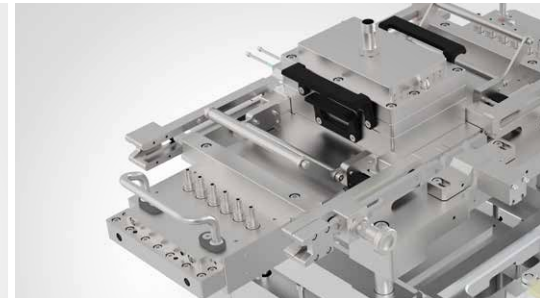
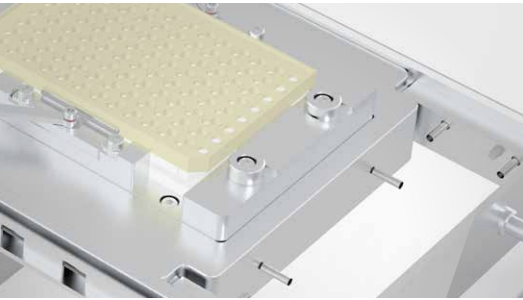


# Advanced in vitro exposure systems



**VITROCELL® 96**

**Higher Throughput**

**11 dilutions / 1 clean air control  
@ 8 replicates**

## VITROCELL® 96

For 96-well HTS plates



**VC 96 with  
Climatic Chamber**

The VITROCELL® 96 Exposure System has been specifically designed and engineered to facilitate the research of human cell cultures in direct exposure to airborne substances such as gases, complex mixtures and particles including nanoparticles. The system authentically simulates the conditions of human physiological exposure.

Up to 11 dilutions with 8 replicates are used for exposure to test substances and the 12th insert row for clean air control with 8 replicates.



Each dilution represents a different dose concentration, so that a complete dose/response profile can be obtained in one experiment.

The cell cultures are exposed at the Air/Liquid Interface on 96 membranes of the HTS plate using low flow rates of the aerosol.

After exposure, the cells are further processed to measure a wide range of endpoints e. g. cytotoxicity, genotoxicity, proliferation, cellular and oxidative stress as well as inflammation (see also VITROCELL® assay guide).

### **Climatic Chamber**

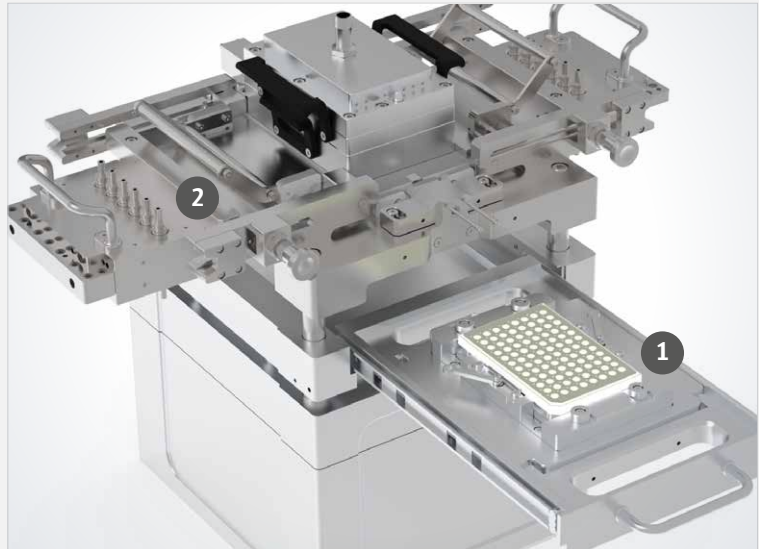
The system is integrated in the Climatic Chamber which enables a stable temperature of 37°C for all components. The benefits are condensation-free operation and a stable humidity level for exposure. The integrated humidification system features a pre-heating of dilution air. All flow controllers are mounted inside the chamber for constant temperature and increased humidity output.

### Docking Station for Base Module and Exposure Top

The docking station guarantees a hermetic connection of the base module with the aerosol exposure top. The flow rate for each of the 96 inlets is controlled by critical orifices which are connected to a vacuum pump.

### Quick-lock Dilution Systems

The integrated 12-fold dilution system can be easily separated from the exposure head for cleaning and maintenance.



Docking Station with Base Module (1) and Quick Lock Dilution System (2)

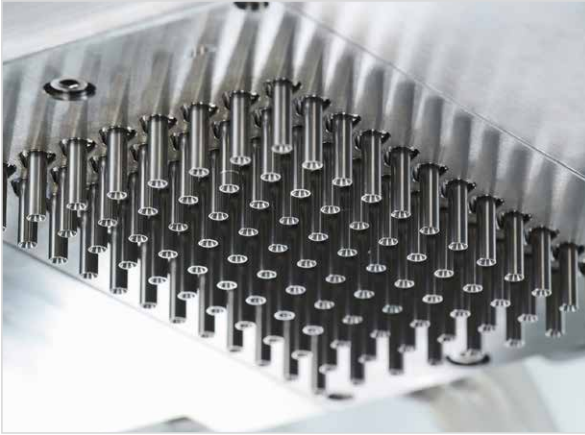
## Base module

### 12 rows @ 8 replicates

The base module with 96 wells is made of electropolished stainless steel. It may be easily removed from the integrated heating base. Temperature can be programmed individually.



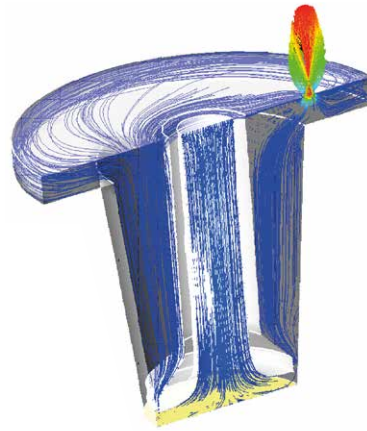
## Aerosol exposure top



### 96 inlets with individual vacuum flow

Special sealing and connection mechanisms guarantee a hermetic connection of the base module with the aerosol exposure top.

The aerosol exposure top guides the test atmosphere at an individually controlled flow rate to each cell culture membrane.



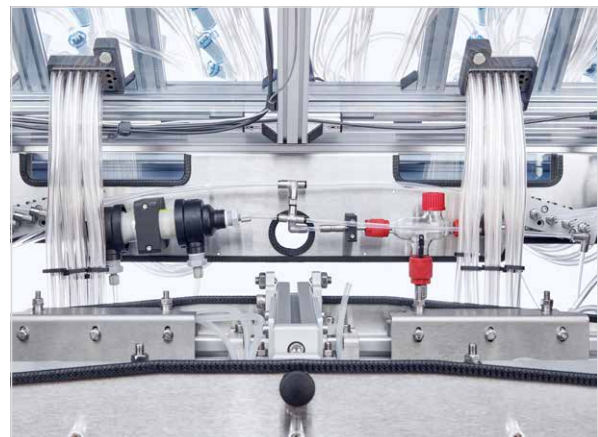
### Controlled inlet flow

VITROCELL® exposure systems have been specifically designed and engineered to give researchers the possibility of directly exposing mammalian cells or tissue at the air/liquid interface. Thus, all cell types cultivated on microporous membranes can be used. This approach allows for more credible and authentic results than by submerged exposure due to a closer replication of the human physiology.



### Integrated Dilution Systems

Support and quick-mounting mechanism of dilution systems and exposure top for easier handling



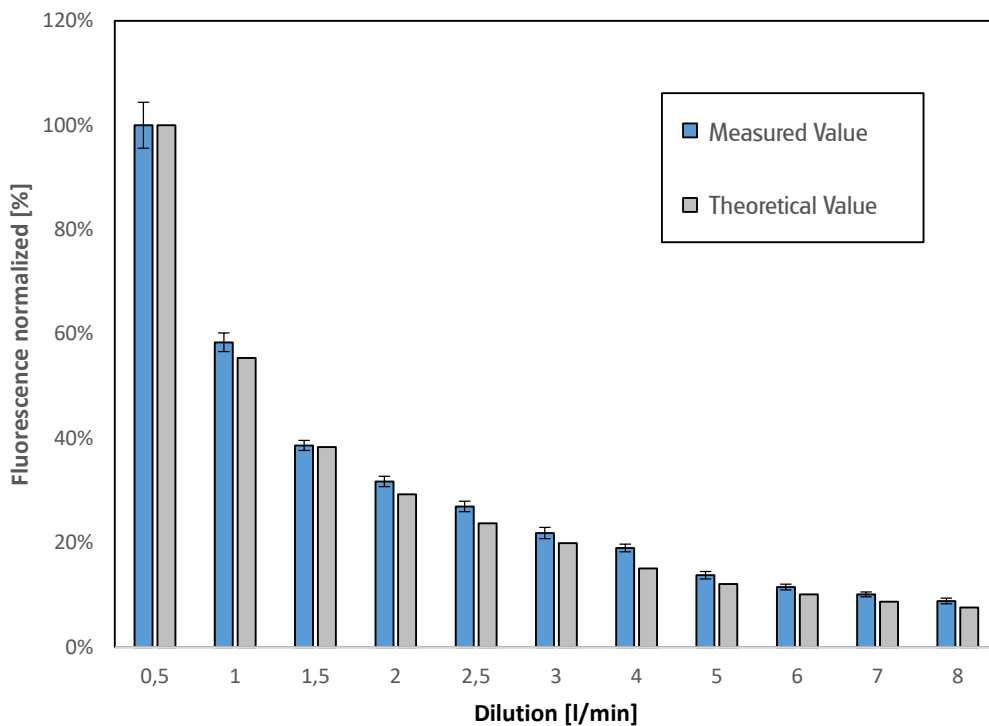
### Integrated Humidification Station

The Humidification Station inside the chamber allows for a stable delivery of humidified dilution air.

## Performance Qualification

The system was evaluated in a comprehensive performance qualification using combustion cigarette aerosols. As a conclusion, the system is fit for purpose.

- **11 Dilution Steps:** 0,5–8 l/min Air
  - **Cigarettes:** 1R6F
  - **Smoking Regime:** Health Canada
  - **Puff number:** 5 Cigarettes à 8 puffs
  - **Puff volume:** 55 ml
  - **Puff duration:** 2s
  - **Exhaust duration:** 8s
- **Continuous Flow:**
  - **Assay:** Autofluorescence
  - **Trapping Liquid:** DMSO
  - **Trapping Volume:** 96-well 60 µL
  - **Vitrocell SOP:** QMD-70-39



## Features

- Base module for 96-well HTS plates
- 12-fold Dilution/Distribution System
- 12 mass flow controllers for humidified air
- 11 dilutions @ 8 replicates
- 1 clean air control @ 8 replicates
- Electronic heating system for base module and exposure head
- Exposure head with 96 critical orifices and filter system
- Climatic Chamber for condensation-free operation if using liquid aerosols
- Housing with double-doors
- Heating systems with two RH/T sensors for temperature monitoring
- Software for read-out of sensor data to controller
- Integrated humidification system

## 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.

For more information please scan the QR-Code:



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