Set of 3 nebulizers

VITROCELL® Holder System for e-cigarettes

Secure and tight connection of any puff-actuated device to Smoking Machine

New designs of ENDS (Electronic Nicotine Delivery Systems) products lead to a large variety of different shapes which make the insertion into conventional holders with labyrinth seals impossible. Different custom-made holders exist - including the use of silicone tubing which is pushed onto the mouth piece.

These solutions bring the risk that aerosol flows are not entirely comparable from machine to machine. VITROCELL® has developed a new holder system which is flexible to adjust to different shapes. It is compatible with all VITROCELL® Smoking Machines & Robots.

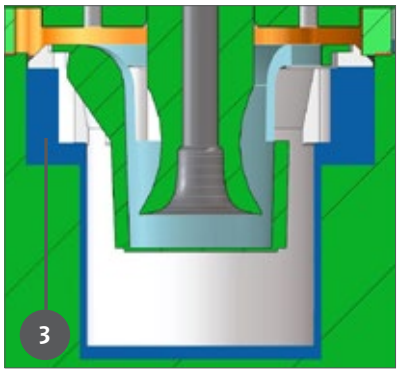
In most cases the exchange of the inner sealing is sufficient to adjust for a specific shape.

Media Inserts for VITROCELL® Exposure Modules 6 & 12 Series

Easier maintenance

VITROCELL® 6 & 12 modules are equipped with media exchange channels which allow for a continuous or intermittent media supply. In applications where this feature is not needed media channels cause increased maintenance efforts for cleaning.

To address this issue raised by key customers, VITROCELL® now offers Media Inserts as a standard product. They have an integrated support for COSTAR®, ThinCerts® Falcon® and Millipore cell culture inserts. The media inserts for VITROCELL® 6 modules are easily mounted with the supplied tool, those for VITROCELL® 12 modules can be fitted into the media compartment. The new media inserts are easy to mount and offer a practical and economical solution to reduce cleaning efforts of the exposure modules.



1 / 2 VITROCELL® 6 Series
3 VITROCELL® 12 Series

VITROCELL® SYSTEMS

About VITROCELL®

VITROCELL® exclusively concentrates on the developing, producing, installing, training and servicing of advanced *in vitro* exposure systems.

The VITROCELL® Systems' team is driven by their vision for new in-vitro standards through state-of-the-art technology, highly qualified workmanship and absolute client dedication. VITROCELL® has successfully collaborated with clients from leading research institutes, contract research organizations, regulatory authorities or industrial laboratories across the world. Working with our team experts, all modules have been tailored to create durable and complete turnkey-systems for ***in vitro*** inhalation toxicology. Gases, environmental atmospheres, nano particles and complex mixtures are analyzed on lung cells at the air/liquid interface using these systems. VITROCELL® technologies are also applicable to solutions for skin research.

Over a decade of devotion to research in this specific field has given our team of design & precision manufacturing specialists the opportunity to mentor highly diversified and complex projects **from conception to completion**. We strive to become a constructive member of each research team, providing support when it is needed, advice when it is required and modules of the highest quality, which are even polished by hand before leaving here to be integrated into your workspace. Every piece of our German engineered equipment is manufactured to the highest of standards – yours.

YOUR GLOBAL PARTNER FOR ***IN VITRO*** EXPOSURE SYSTEMS

VITROCELL® Systems GmbH
Fabrik Sonntag 3
79183 Waldkirch
Germany

Tel. +49 7681 497 79-50
Fax +49 7681 497 79-79
Email: info@vitrocell.com
www.vitrocell.com

VITROCELL® SYSTEMS