

BERNER

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safety systems
made in Germany



Claire

The new generation of
safety cabinets



reddot design award
winner 2013



Safety cabinets
made in Germany



Interview with Thomas Hinrichs
QR-Code for Videoclip



www.berner-international.de/Claire_interview_gb

New standards

We have researched for your safety.

"Made in Germany" has stood for over 60 years for quality, reliability and innovative technology worldwide. The development and production of safety cabinets in Germany has been our core competency for over three decades.

We are setting new standards with an entirely new and ground-breaking generation of safety cabinets. The combination of well-established standard technology together with innovative solutions based on research – this is what distinguishes the new generation. Protection at the highest level, intuitive operation, low energy con-

sumption and a detection system for air flow disruption have made these safety cabinets even more efficient and safer. The **Shield Design** imparts protection, simplifies usage, facilitates the operation, and is an indicator of technological progress.

Awarded with the renowned quality seal for high design quality: The **reddot** design award!



Dipl.-Ing. Thomas Hinrichs
Managing Partner



	<i>Premium Quality</i> Quality, reliability and innovative technology – „Made in Germany“.	6
	<i>Shield Design</i> Visualization of technological progress.	8
	<i>Touch Display</i> Intuitive operation and user-friendly menu navigation - so easy.	9
	<i>Safety</i> Prevention is still the best way.	12
	<i>Sensor Technology</i> Claire recognizes you, when you get close.	13
	<i>Filter Technology</i> New HEPA cartridge filter for a low noise level and energy consumption.	15
	<i>Claire & BSS® Sensor+</i> Perfect symbiosis: Safe transfer of dangerous waste.	17
	<i>GreenTec</i> Innovative technology reduces the operating costs of up to 97%.	19
	<i>Construction</i> Very quiet, very bright and extremely easy to clean.	21
	<i>Technical Data</i> Most important facts at a glance.	23
	<i>More for your laboratory</i> SealSafe® Sensor+	25



Safety cabinets
made in Germany





Premium Quality

Quality, reliability and innovative technology – “Made in Germany“.

“Made in Germany“ has been a success story for over 60 years. For three decades we have developed and manufactured safety cabinets in Germany. Our products stand for quality, reliability and innovative technology – “Made in Germany“.

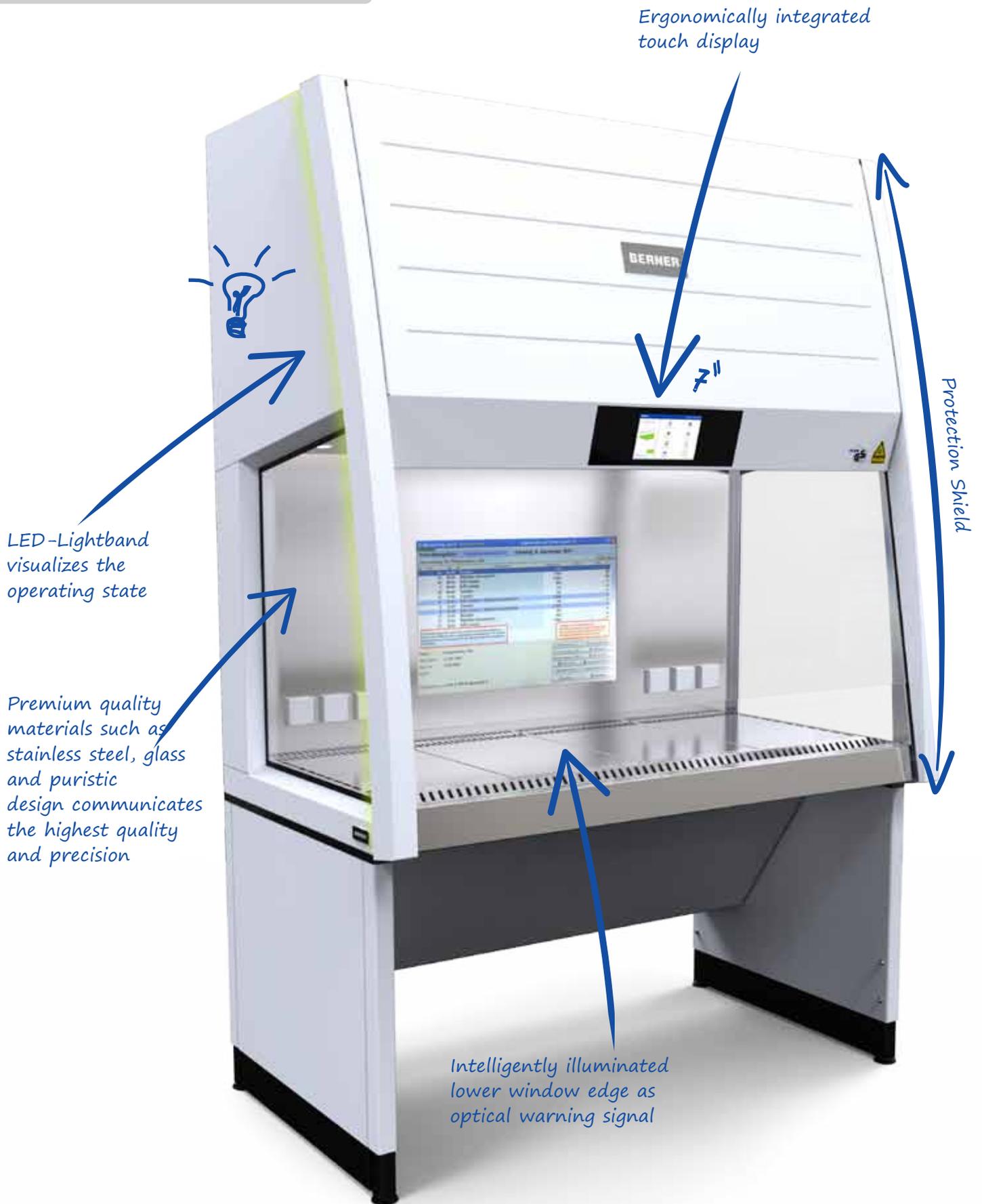
The prime goal during the development of the new generation was to make working at safety cabinets easier and more intuitive - while at the same time raising safety levels. In a special development project our engineers and designers have collected and tested many ideas for several years, as well as implementing results from our research.

Form and function entered a symbiosis as the new **“Shield Design“** to generate the perfect product. The new generation of safety cabinets combines this in a unique way. The combination of established technologies together with new technological advances, plus the production and quality “Made in Germany“ have made these safety cabinets to be something very special - a premium product.

Premium Quality
QR-Code for video clip



[www.berner-international.de/premium quality](http://www.berner-international.de/premium%20quality)



Shield Design

Visualisation of technological progress.

The design is convincing with a clear-cut and slender appearance. The side profile forms an attractive surface continuing across the whole of the front casing – the **Protection-Shield**. Just above the front window is a touch display which is positioned to fit in harmonically as well as ergonomically. Both of the side verticals visually encompass the workspace, which has been constructed with maximum safety in mind, and above all fulfill a crucial functional aspect. The recessed light band, highly visible from afar, informs through its colour coding about the current operating status and gives the user an clear and highly visible warning signal of potential dangers. This effect is reinforced by the intelligent illumination of the front window lower edge, which encloses the completely glazed and optimally visible workspace made from high grade stainless steel.

To ensure easy cleaning, special attention was paid to the smooth and virtually joint-free design of the surfaces. A puristic colour and material combination made from fine white powder coating and first-class materials, such as stainless steel and glass communicates premium quality and precision.

Shield Design

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www.berner-international.de/shield_design_gb



reddot design award winner 2013

reddot

The Red Dot is the renowned award for high design quality. This sought-after quality seal awarded by an international jury panel is only given to those products, which due to their exceptional design demonstrates distinctly superior features in comparison to other product designs.

reddot

QR-Code for reddot-website



www.berner-international.de/reddot_gb

Statement of the jury

"With its self-contained and minimalist design, in combination with innovative lighting technology, the Claire safety cabinet sets new standards."

www.red-dot.de

Evaluation criteria

"reddot design award product design"

- *Functionality*
- *Ergonomics*
- *Durability*
- *Symbolic and emotional content*
- *Product periphery*
- *Self-explanatory quality*
- *Ecological compatibility*
- *Degree of innovation*



Touch Display

Intuitive operation and user friendly menu navigation – so easy.

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 possible error corrections are suggested.

- Individual user profiles (language, specific devices connected/disconnected, etc.) and display surfaces can be generated.
- Data from external equipment (e.g. particle counter, sensors) may be implemented and displayed.
- Comprehensive quick guide in pictorial form facilitates instruction considerably.

The distinguishing feature of the touch display of the new generation of safety cabinets is **the intuitive operation and extremely user-friendly menu navigation**- so simple!

Touch Display
QR-Code for video clip



www.berner-international.de/display_gb



User profiles can be saved individually and are protected with a pin code.



Air flow – specific display and monitoring.



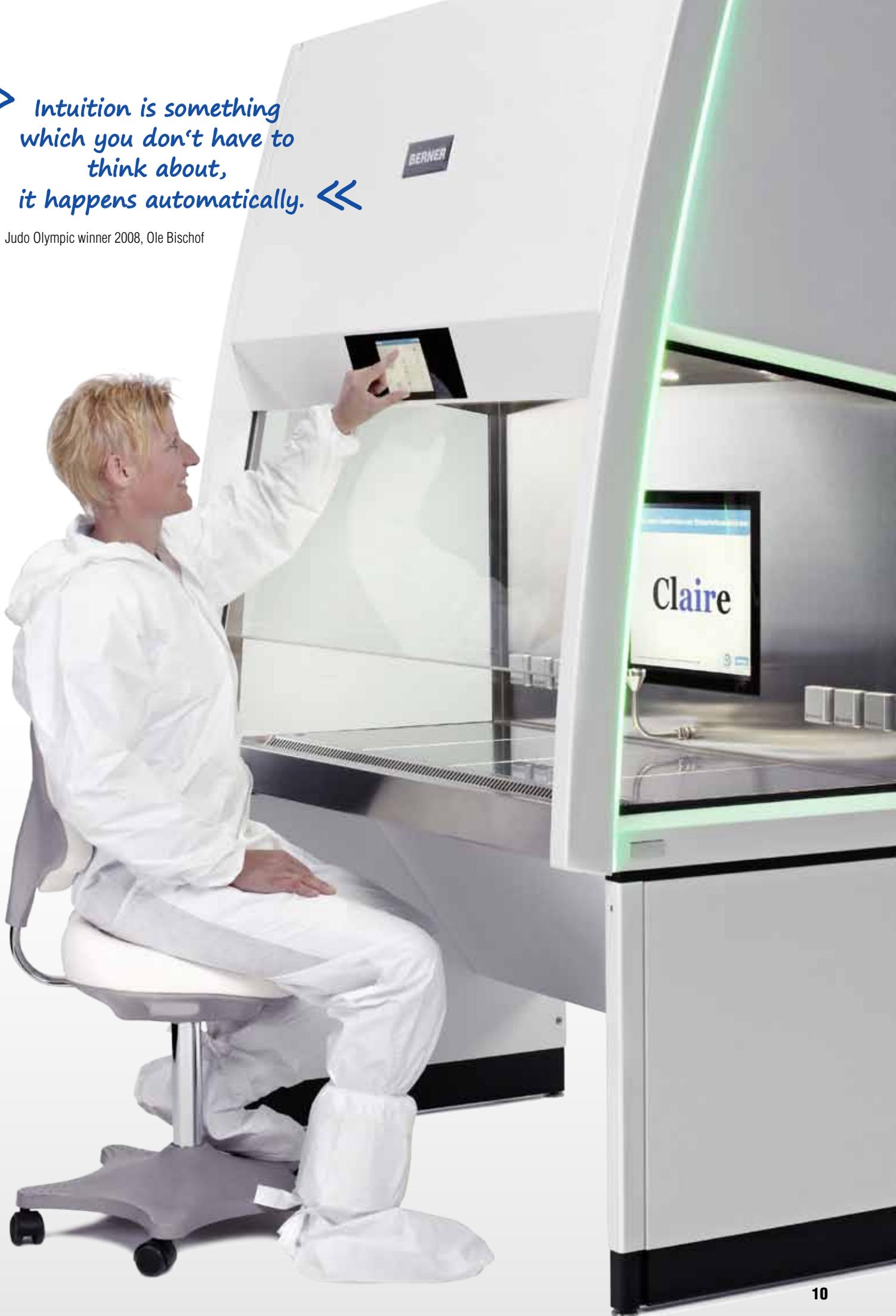
Quick guide – in pictorial form for instructions.



Alarm – specific fault diagnosis and suggested solutions.

>> Intuition is something
which you don't have to
think about,
it happens automatically. <<

Judo Olympic winner 2008, Ole Bischof



Safety

Proven technologies combined with solutions from research for your safety.

The new generation of safety cabinets guarantee the highest level protection. Established technologies have been combined with the latest research findings – creating the perfect protective equipment.

Ever since 2002, we have been 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 optimize the protection potential of our safety cabinets. The personal, product and cross-contamination protection of a safety cabinet has the very 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 setpoints while guaranteeing maximum protection. [1,2]

[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

LED-band & illuminated glass edge
QR-Code for video clip



www.berner-international.de/safety

Protection functions & PET
QR-Code for video clip



www.berner-international.de/PET_gb

NEW

The LED light bands set into the side panels of the new generation safety cabinets and the illuminated glass edge provides information about the current operating state using colour coding. You will be warned at a much earlier stage and more clearly about an unsafe operating state, as compared to traditional monitoring systems.

Prevention for more safety.



Sensor Technology

Claire recognizes you, as you approach.

Current research findings have shown, that the movements of a person close to the front working aperture can have a considerable impact on the protection functions [3,4]. A detection system for disruptive air flow, registered as a new patent, will detect movements of people and subsequently generate a warning signal in the display and the lateral LED lightband. This preventive system warns you of possible dangers in good time.

[3] Gragert, S.; Harder, M.; Hinrichs, T.; Kamdem Medom, B.; Dynamische Störungen und deren Einfluss auf die Schutzfunktion von Sicherheitswerk-bänken; Onkologische Pharmazie; 15. Jahrgang; 01.2013

[4] Gragert, S.; Hinrichs, T.; Kamdem Medom, B.; Safety Cabinets: The influence of dynamic interference factors on the safety function; Abstract for Poster Presentation; 55th Annual Biological Safety Conference; Orlando, FL, USA; 10.2012

Sensor technology

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www.berner-international.de/sensor_gb

$v = 1 \text{ m/s}$,
6 crossings per test cycle



Test stand „Dynamic interference and the impact on the protection potential of safety cabinets“ in our research and development laboratory.



64 individual sensors built into the base frame detect temperature and velocity of passing people



Filter technology

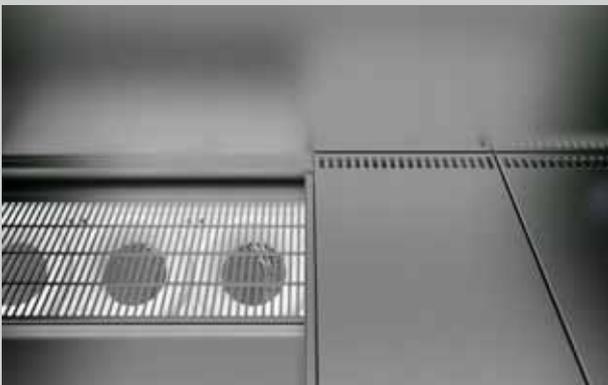
New HEPA-cartridge filter for lower sound levels and energy consumption.

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

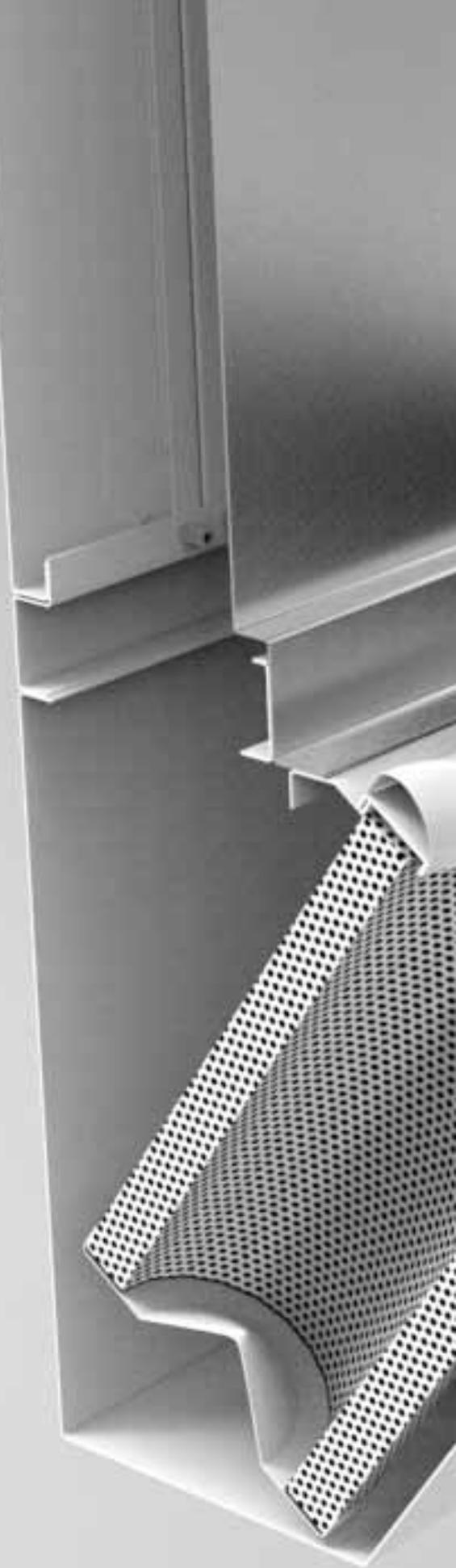
As part of a research project we were able to fluid mechanically optimize the HEPA-cartridge filters used in the 3-filter systems. Thanks to a newly designed intake port and air ducts the operating properties have been improved. Noise level and energy consumption have been reduced. The filter life has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

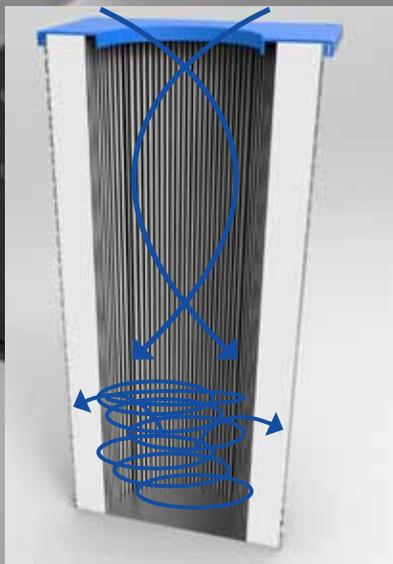
Proven properties have remained the same:

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

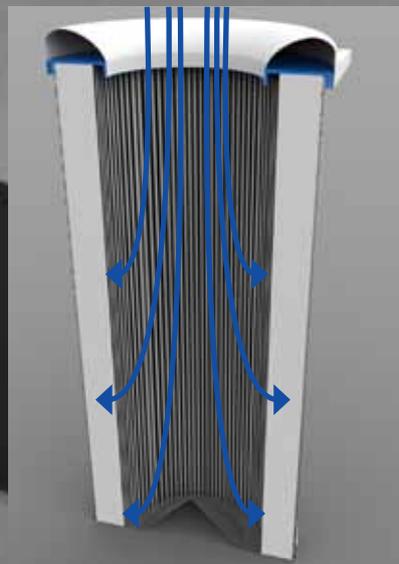


HEPA-cartridge filters below the works surface





Original generation
of HEPA-cartridge filters



New generation
of HEPA-cartridge filters



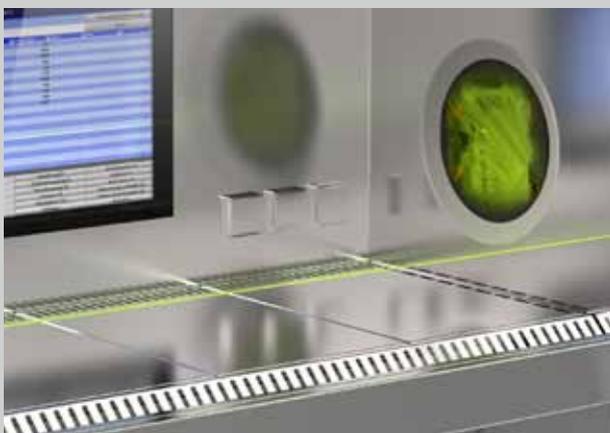
Claire & BSS[®] Sensor⁺

Perfect symbiosis: Safe transfer of dangerous waste.

Hazardous chemical and biological waste from safety cabinets requires special supervision. The ability to transfer waste without leaving the safety of the work area is the key to minimize cross contamination effectively.

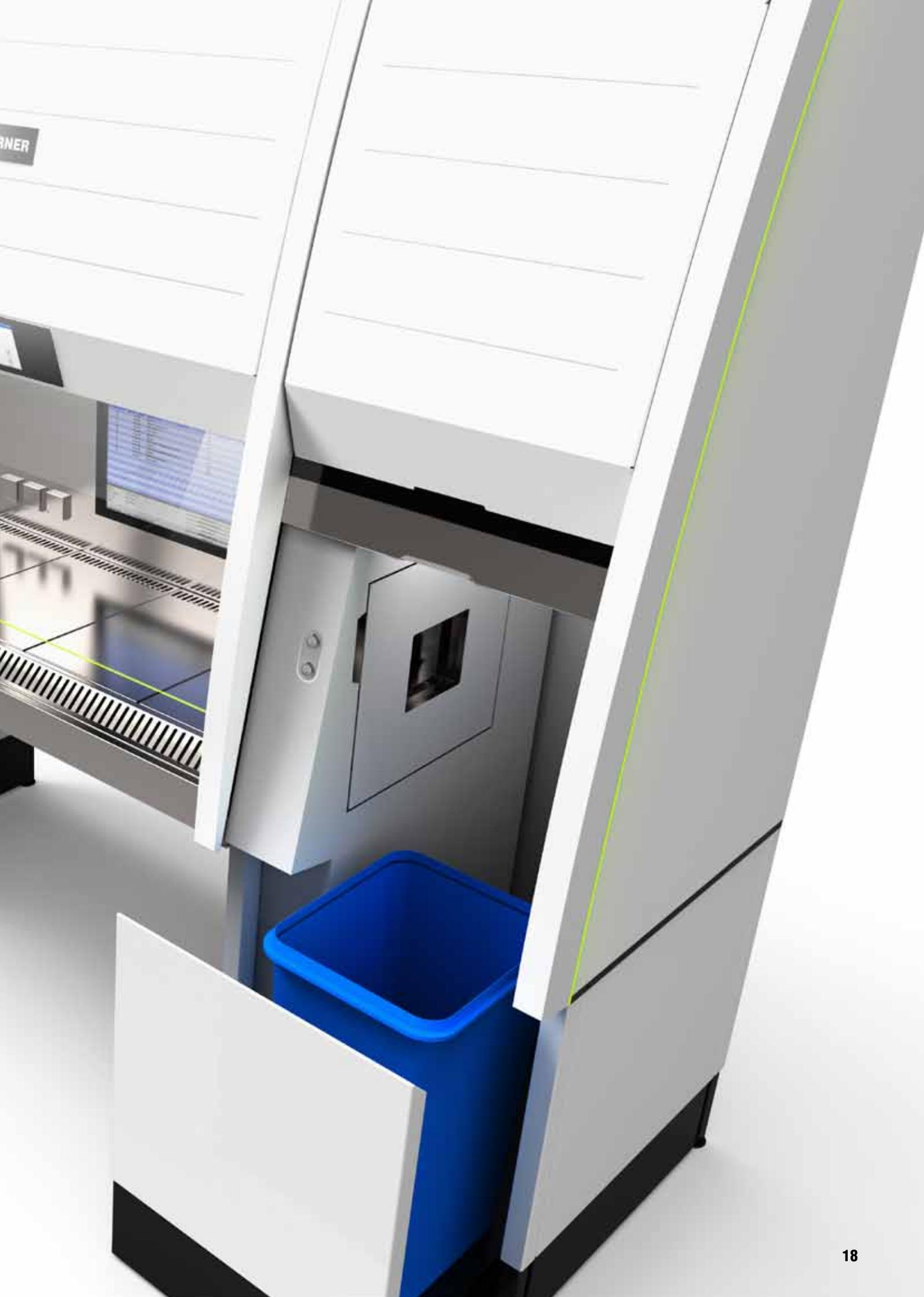
The, for the Claire specially adapted, waste disposal unit BERNER Seal-Safe[®] Sensor⁺ has been designed for receiving and air-tight sealing of waste:

- Minimizes release of aerosol and contamination
- Safe storage and transport in the foil tube up to inactivation by incineration or autoclaving
- Touch-free sealing via sensor technology
- Cut and seal facility for the foil tube
- 3-layer polyethylene foil tube with high barrier properties (e.g. cytostatics >7 days)
- Individual size of waste bags possible
- Automatic transport of foil tube sealing



Lateral disposal of dangerous waste without having to leave the containment.







GreenTec

Innovative technology reduces the energy consumption up to 97%.

During the development of the new generation a great deal of emphasis was placed on low operating costs and an environmentally friendly design – **GreenTec**.

Due to

- energy-efficient “Eco-Mode“
- innovative LED illumination technology
- top modern EC-fans
- intelligent controlling and regulation technology and
- „Auto-On-Off“ function by means of a presence sensor system

The new generation reduces the operating costs by up to **97 %** compared to conventional safety cabinets.

Based on experience of the average life expectancy of safety cabinets of approximately 15 years and continually increasing electricity prices of about 37 per cent in the last five years [1], this is a particularly interesting aspect. The economic operation of laboratories is a decisive factor in the acquisition of new equipment and systems for a company. The investment of the new generation energy efficient safety cabinets will pay for itself much sooner thanks to the reduction of the operating costs (see table below).

[1] Statistical German Federal Office, <http://www.destatis.de>; Prices - Data of the energy price development; Wiesbaden; Germany; 12/2012

	Power consumption ¹	Energy consumption ²	Costs ³		CO ₂ -emissions ⁶		Reduction [Costs & CO ₂ -emissions/ 15 years]
	[W]	[kWh]	[€/year]	[€/15 years] ⁵	[t/year]	[t/15 years]	
Old generation	500	4.380	1.165,00	17.475	2,61	39,2	
New generation plus with “Auto-On-Off“-Function ⁴	85	149	40	600	0,09	1,4	

[1] Target operation incl. light on

[2] as in [1] for 365 days/year and 24 h operation

[3] 26.6 cent/kWh, source: www.eon.de, tariff ProfiStar Gewerbebetriebe 2013

[4] 8h/day incl. breaks (Breakfast, lunch, transfer in-/out, , etc. 1–1.25 h), 5 days/week, 52 weeks

[5] Average life of SC = 15 years

[6] Source: www.umweltbundesamt.de; basis electricity mix in Germany

GreenTec

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www.berner-international.de/Greentec_gb

NEW

The patent-registered "Auto-On-Off" function for safety cabinets, guarantees an extremely energy-efficient operation. If the user is not within the detection range of the presence sensor system near the safety cabinet, then the front window will be closed automatically after completion of the "Safety-Clean-Cycle". All consumers will be switched off to conserve valuable energy. As soon as the user re-enters the detection range, the original operating state is reactivated immediately. The operation costs are reduced considerably.





Construction

**Very quiet, optimally illuminated
and easy to clean.**

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

- Unlike many other safety cabinets, the "New Generation" can be transported and set up on location as one unit. This special feature results in an easier and faster transport, installation and commissioning.
- Another advantage is the relatively low overall height. This enables the operation of safety cabinets even in rooms with extremely low ceilings. In this way the maintenance as well as service costs are reduced and the connection of a ventilation system is simplified.
- The use of high grade materials from qualified suppliers guarantees a first class and reliable workmanship. The

workspace is made completely of stainless steel and is finished in one piece. Thus there are virtually no joins making it very easy to clean.

- Operational parameters like the sound pressure level **as low as 46 dB(A)*** and the nominal illumination level **of up to 1.700 lx*** and a dimmable LED-technology guarantee very comfortable working conditions.
- A large selection of additional options offer numerous possibilities for customization.

* According to model and operating mode.

NEW

The delivery of a safety cabinet takes place in one complete unit. As the work surface can be adjusted to suit individual needs, the safety cabinet can be lowered to a total height of 1950 mm. This means that for delivery the safety cabinet will fit through virtually any door!

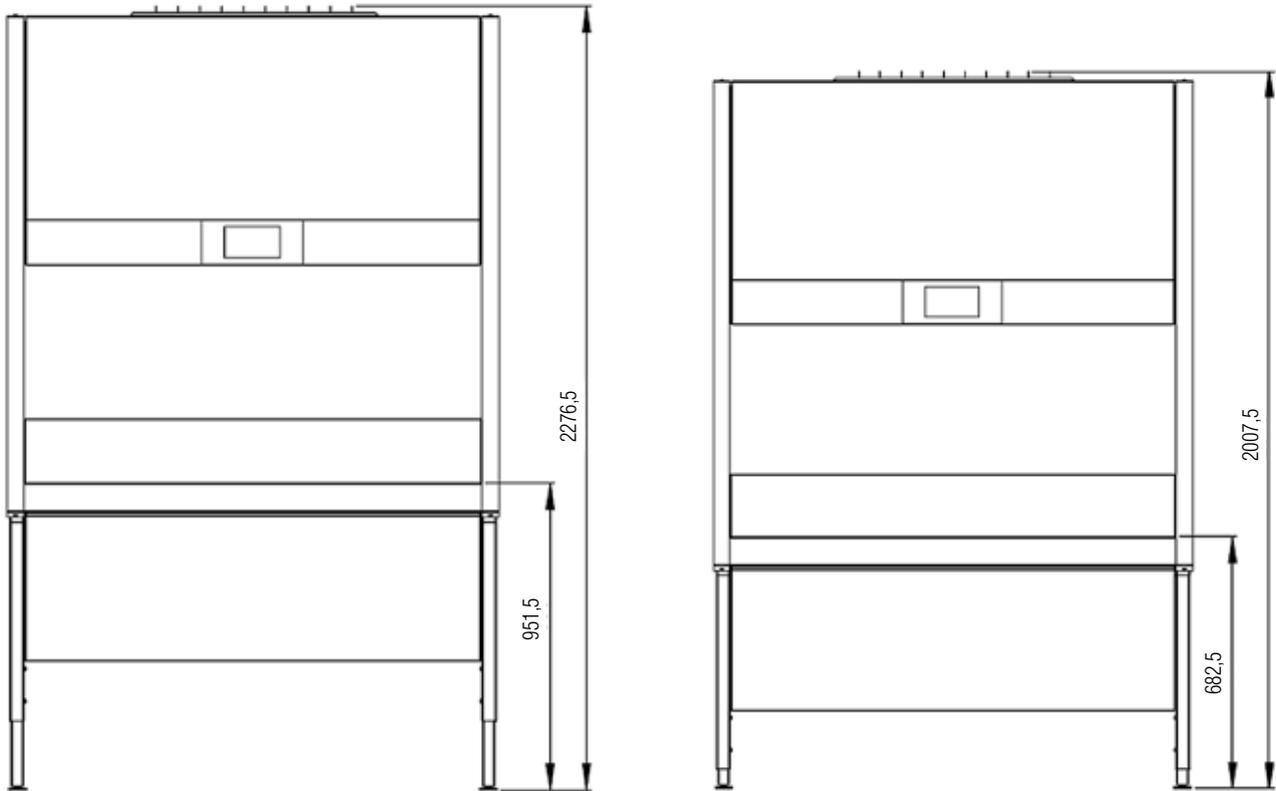
Transport & Delivery

QR-Code for video clip



www.berner-international.de/delivery





General data

Device	Laboratory device
Type of device	Cytostatic safety cabinet or class II microbiological safety cabinet
Type of construction	DIN 12980; EN 12469; NSF 49
Mark	CE
Quality management system	EN ISO 9001:2008
Target test mark	TÜV-GS

General technical data

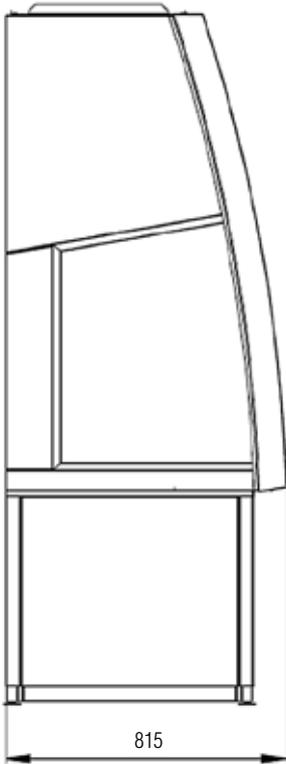
Nominal illuminance	800–1700 lx ¹
Vibration (RMS) of the work tops ¹	≤ 5 µm
Sound pressure level to ISO 11201	46–60 dB(A) ¹

Material specific data: casing

Material workspace	1,5 mm stainless steel, material no.: 1.4301
Surface finish work space	320 grit fine finish, mean roughness index $R_a \approx 1,6 \mu\text{m}$
Material casing	Powder coated 1,5 mm Zincor-sheet steel, material no.: 1.0330
Front-, side and back panel	Multi-layer safety glass with UV absorbing PVB interlayer

Electrical data

Rated voltage / rated frequency / power consumption	230 V AC / 50 Hz / 85 – ca. 700 W ¹
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Supported by:



on the basis of a decision
by the German Bundestag



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Mechanical Data	
Width	approx. 1.300, 1.600, 1.900 mm
Height	2007,5 – 2276,5 mm
Depth	815 mm
Installation dimension (Height/depth)	1950 mm / 790 mm
Work surface height, 7 steps	682,5 – 951,5 mm
Ventilation data	
Flow rate of downflow air	approx. 900 – 1400 m ³ /h ¹
Flow rate of exhaust/inflow air	approx. 350 – 540 m ³ /h ¹
Variable air flow	Eco-Mode, Standard-Mode, GMP-Mode
Filter class(es) main, recirculation and exhaust filter	at least H 14 (degree of filtration ²): E ≥ 99,995% in accordance with DIN EN 1822-1 ²
Clean room in work space	EC-GMP-Guidelines: A; EN ISO 14644-1: 5

[1] Depending on operating mode and model

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

Several illustrations contain optional features and equipment, which are supplied as standard.

* Several models of Claire are currently being type-tested by the TÜV to obtain the „GS-Mark“. Certification is imminent.



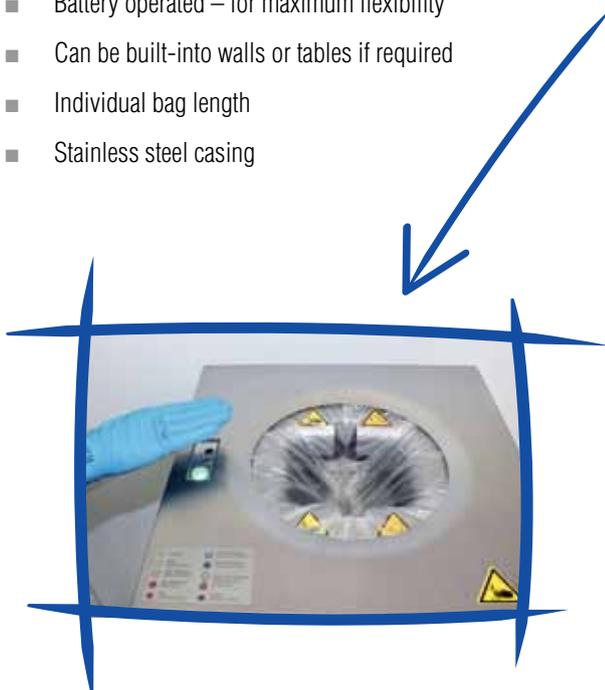
SealSafe® Sensor⁺

The SealSafe® waste disposal unit is used for the containment and aerosol-tight heat sealing of infectious and cytotoxic waste, thereby increasing the occupational safety in your laboratory. Even without the connection to Claire it is an asset for your laboratory.

The handling of infectious and toxic waste is regulated in European and national legislation. Our BERNER SealSafe® guarantees the highest standard when working with contaminated substances and seals aerosol and liquid-tight, resulting in increased safety for all staff in the laboratories.

Touch-free sealing

- Sensor controlled shrinkwrapping & foil transport
- Automatic foil cutting
- Can be integrated into a safety cabinet
- Battery operated – for maximum flexibility
- Can be built-into walls or tables if required
- Individual bag length
- Stainless steel casing



Premium Quality

Quality, reliability and innovative technology
–“Made in Germany“ .

Safety cabinets by Berner International comply with the highest quality requirements and are subjected to a comprehensive testing program before delivery to the customer. From product development to manufacturing to installation in your laboratory – Quality “Made in Germany”.



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ISO 9001 certified
company since 1994

BERNER

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