

# Advanced in vitro exposure systems



Product News  
**2025**  
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# VITROCELL® Essentials

Simplifying in vitro exposures with essential functionality.

Welcome to the world of VITROCELL® Essentials - where simplicity meets functionality. Our Essentials line is attentively designed for those who value streamlined efficiency and essential features driven by VITROCELL's proven technology.

Perfect for budget-conscious customers, this product line offers reliable performance without the complexity and cost of our more sophisticated offerings.

## Integrated Dilution and Distribution System

This fully integrated system enables the generation of varied aerosol concentrations and ensures even distribution across all exposed cell culture inserts.

## Versatile Compatibility

Supports both 12 and 24 well sized inserts from numerous brands, enhancing its utility across different experimental setups.

## Premium Build

Diamond finish inlets paired with the highest grade autoclavable stainless steel construct for unmatched durability and ease of maintenance.

## Optimal Control

The module maintains precise temperature control via a heated water bath, ensuring a stable environment.

## Efficient Operation

Features a fixed inlet distance and an easy closing mechanism coupled with optimized sealing technology for enhanced operational efficiency.

## Maintenance Simplicity

Designed for easy installation, quick setup, and fast cleaning.

## Universal Exposure Module

12 and 24 well sized inserts



## Flexible Use

Offers 3 sham and 3 exposure positions, allowing for a diverse range of applications.

## Humidification System

The humidification system provides a stable delivery of humidified dilution air.

## Service and Support

Optional yearly „no worries“ V-CARE Support package

## Cost-Effectiveness

Outstanding price/performance ratio makes the VITROCELL® Essentials Exposure Module an ideal choice for labs seeking both quality and value.

### Lowered Entry Barrier

This device significantly lowers the entry barrier into the air-liquid interface exposure world, making advanced scientific methods more accessible than ever.

### Media Cover

Specifically designed for 12 and 24 well sized inserts to protect and maintain the integrity of your samples.

### User-Friendly Design

Simplifies the processes of cleaning, setup, and sample handling, saving time and enhancing lab efficiency.



Product Line Comparison		
Feature	Flow 4	Essentials
6 well sized inserts	✓	–
12 well sized inserts	✓	✓
24 well sized inserts	✓	✓
Ames 35 mm Petri dishes	✓	–
Microbalance (optional)	✓	–
Heating method	electronically	waterbath
Exposure positions	4	3
Clean Air positions	4	3
Compatible with Isokinetic sampling	✓	–
Easy closing mechanism	✓	✓
Fixed Inlet distance	✓	✓
Humidification system	✓	✓
Media Cover (optional)	✓	✓
In situ humidity sensor (optional)	✓	–
Integration into VC Monitor Software	✓	–
Thermophoresis (optional)	✓	–
Removable media compartments	✓	–

### Commitment to Innovation

The VITROCELL® Essentials Exposure Module stands as an example of innovation, designed to meet the highest demands of our customers from the scientific community. With its convincing design and comprehensive feature set, it is an essential tool for achieving precise and reproducible results in various experimental scenarios.

### Key Features:

- Compact and efficient design
- Cost effective solution
- Fully integrated dilution and distribution system
- Supports 12 and 24 well sized inserts of various brands
- Diamond finish inlets
- Media cover for 12 and 24 well sized inserts
- 3 positions sham, 3 positions exposure
- Easy installation and setup
- Fast and easy cleaning
- Autoclavability, highest grade stainless steel
- Temperature maintained via waterbath
- Humidification of dilution and sham control air
- Pre-set inlet for optimal distance
- Easy closing mechanism
- Optimized sealing technology

## Essentials Vape & Smoke

### Manual Single-Port Smoking Machine

Application  
Area

1

- Economic solution with essential functionality
- For combustion and electronic cigarettes
- Freely programmable parameters
  - Puff Volume
  - Puff Frequency
  - Puff Duration
  - Puff Exhaust Duration
  - Bell and square shaped puff profiles
- Fully integrated software controls via touch screen

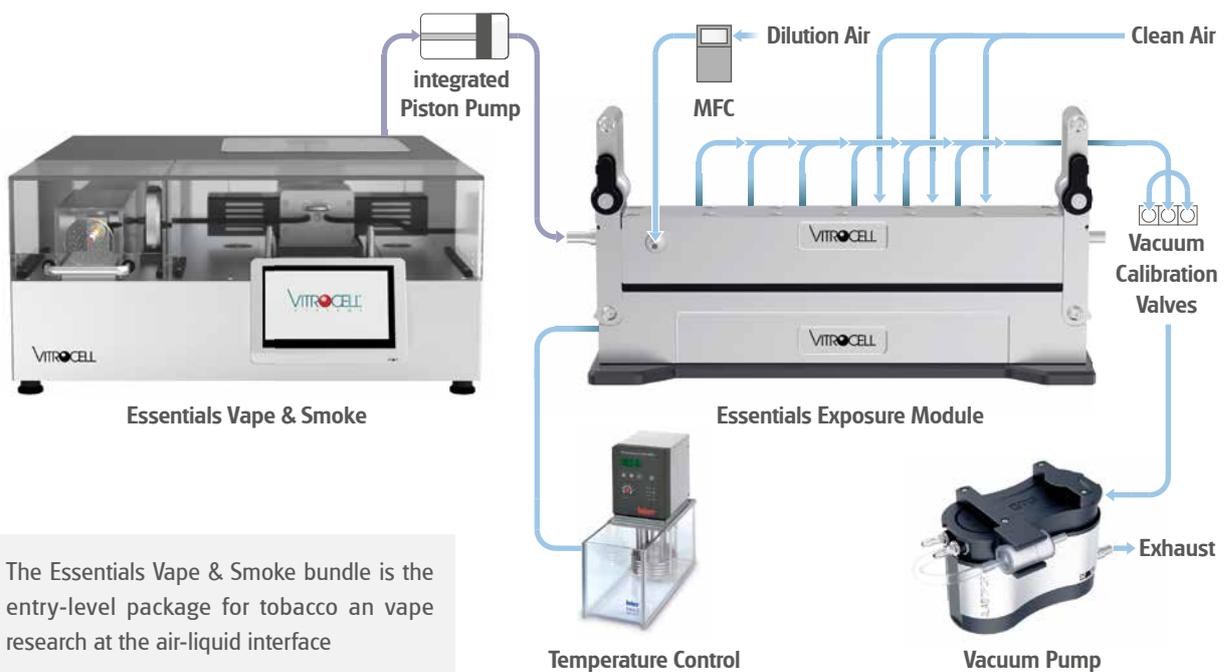


## Turnkey Installation with Essentials Cell Culture Exposure Module

### Available as bundle solution

#### Bundle features

- Smoking Machine for Combustion & Electronic Cigarettes
- Cell Culture Exposure System for 12- and 24-well sized inserts
- Dilution System
- Humidification
- Designed for easy use and maintenance



The Essentials Vape & Smoke bundle is the entry-level package for tobacco and vape research at the air-liquid interface

Application  
Area  

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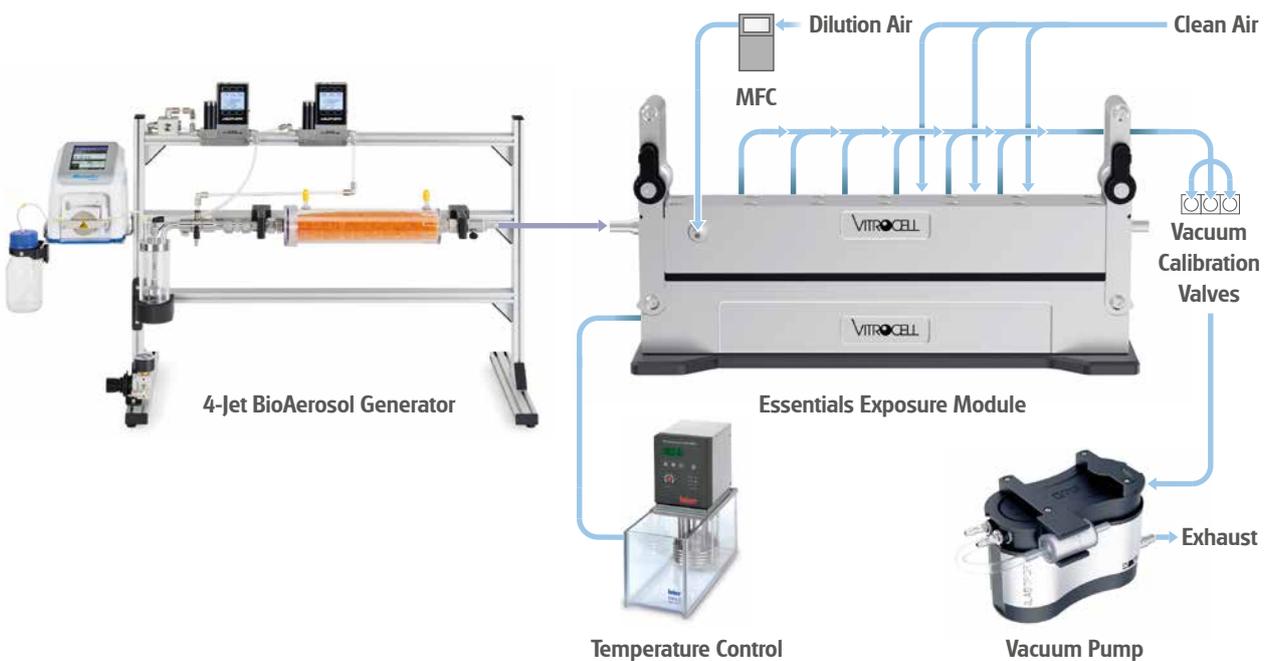
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# VITROCELL® 4-Jet BioAerosol Generator

For liquids, proteins, bacteria, microorganisms with minimal sample volume and low flow rates

The VITROCELL® 4-Jet BioAerosol Generator has been specifically developed and engineered for applications where the test substance must be dosed in smallest quantities. This is performed using a peristaltic pump.

It works at low air flows of e.g. 0.4 - 4 l/min. and has a small dead space. The aerosol concentration can be adjusted by either adjusting the liquid flow rate, changing the air flow rate or by adding the integrated dilution system.



Application  
Area

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## Cylinder / Bag / Gas Mixing System

Supply via cylinder, sampling bag or dynamic mixing system.

### Possible sources of gases or mixtures:

#### Gas cylinder

Gases and mixtures in various concentrations and specifications can be purchased from gas supply companies. The cylinders must have pressure and flow regulators. They can be connected to the VITROCELL® distribution system which then delivers the gases or mixtures to the VITROCELL® module.

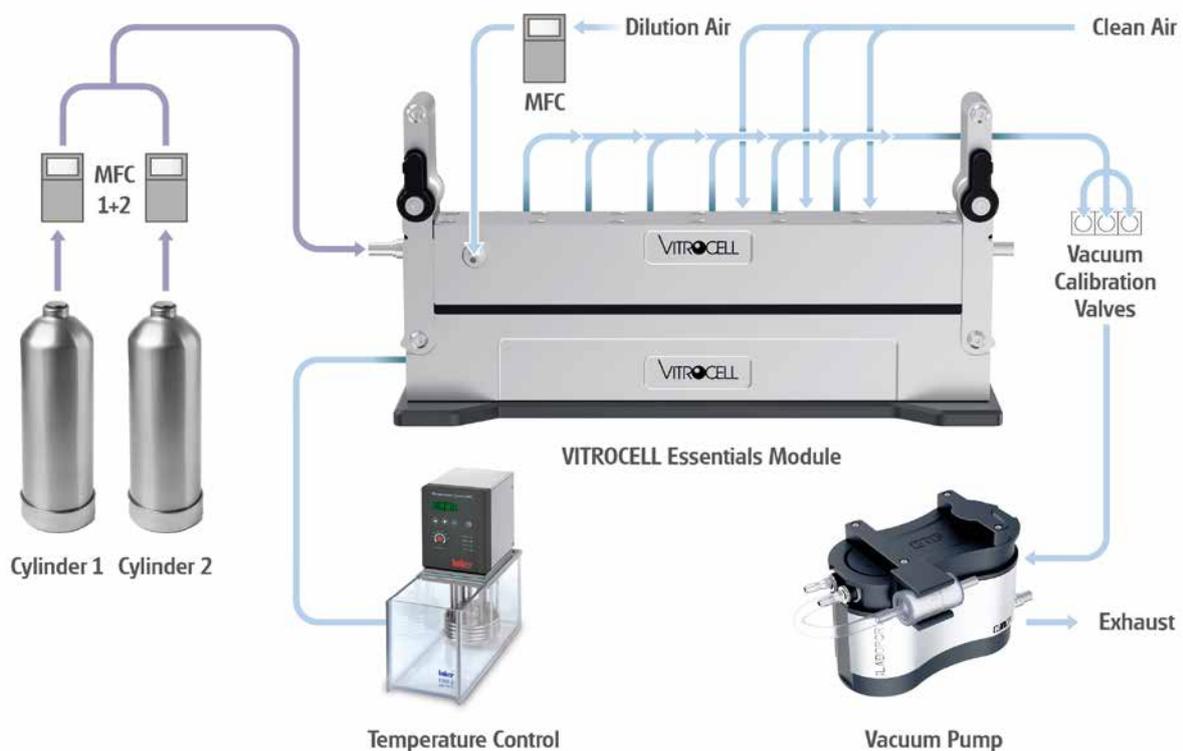
#### Sampling bag

A sampling bag can be connected to the module and filled from various sources. For indoor or outdoor environmental sampling, VITROCELL® provides a dedicated vacuum filling system, allowing safe transfer of the sample to the laboratory. Please note: this procedure is not suitable for test atmospheres containing particles. For the collection of complex mixtures that include particles, please contact us directly to discuss a tailored solution.



#### Dynamic Gas Mixing System

There are various options to create individual mixtures with different dose levels. With the VITROCELL® Dynamic Gas Mixing System, it is possible to generate different dilutions of the test aerosol.



**Application  
Area**

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**4**

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## Spiking System

For the production of mixtures in ppm and ppb ranges.

The VITROCELL® Spiking System has been specifically designed to provide optimal results when exposing gas mixtures from solvents, gases and vapors.

It is the perfect solution when the required concentrations are not available in cylinders. The gas mixture is produced dynamically by means of a digital syringe pump allowing

injections of less than 0.1 µl with high accuracy. The component is fed into a zero gas flow through a heated mixing chamber at temperatures up to 400°C.

Programmable heating steps, mass flow controllers and the secondary dilution system allow the production of mixtures in various ppm and ppb concentration ranges.



Spiking System



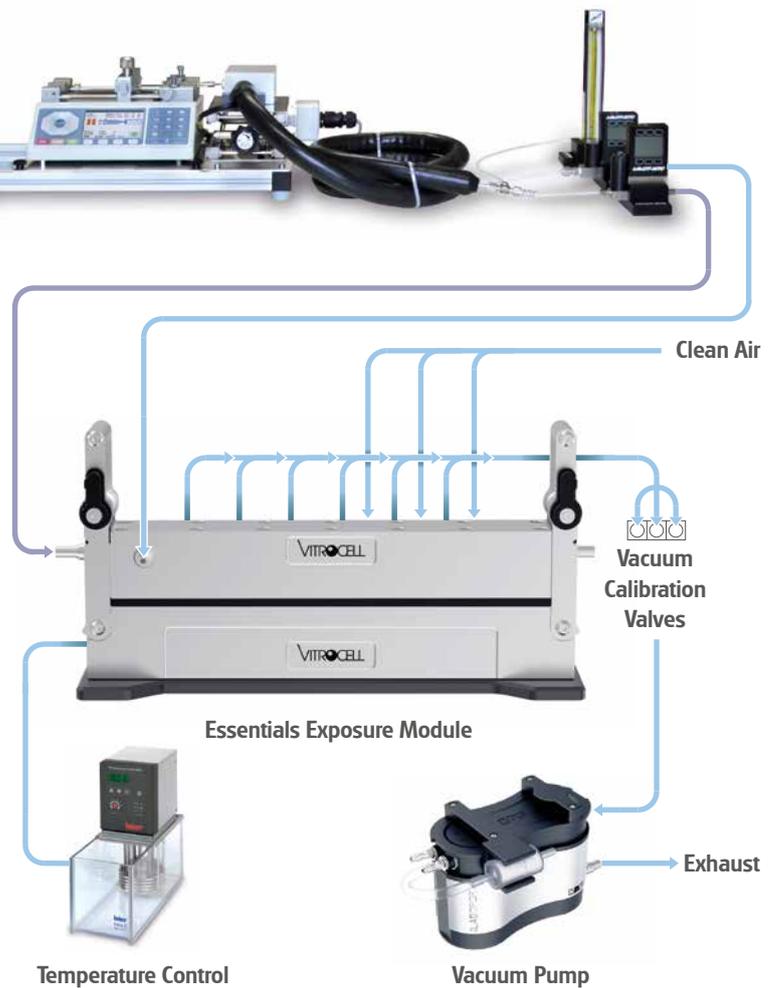
### Syringe drive

High precision and electronically controlled.



### Syringe types

Compatible with various syringe types.



## 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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