



## CLAIRE PURE - SAFETY CABINET

Setting new standards



berner

## MADE IN GERMANY QUALITY, RELIABILITY & INNOVATIVE TECHNOLOGY FOR THREE DECADES

The prime goal during the development of the new generation was to make working at safety cabinets easier and more intuitive- while raising safety at the same time. In development projects, our engineers and designers have collected and tested many ideas for several years, as well as implementing results from our research. Form and function entered a perfect symbiosis as the new "Shield Design". The combination of proven and new technologies, plus the production and quality "Made in Germany" have made these safety cabinets to be something very special - a premium product.



# QUALITY FROM GERMANY



## RESEARCH SOLUTIONS FOR THE FUTURE

Research always forms the basis for innovation. For this reason, since 2002, Berner International has a private research laboratory at its site in Germany. In numerous research projects, the teams of Berner International develop new solutions and improved products for working safely in the laboratory, including projects funded by the Federal Ministry for Economics and Technology.

Well-established microbiological test methods, derived from DIN EN 12469, DIN 12980 or NSF 49 are applied for testing the safety functions.

Several examples of accomplished research projects include:

- Movements as interference factors in the laboratory
- Safe cytostatic preparations in an isolator
- Optimisation of airflow in particle filters
- Realistic testing methods of safety cabinets
- Contamination of safety cabinet filters with cytostatics
- Performance capacity of safety cabinets in correlation with airflow

# THE POWER OF INNOVATION

Supported by:



on the basis of a decision  
by the German Bundestag

# CLAIRE PURE SETTING NEW STANDARDS



### Protection Shield

The multiple award-winning "Shield Design" testifies high quality design, which combines by way of example innovation with form and function.

### 1 Quality seal

Multiple award-winning\* product design in the selection criteria - degree of innovation, safety, sustainability, aesthetics, industrial feasibility and implementation.



### Ergonomics

Particularly quiet, bright operating conditions and optimum legroom even for 3-filter cabinets due to the particularly compact design of the first main filter.

### Economical

The excellent price, the highest energy efficiency and lowest operating costs make Claire pure to Berner's most economical safety cabinet.

### Touch Display

Intuitive operation and user-friendly menu navigation.

### Filtertechnologie

New HEPA cartridge filters for even lower sound levels and energy consumption.

### High level of performance

Outstanding protection functions with relatively low flow conditions characterise this design. Two operating points "ECO" & "GMP" are TÜV tested and certified using the microbiological test method according to DIN EN 12469, DIN 12980 and NSF 49. High flexibility with maximum safety.

### GreenTec

Innovative technology reduces the operating costs by up to 84%.

### LED light technology

Light and even illumination of the working area thanks to high quality and dimmable LED technology.

### Proven protection

The design of the workspace, the work aperture, the HEPA cartridge filter and the front intake ensure a very high level of protection.

## CLAIRE PURE - CLEARLY BETTER NEW STANDARDS FOR FUNCTIONALITY AND ECONOMICS

The Claire pure provides the highest quality technology at an attractive price. LED illumination in the work area, high-performance EC fans and the touch display with intuitive menu navigation form the technical basis for the highest functionality. This is complemented by a targeted range of options for all major applications.

Outstanding energy efficiency and low procurement and operating costs make Claire pure the ultimate in efficiency.

#### MORE PROGRESSIVE

**34** YEARS  
experience in the development and production of safety cabinets

#### CLEARER

**360** PICTOGRAMS  
High qualitative, clear and self-explaining.

#### MORE SUSTAINABLE

**84** PERCENT  
reduction in energy costs and greenhouse gas emission of CO<sub>2</sub> possible

#### MORE ECONOMICAL

**1000** EUROS  
Minimum-price benefit compared to Claire pro models.

\* Awards received for a model of Claire pro

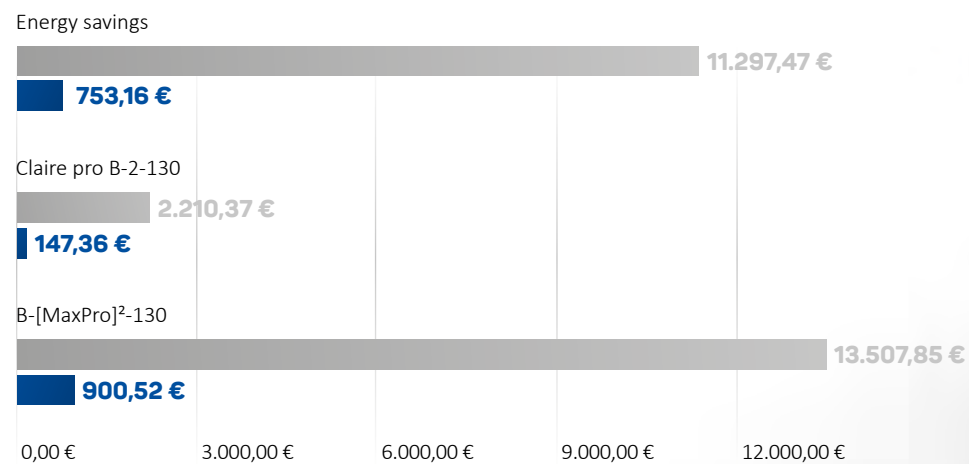


# GREENTEC

## 84% LOWER OPERATING COSTS

### INNOVATIVE TECHNOLOGY INNER VALUES MATTER

During the development of the new generation, emphasis was placed value on top quality components, low operating costs and an environmentally friendly feature - GreenTec. This is an especially interesting aspect when considering an expected economic life expectancy of about 15 years and steadily rising electricity costs of around 5 % in the past 10 years <sup>1)</sup>. The investment for the new generation of energy efficient safety cabinets breaks even much earlier thanks to lower operating costs.



■ Energy costs over the life cycle (15 years) of a safety cabinet  
■ Energy cost per year <sup>2)</sup>



#### Fluid mechanics

Air distribution, cross-sections and filters have been optimised resulting in the lowest possible flow resistance in order to achieve a more efficient air-flow. This reduces the load on the fans which saves valuable energy.

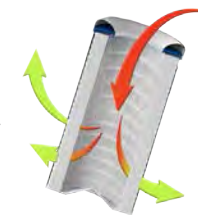
#### Top quality components

Premium quality components like EC-fans, LED lighting technology and a LED touch display reduce the active energy consumption enormously.



#### Eco Mode

Intelligent control and monitoring technology reduces all consumers with one touch to a minimum.



#### New HEPA cartridge filters

Improved operating characteristics significantly reduce energy consumption and sound level thanks to new suction nozzle and air distribution. Resulting longer service life of filters saves additional costs.

1) Federal Statistical Office, <http://www.destatis.de>; Preise-Daten zur Energiepreisentwicklung; Wiesbaden; 03.2016

2) Working price (gross): 0.2256 €/kWh; Source: [www.eon.de](http://www.eon.de), tariff for businesses based on Elmshorn, Germany; 04.2016

#### SAFE INVESTMENT

##### INVESTMENT SAFETY

Already meets requirements of the new DIN 12980:2016

#### MORE EFFICIENT

##### REAL 0.45 M/S

Operating modes for GMP applications

#### MORE EXTREME

##### BERNER IN HIGH SECURITY LABORATORY

SCs in S4 laboratory of the Bernhard-Nocht-Institute in Hamburg and Friedrich-Löffler-Institute Riems

#### ENVIRONMENTALLY FRIENDLY

##### 84% LESS CO<sub>2</sub>

Reduces the CO<sub>2</sub> pollution by up to 84% and positively contributes to climate protection



## TOUCH DISPLAY INTUITIVE USE AND EASY TO USE MENU NAVIGATION

The touch display is the central interface and control unit for the user. The touch display of the new generation is intuitive in its operation with a self-explanatory menu. Premium quality pictograms and a puristic design speak a clear language. The superior TFT-display with LED background lighting is arranged in a central position and within easy reach. The display can be easily read from a sitting as well as a standing position. All safety-related parameters such as airflow velocities and front screen position are displayed as large graphical images. Errors are shown clearly, and potential corrective actions are suggested.

The distinguishing feature of the touch display of the new generation of safety cabinets is the intuitive operation and extremely user-friendly menu navigation- it's easy!

# INTUITIVE OPERATION

### Flexible

Four function keys can be individually assigned to different functions-specific to your needs.

### Individual

Own PIN code protected user profiles (language, connection/ disconnection of certain equipment, etc.) and display surfaces can be created.

### State of the Art

High quality TFT display with dimmable LED backlight and excellent visibility from all directions.

### Clearly arranged

Generous graphics display of temperature, humidity, flow velocities, etc. Implementation and display of data from external devices, for example particle counter or sensors are possible.

### Precise

Display of current operating mode, normal, cleaning, energy saving or night mode.

### Safe

Display of alarm with specific error diagnosis and suggested solutions.

### Intuitive

Simple and self-explanatory menu navigation in puristic design make the operation simple.

### Informative

Comprehensive quick guide in pictorial form facilitate instructions considerably.



# PURE PERFORMANCE

## SAFETY PROVEN TECHNOLOGIES COMBINED WITH SOLUTIONS FROM RESEARCH

As early as 2002, we were the first European manufacturer to use the microbiological test method in accordance with DIN 12980, EN 12469 and NSF 49 for the verification of the protection functions. On the basis of this method, most frequently used worldwide, we test and optimise the protection potential of our safety cabinets.

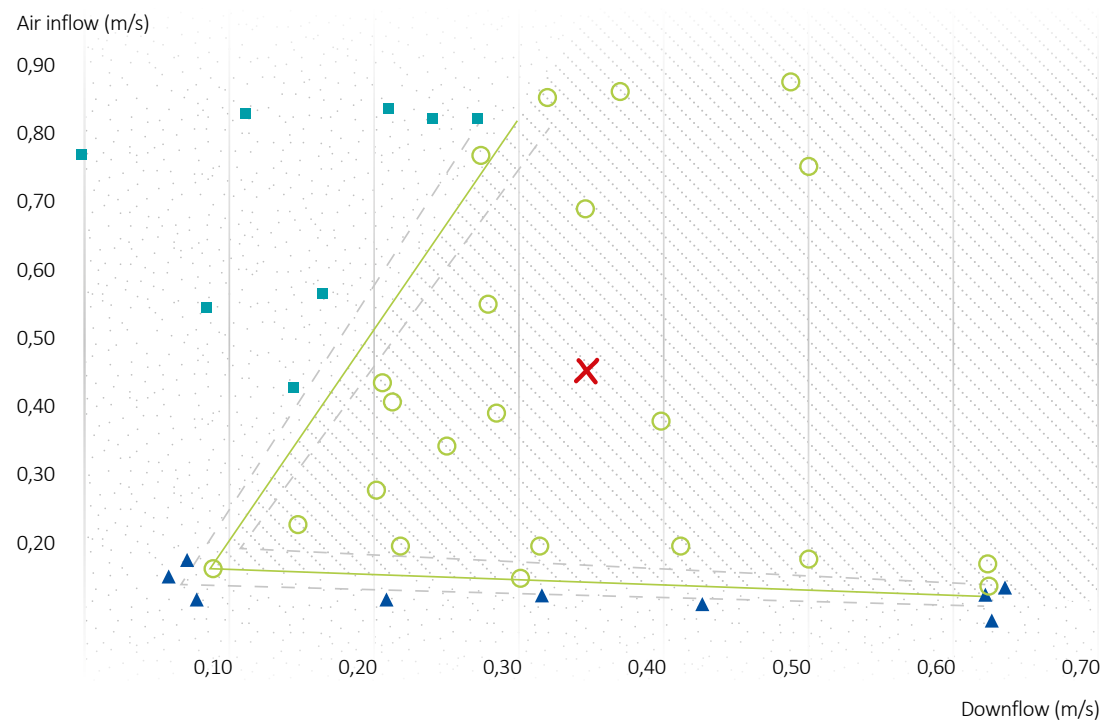
The personal, product and cross-contamination protection of a safety cabinet has the highest priority.

Highly efficient air flows are next to the filtration properties of crucial importance in relation to the protection potential of a safety cabinet. The „Performance Envelope Test (PET)“ in our own research laboratory

has shown, that Claire owing to its innovative design demonstrates a high bandwidth in the performance of the protection functions. This unique property allows for a great flexibility in the choice of set points while guaranteeing maximum protection. That is why tested operations points can be achieved with real 0.45 m/s in accordance with GMP or low flow conditions for other applications. <sup>1) 2)</sup>

1) Christiansen, S.; Gragert, S.; Hinrichs, T.; Karpinska, R.; Leistungsgrenzen von Sicherheitswerkbänken; Onkologische Pharmazie; 12. Jahrgang; 01.2010

2) Christiansen, S.; Gragert, S.; Hinrichs, T.; Karpinska, R.; Performance Envelope Testing – or where are the performance limits of safety cabinets; labor & more; 02.2009



### PERFORMANCE-ENVELOPE-TESTING

Airflows were changed to verify the personal and product protection in accordance to DIN EN 12469, DIN 12980, NSF 49 at a total of 42 setpoints. Result: An outstanding performance and great flexibility in airflows.

- ✗ Setpoint
- Personal- and product protection
- Optimum personal and product protection
- ▲ No personal protection
- No product protection
- No personal and/or product protection

Solutions for the future

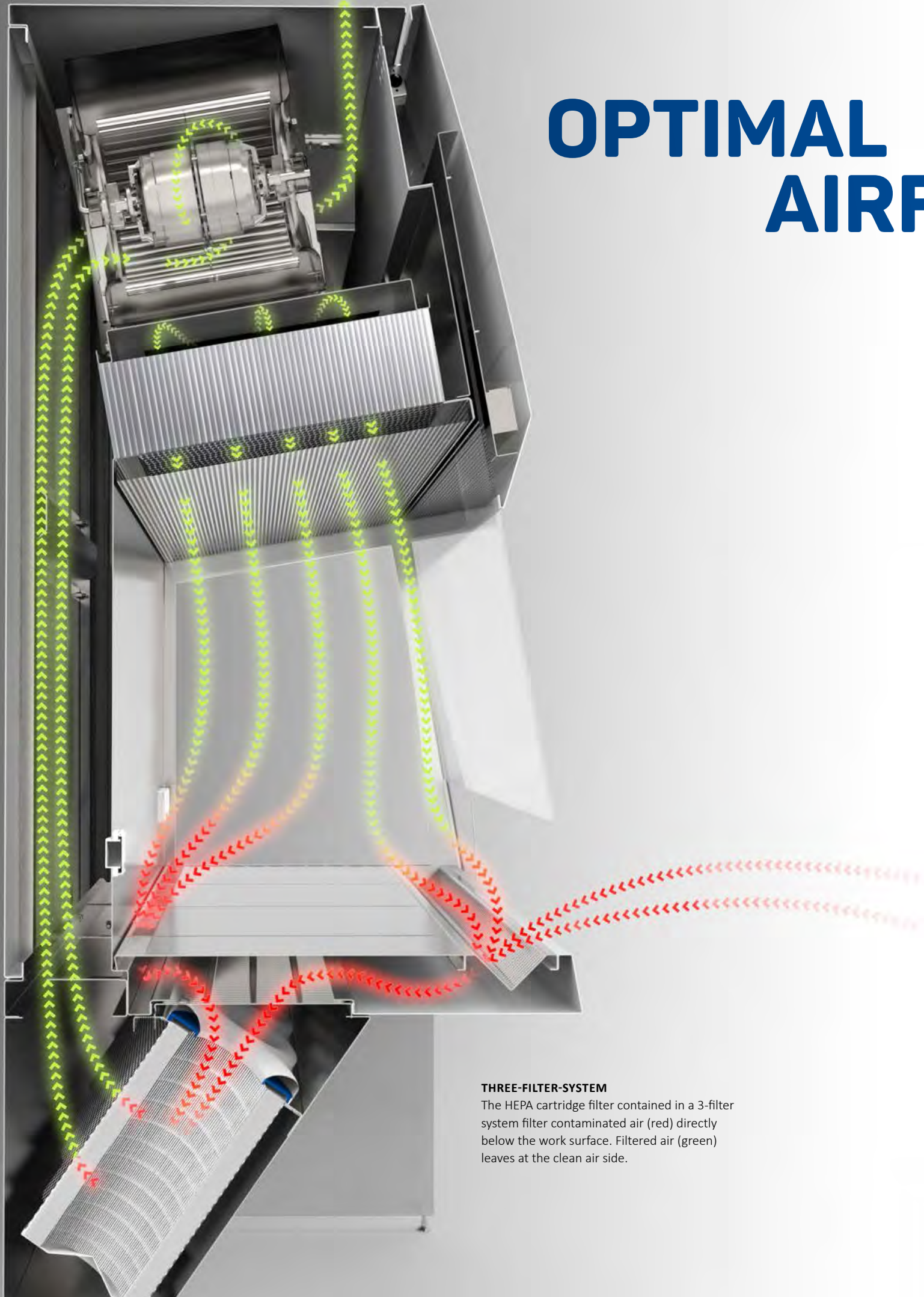
## MICROBIOLOGICAL TESTING OF PERSONAL PROTECTION

Microbiological testing of personal protection in accordance to DIN EN 12469, DIN 12980, NSF 49 in the Berner R&D laboratory.





# OPTIMAL AIRFLOW



**THREE-FILTER-SYSTEM**  
 The HEPA cartridge filter contained in a 3-filter system filter contaminated air (red) directly below the work surface. Filtered air (green) leaves at the clean air side.

## FILTER TECHNOLOGY NEW HEPA-CARTRIDGE FILTERS FOR EVEN LOWER SOUND LEVELS AND ENERGY CONSUMPTION

Filters are the most safety relevant components in safety cabinets. They make up the most important barrier for people, the environment and the product.

As part of a research project we were able to fluid mechanically optimize the HEPA-cartridge filters used in the 3-filter systems. Thanks to a newly designed intake port and air ducts the operating properties have been improved. Noise level and energy consumption have been reduced. The filter life has been optimised.

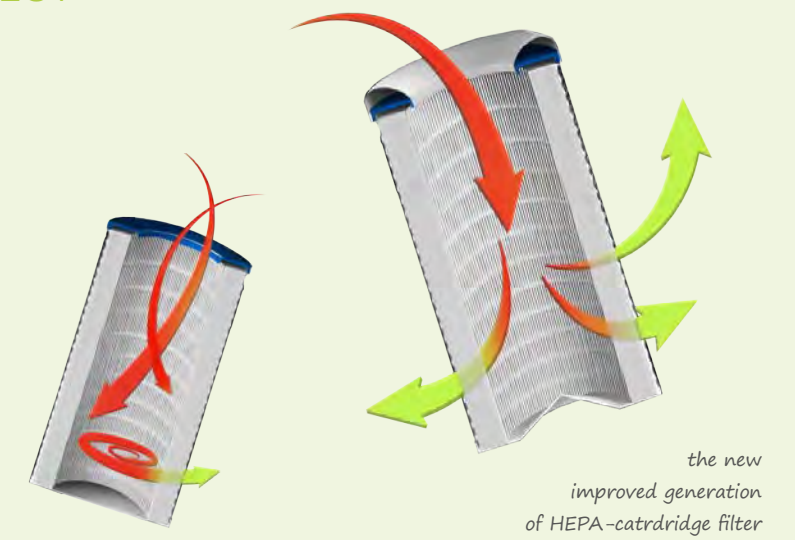
Proven properties have remained the same:

- Small size and compact design
- Maximum legroom in 3-filter-systems
- 50% reduced changing and test expenditure compared to traditional filter systems
- Possibility of a low contamination filter change in accordance to DIN 12980:2016
- Fit into many standard waste disposal containers or autoclaves

Solutions for the future

### SMALL DETAIL – GREAT EFFECT

Thanks to the newly designed intake port and optimized air channels the flow resistance has been reduced. The air flows more evenly through the HEPA cartridge filter.



the previous generation of HEPA-cartridge filter

the new improved generation of HEPA-cartridge filter

RESEARCH



# THE HUMAN IN FOCUS

**+** The touch display can be seen clearly and is easily reached in the sitting as well as the standing position.

**+** Sitting dynamically with a flexible seating position allows comfortable working and prevents postural damage.

**+** The compact first filter stage provides the user with significantly more legroom.

## ERGONOMICS VERY QUIET, OPTIMALLY ILLUMINATED AND BEST ARM POSITION

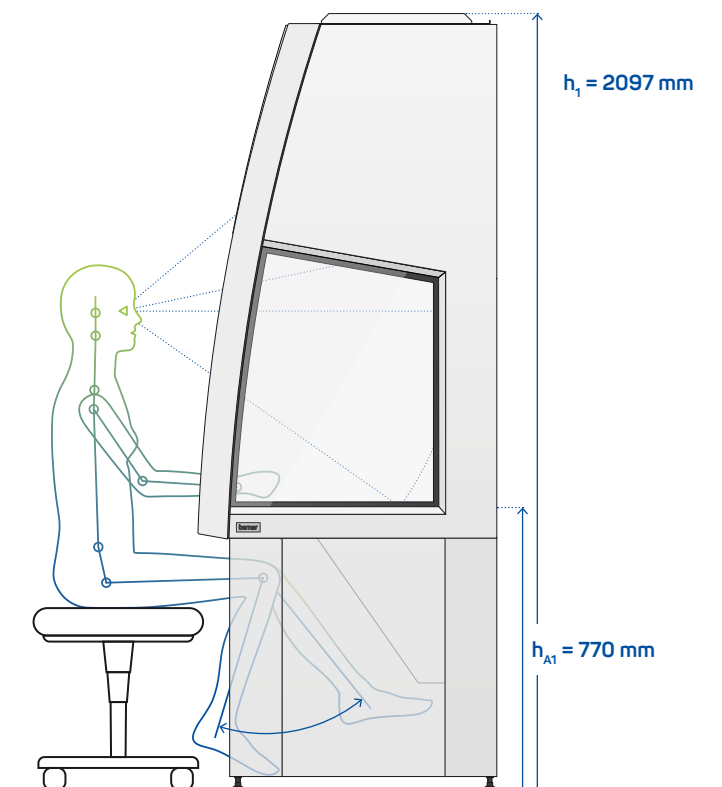
The new generation of safety cabinets is the result of decades of experience, German engineering innovation, as well as the utilisation of the most up-to-date available technologies- "Made in Germany".

- Very quiet and pleasant working conditions with a sound pressure level of up to 49dB [A].
- Bright and uniform illumination of the working area thanks to high quality and dimmable LED technology.
- Worktop height of 770 mm. Ideal as a seated workstation according to DIN EN ISO 14738.

→ High quality working space: High-quality & solid construction, completely made of stainless steel. Jointless and made of one piece. Durable and easy to clean.

- Exceptional legroom for the 3-filter system.
- Good for precision work: armrest and work surface at one height. Therefore, the entire height of the work aperture is available for ease of movement.

**Info**  
 The extremely low total height of 2097 mm favours the operation of an exhaust air system or exhaust cooler and allows for easy testing of the exhaust filter.



Worktop height of 770 mm, maximum legroom and a comfortable arm position.

## EQUIPMENT & OPTIONS FOR BERNER CLAIRE PURE

Claire pure 130



The high-quality standard features of all Claire pure models include a stable ergonomic base, filter test ports, 1-2 sockets depending on the model size, preparation for additional power sockets or interfaces and for all B-models 2 x 22 mm side window lead-through on each side.

The high functionality is rounded off sensibly with a targeted range of options for all major applications and includes amongst others:

→ Various interfaces and additional power sockets

→ Powerful systems for UV-C disinfection

→ Low vibration weighing worktops

→ Uninterrupted worktops

→ Various connections for liquid and gaseous media

→ Isokinetic sampling probe for particle monitoring

→ Exhaust air connection Exhaust Duct Flex for connection and feedback-free operation of air exhaust systems

Claire pure 160



Claire pure 190



Berner Safety Hotline: +49 4121 - 43 560



## TECHNICAL INFORMATION FOR BERNER CLAIRE PURE

### General data

Device	Laboratory device
Type of device	Cytostatic safety cabinet or biological safety cabinet
Type of construction	DIN 12980; DIN EN 12469; NSF 49
Marking	CE
Quality management system	DIN EN ISO 9001:2008

### General technical data

Nominal illuminance	0-1.100 lux
Vibration (RMS) on worktops	≤ 5µm
Sound pressure level to ISO 11201	49 bis 59 dB(A) [1]

### Material specific data

Material workspace	1.5 mm stainless steel „V2A“, material no.: 1.4301
Surface finish work space	320 grit fine finish, mean roughness index Ra ≈ 1.6 µm
Material casing	Powder-coated 1.5 mm Zincor steel sheet, material no.: 1.0330
Front-, side and back panel	Multi-layer safety glass with UV-light absorbing interlayer

### Electrical data

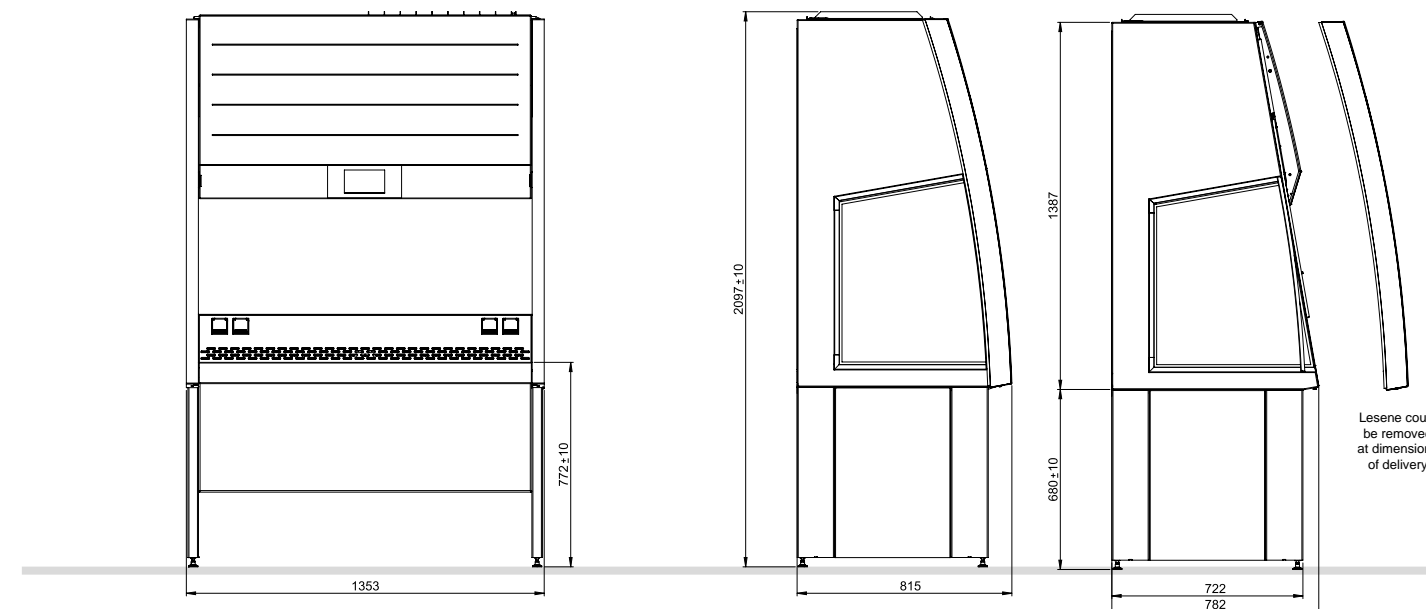
Rated voltage/ Rated frequency	230 V AC / 50/60 Hz
Power consumption	85 – ca. 550 W [1]

### Mechanical data

Width, outer	1352, 1654 und 1957 mm
Height	2097 mm
Depth	815 mm
Installation dimension	2009 x 815 mm
Worktop height	770 mm

### Ventilation data

Flow rate of exhaust or inflow air	330 – 490 m³/h [1]
Flow rate of exhaust air (with feedback-free duct connection)	450 – 600 ± 50 m³/h [1]
Filter classes (with main-, recirculation & exhaust filter)	Min. H 14 (Filtration rate: E ≥ 99,995%), gem. DIN EN 1822-1 [2]
Cleanroom class in workspace	EG-GMP-Guidelines: A; DIN EN ISO 14644-1: ISO-Klasse 5



[1] Depending on operating mode and model size

[2] Integral degree of filtration as minimum filtration efficiency for max. penetration, with particles of the Most Penetrating Particle Size (MPPS)





\* Awards received for a model of Claire pro

V1-16/04/EN

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