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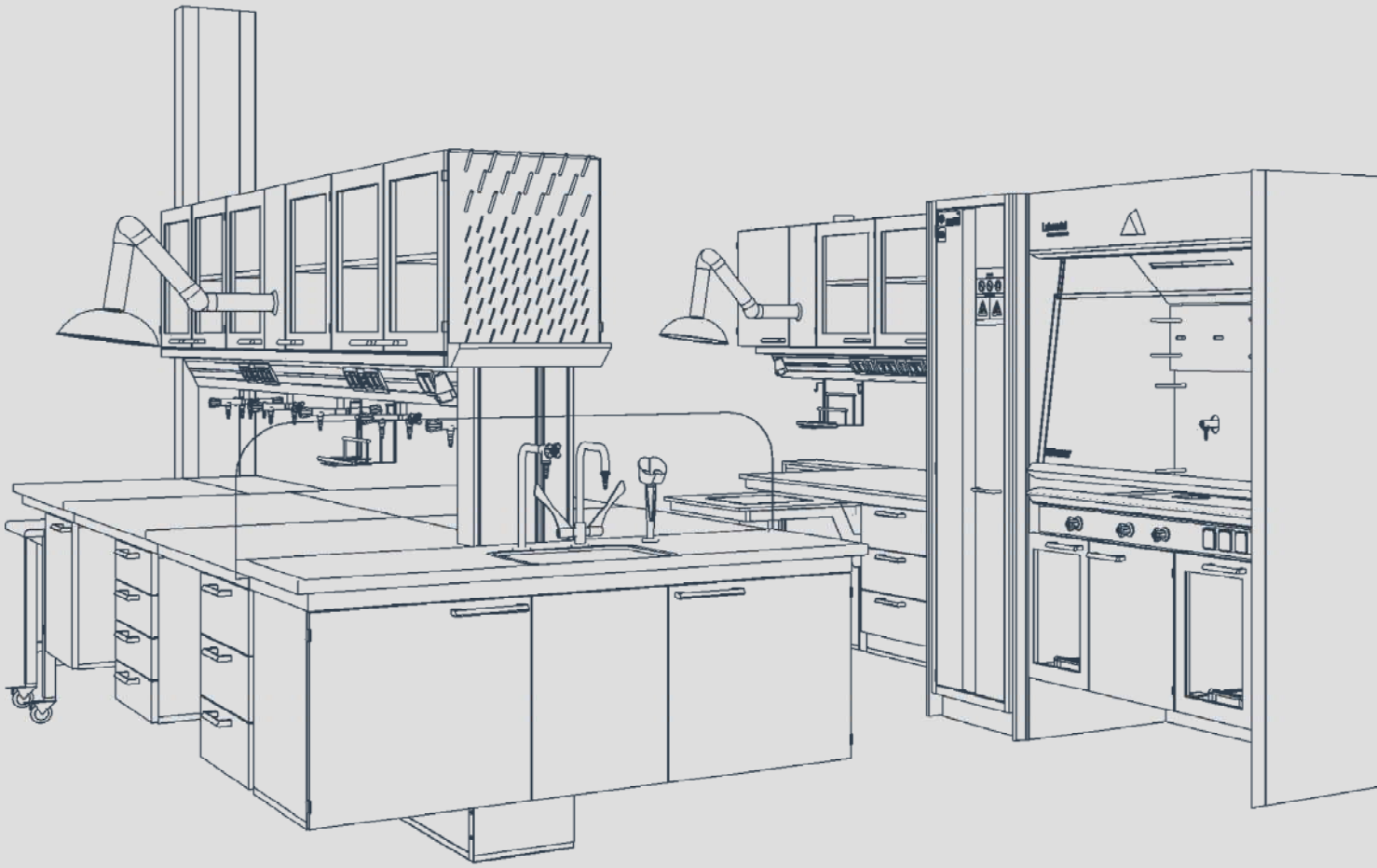
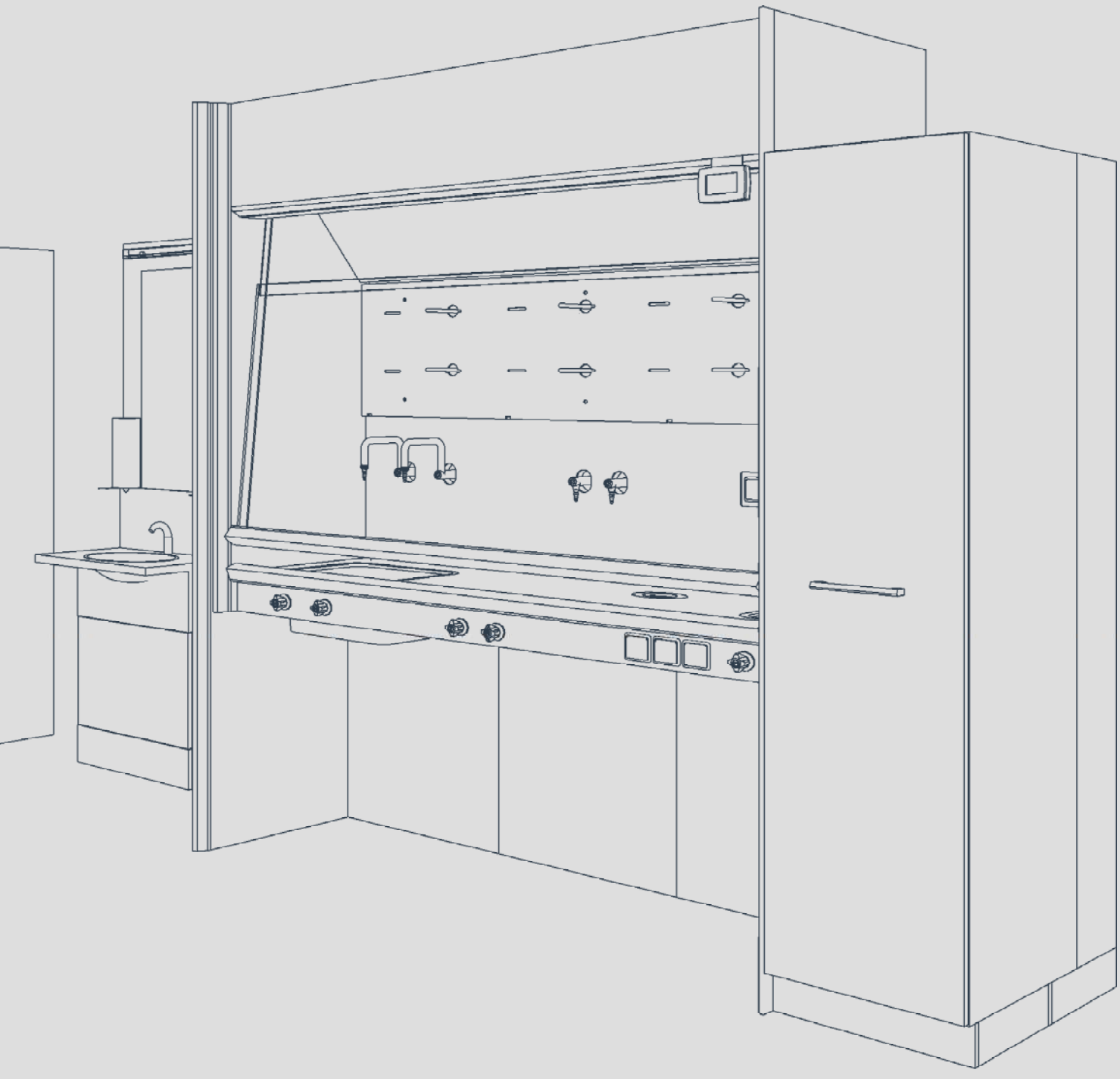
Designing safety

Designing safety...



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FUME CUPBOARDS GREENLINE PRO

GREENLINE
FUME CUPBOARD PRO

- Highest safety
- Optimized for lower energy consumption
- Large glass area for maximum possible view
- High quality for daily use
- Designed for GMO facilities
- Egonomics and comfort features
- EN / DS 14175-200:23

GREENLINE™ PRO

Efficient fume cupboard with maximum security, ergonomics and flexibility in a modern design. The construction of the fume cupboard adheres to the EN/DS 14175 fume cupboard safety standard and fore fill international demands for safety and performance with a special focus on user-friendliness.

GreenlineTM series is prepared for a number of options that provide the fume cupboard with comfort, service and energy saving features. The fume cupboard is designed for flexibility in relation to future requirements, functions and ergonomics.

The fume cupboard can be added an electric height regulation function for an optimum working posture and for wheelchair users.
The fume cupboard is made of resistant materials for intensive professional use with a design made for installation of power, gasses, water etc. on the inside as well on the outside of the fume hood. The plumbing installations are placed in the front panel under the worktop for easy access.

Design

Aerodynamics in the chamber.

The fume cupboard compartment is the central part of an effective user protection. Safety is enhanced through a comprehensive analysis of the flow conditions inside the chamber using computational fluid dynamics computer models. These are optimized to ensure a smooth air flow both with and without equipment and setups inside the fume cupboard.

Flexibility

GREEN LINE PRO series is configurable and consists of a basic module which can be fitted exactly to the specific needs and performance requirements. The fume cupboard can easily be supplied with additional technical outlets or other functions for future needs.

Maximum possible view

In the definition of hood design, the ease of use and safety was the primary desire. Parameters such as a large glass area and easy access through the high sash window ensure that the operator achieves maximum overview and insight into the chamber of the fume cupboard and get a safe and easy access to setups and larger equipment.

Direct personal protection

The sash window is made of safety glass, which protects the user in case of accidents with a chemical splash, explosion or similar. The sash window is balanced by a counterweight placed on the backside of the fume cupboard which provides an easy operation. A double-wire system made of stainless steel, fixed with professional system brackets are connecting the two components.

Instant lock - fall protection

In the unlikely event that a breach occurs on a wire or a bracket - the sash window locks and is kept in position. The built-in safety mechanism locks both the sash window and counterweight to avoid injury.

Lighting

Pro fume cupboard comes with dual LED worklight lights on the top.

Pressure relief device

In case of sudden pressure in the cabin, for example, by an explosion, the pressure is effectively away from the operator through 2 explosion fields and the light unit located at the top of the fume cupboard.

Accessories

The PRO series is prepared for a range of assistive accessories for installation in the fume cupboard. For more information about monkey bars, shelves and holders, see our prospectus.

Safety

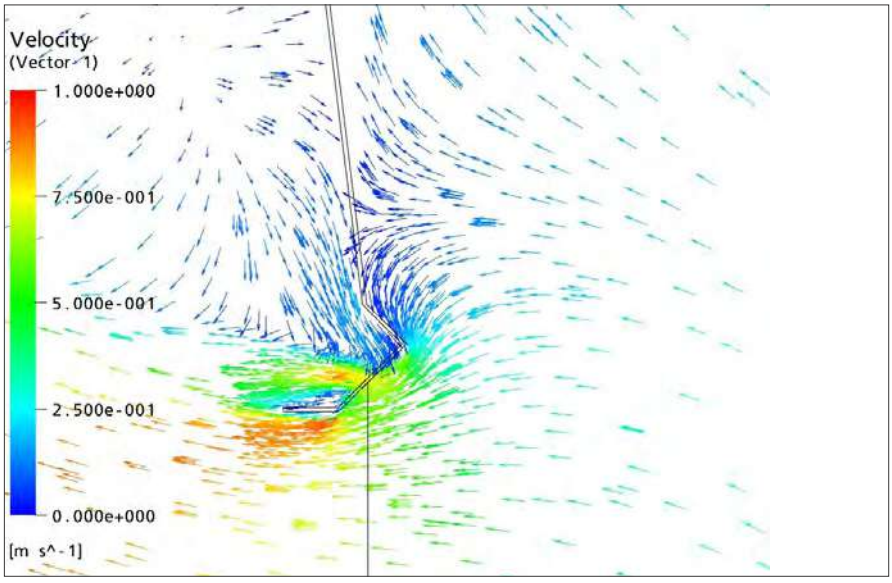
Airflow technology

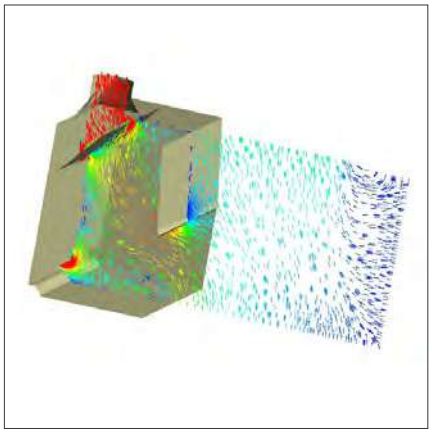
Security and protection of the user is the fume cupboard's main feature. High security and durability is an important element in our product development, therefore we use sophisticated CFD modeling to create the optimum airflow user protection in the working chamber.

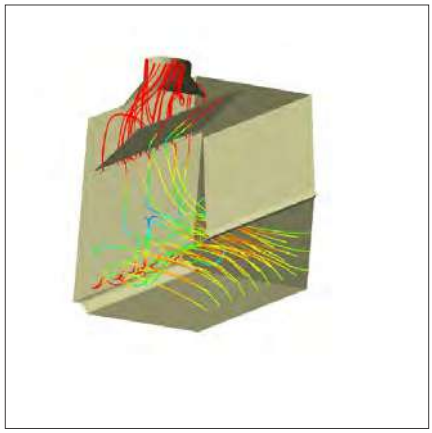
The operator is effectively protected against chemical vapors, gases, aerosols, carcinogens and other hazardous materials.

The working chamber acts as a physical barrier between the reactions in the fume cupboard and the surroundings in the laboratory and is designed to protect against chemical spills, runaway reactions, fires etc. The air flow in the fume cupboard prevents the accumulation of potentially explosive atmosphere inside the chamber.

The sash window is fitted with a protective rail / Airflowrail TM, and in front of the worktop is an airfoil that ensures a steady and controlled airflow over the work surface. This prevents accidental air turbulence, which can result in increased emissions and hazardous emissions from the working compartment.
The airflow is also safely controlled on both sides through the rounded aluminum profiles, and the well-proven design ensures that the jet streams are managed properly and removes heavy gases, vapors and other harmful substances inside the chamber.







Ventilation

The fume cupboard is connected to the ventilation system in the room via the connection on the top deck, either via a motorized damper connected to the main ventilation system or a separate frequency controlled ventilator box.

In accordance with EN / DS 14175, the fume cupboards must be equipped with an alarm
and control unit. The fan and the control unit ensures automatically a proper ventilation for the fume cupboard during operation.

The fume cupboard is working by creating a negative pressure inside the work chamber that prevents any contaminant from escaping. The air passes into the fume cupboard between the worktop and the sash window, and there are requirements for the air velocity measured in meters per second (m/s).
F the air velocity is too high in the chamber, it might cause a severe turbulence and a risk of harmful fumes escaping to the outside of the fume cupboard. An excessively low air velocity can likewise course harmful fumes escaping. The correct airspeed is essential for a safe and economically efficient fume cupboard.

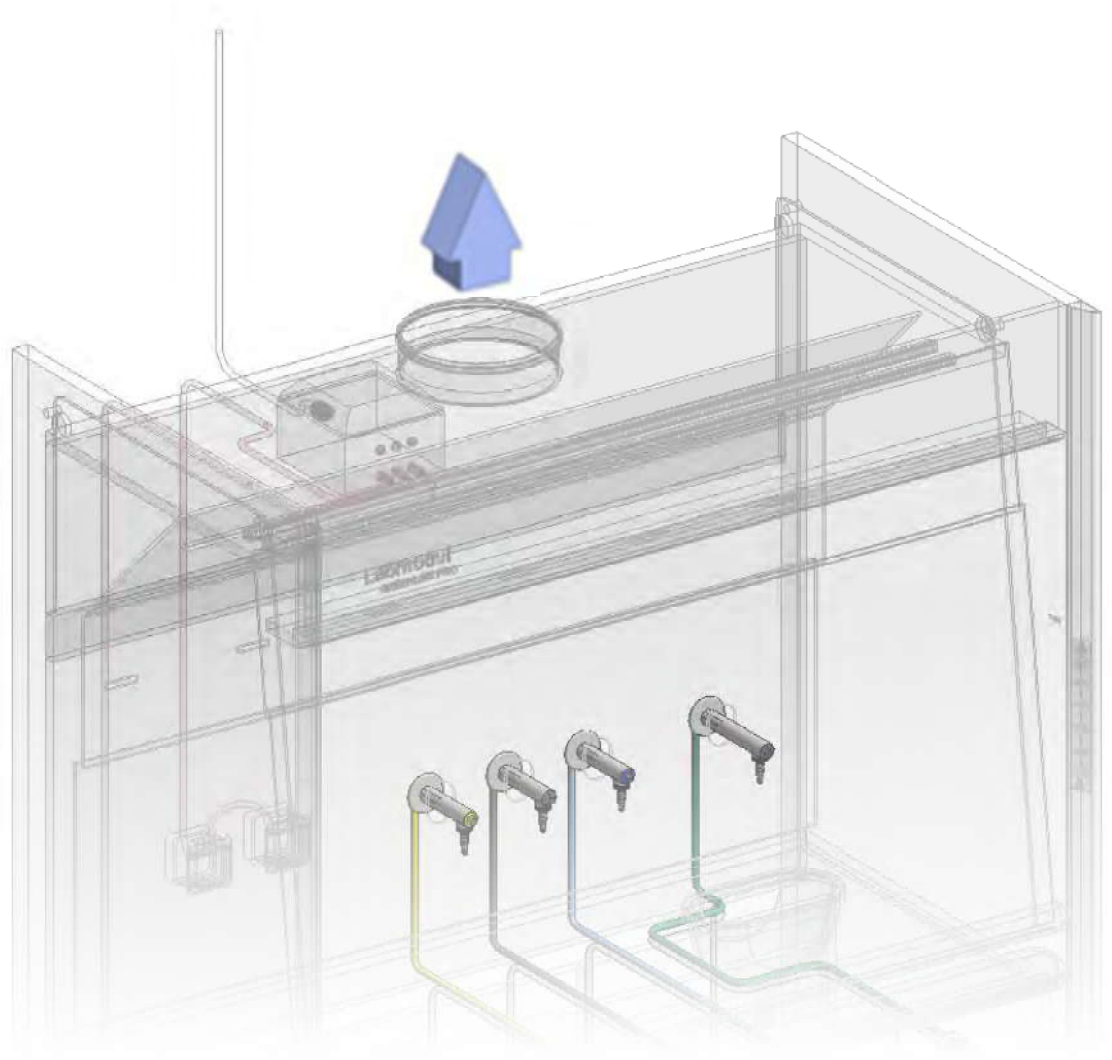
In general, it is recommended that the air velocity is between 0.3 and 0.5 m/s However, it is important to check with the local safety regulations before the fume cupboard is in service.
Low energy fume hoods are designed and tested to run with minimal air speed during use.

Energy savings
To save more energy, these fume cupboards can be equipped with a sash automation that lowers the sash when there has been no activity in the chamber in a specified time. The sash window automatically closes and the air velocity is lowered to the standby mode.

Suction from chemical cabinets

Chemicals should be stored properly and thus kept in a ventilated cupboard, substances that are marked as toxic requires also that the cabinet must be locked.
Chemical cabinets shall be constantly ventilated 24 hours a day and connected independently of the fume cupboard exhaust system.

- Chemical tall Cabinets are connected on top to a 100 mm pipe.
- Chemical base cabinets are connected on a 50 mm pipe placed on top of the fume cupboard



Sustainability

The fume cupboard is made of resistant materials for professional use and is prepared for the installation of sockets for electrical and plumbing both inside and outside the fume cupboard cabinet.

GreenlineTM has been developed with a particular focus on sustainability and reducing CO2 consumption.

Certified quality components are used by recognized Danish and European producers.

The material selection has been made to meet the requirements of Labmodul A / S for the use of products that are or may be used in a natural recycling cycle for both energy and environmental reasons.

Including a sample of typically used recycled materials in the production of the Greenline Pro fume cupboards.

- Construction material based on recycled wood.
- Glass
- Steel
- Stainless steel
- Aluminum
- Copper / cables

Security

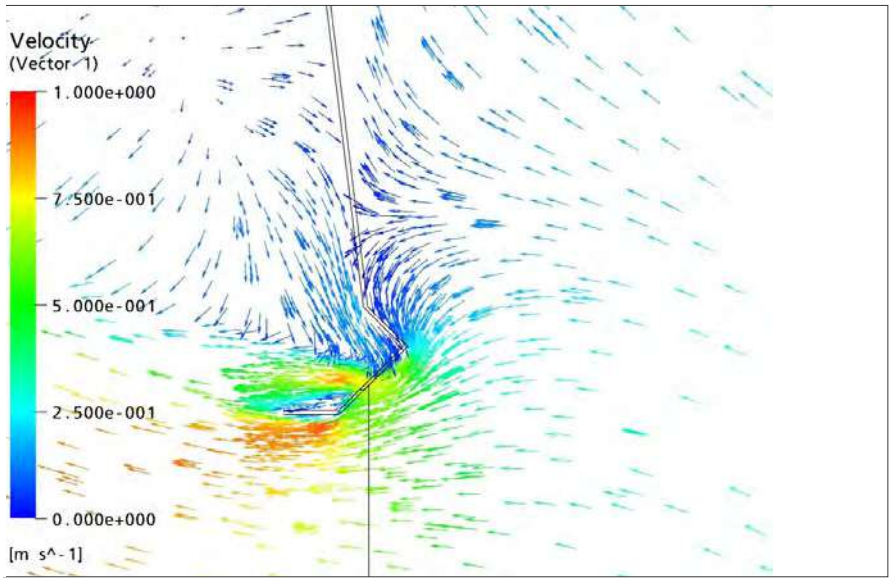
Airflow technology
The security and protection of the user is the most important feature of the fume cupboard.

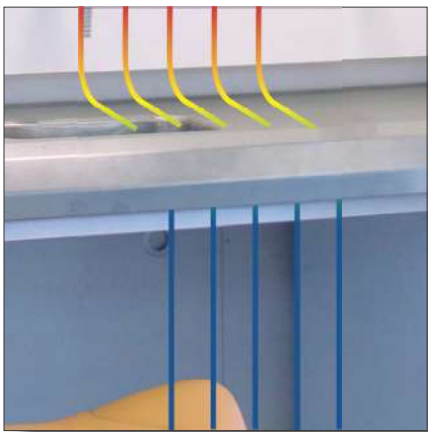
The operator is effectively protected from chemical vapors, gases, aerosols, carcinogens, and other harmful media.

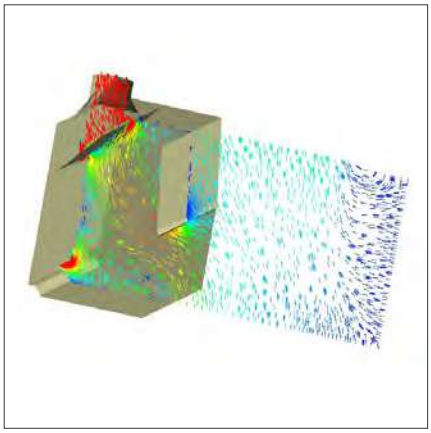
The fume cupboard cabinet acts as a physical barrier between reactions in the fume cupboard and the laboratory and is designed to protect against chemical spillage, runaway reactions, fires, etc. Ventilation flow in the fume cupboard prevents the accumulation of potentially explosive materials or vapors in the cabin.

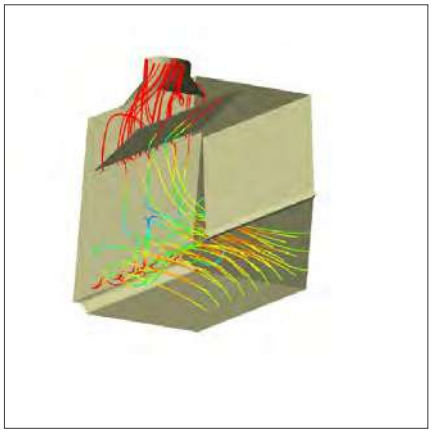
The sash is fitted with a protective rail, and on the front of the worktop, a table airfoil ensures a uniform flow across the work surface. This prevents unintentional air turbulence, which may result in increased emissions and harmful emissions from the work cabinet.

Also on the sides, the air is safely controlled through the work opening via the rounded aluminum lesenes and the proven design ensures that airflow is properly controlled and removes heavy gases, vapors, and other harmful substances from the cabin.









Ventilation

The Fume cupboard is connected via the stud on the top deck to the house ventilation system, either via a motorized damper connected to the main ventilation system or a separate frequency-controlled fan box.

According to EN / DS 14175, there is a requirement that the Fume cupboard is equipped with an alarm and control unit. The built-in ventilation control automatically ensures proper ventilation when the Fume cupboard is in operation.

The Fume cupboard works by maintaining a negative pressure in the fume cupboard cabinet to prevent any contaminant from escaping. The air passes into the Fume cupboard between the tabletop and the sash, and the air velocity is measured in meters per second (m/s).

An excessive air velocity in the fume cupboard cabin can result in heavy turbulence and thus a risk of spillage of harmful fumes.
An excessively low air velocity may also give rise to spillage. The correct air velocity is therefore essential for a safe and economically efficient fume cupboard.

Recommended air velocity 0.5 m/s.

Trace gas tests
According to EN / DS 14175, there is a requirement that after installation and adjustment of ventilation and fume cupboard an on-site test is performed including a trace gas measurement. Read more about this in the "On-site test" prospect.

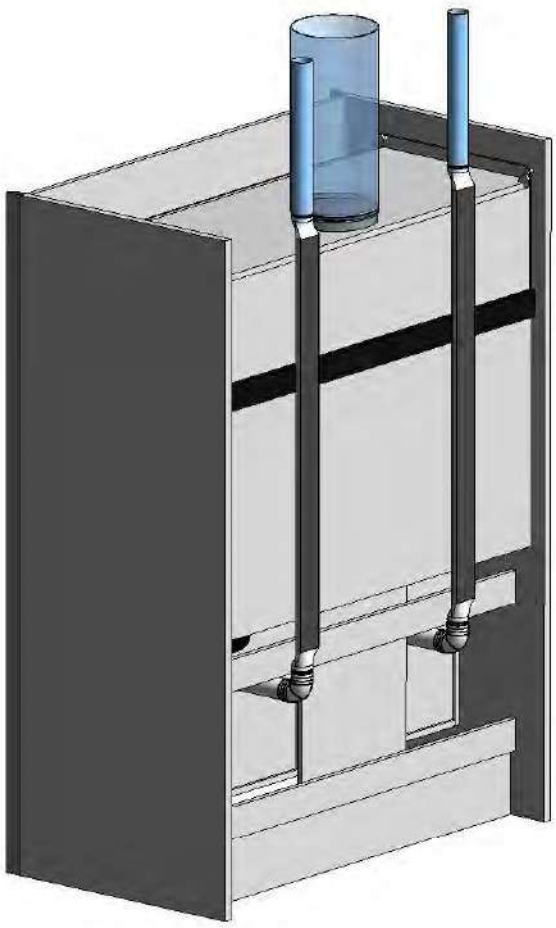
Energy savings
In order to save additional energy, these fume cupboards can be fitted with automatic sash windows, which further reduces the air velocity when the sash is closed.

Read more about this in the prospectus "Energy-saving lifting automation - GIS system".

Suction from chemicals
Chemicals must be stored properly and stored in a ventilated cabinet with extraction. In the case of substances that are poisoned, the cabinet must also be locked.

Chemical cabinets must be equipped with constant extraction 24 hours a day and function independently of the fume cupboard process ventilation

- The chemical tall cabinet is connected at the top to an Ø100 mm flange stub.
- The chemical Underbench cabinets are connected to a Ø50 mm stub located on the top of the fume cupboard.




labmodul
GREENLINE BASIC
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Sustainability

The fume cupboard is made of resistant materials for professional use and is prepared for the installation of sockets for electrical and plumbing both inside and outside the fume cupboard cabinet.

GreenlineTM has been developed with a particular focus on sustainability and reducing CO2 footprint.

Certified quality components are used by recognized Danish and European producers.

The material selection has been made to meet the requirements of Labmodul A / S for the use of products that are or may be used in a natural recycling cycle for both energy and environmental reasons.

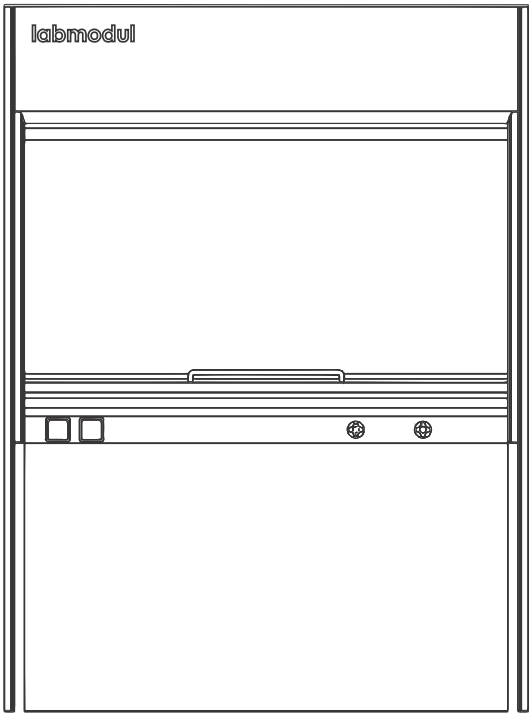
Including a sample of typically used recycled materials in the production of the Greenline Pro fume cupboards.

- Furniture plate based on recycled wood
- Glass
- Steel
- Stainless steel
- Aluminum
- Copper / cables

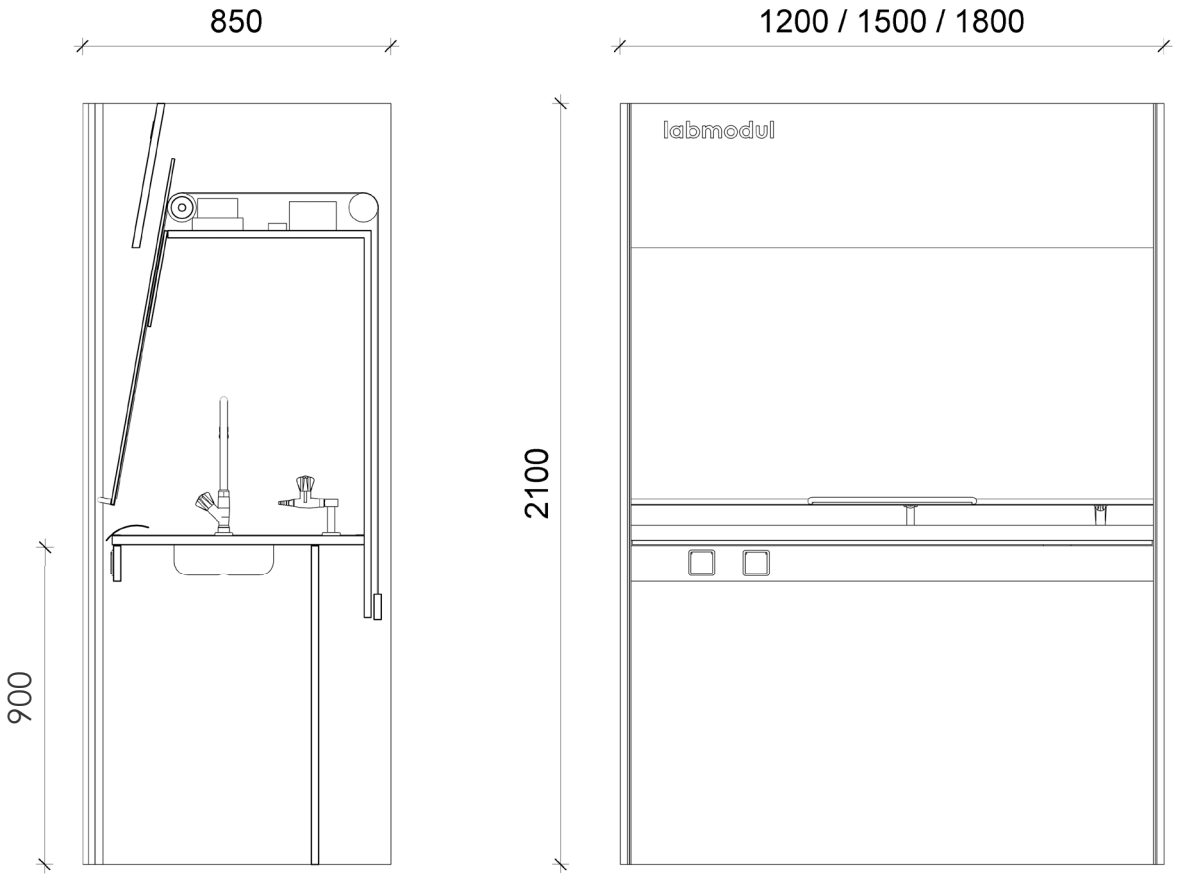
1. Fume cupboard cabin
2. Sash window
3. Worktop airfoil
4. Worktop
5. Slanted Cover
6. Working opening
7. Alarm and fume cupboard automatic box
8. Energy saving automatic sash system
9. Person detector for fume cupboard
10. Light

Accessories and ADD-ON's
The Greenline BASIC series can be configured with additional service and comfort features that increase functionality and create additional ergonomic benefits.

- Chemical and storage cabinet
- A wide range of table tops, drip cups and sinks
- VAV systems and alarms
- GIS, energy-efficient automation sash system



GREENLINE BASIC



Technical data

Model STB-SFA	Greenline Basic 120	Greenline Basic 150	Greenline Basic 180
Width outside (mm)	1200	1500	1800
Depth exterior (mm)	850		
Height exterior (mm)	2100		
Width inside cabin (mm)	1140	1440	1740
Depth countertops (mm)	680		
Height inside cabin (mm)	1025		
Max sash opening (mm)	700		
Connector for ventilation (mm)	Ø250	Ø250	Ø315
Position from the back wall to ventilations c-c (mm)	207.5	207.5	240
Position from fume cupboard side to c-c (mm)	600	750	900
	Fixed bottom		


HOLD RUDEN LUKKET
KEEP SASH CLOSED
F6

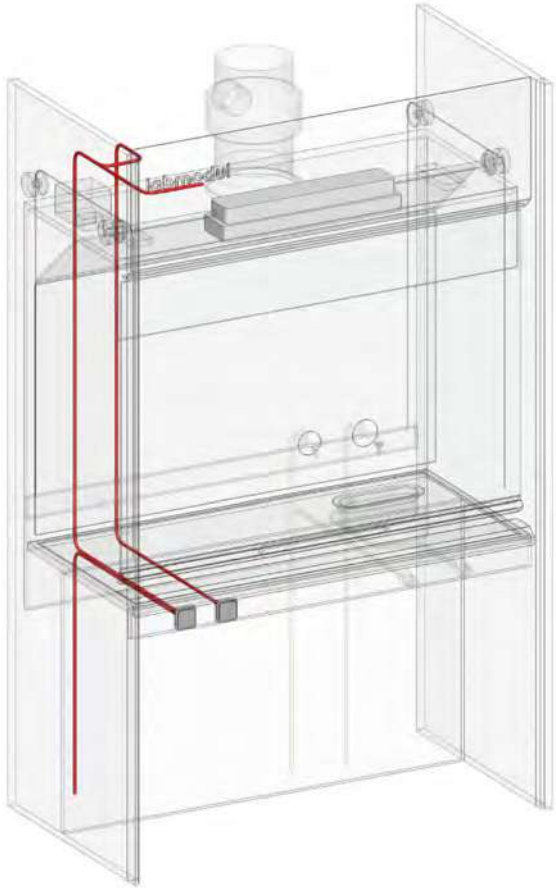
Electrical installations

Internal cable connections are made in 3-wire installation cable with 1-phase distribution. The installation is completed in a junction box located on top of the fume cupboard. From the assembly box, a cable length of 130 cm is completed with a CEE plug 16A.

Consumption on the stage up to 2200 watts.

The fume cupboard is supplied with all internal connections made in cable installation and in accordance with the Strong Power Order, Section 6, Electrical Installations.

In case of special fume cupboards that must meet ATEX requirements, this is carried out in accordance with the applicable regulatory requirements.



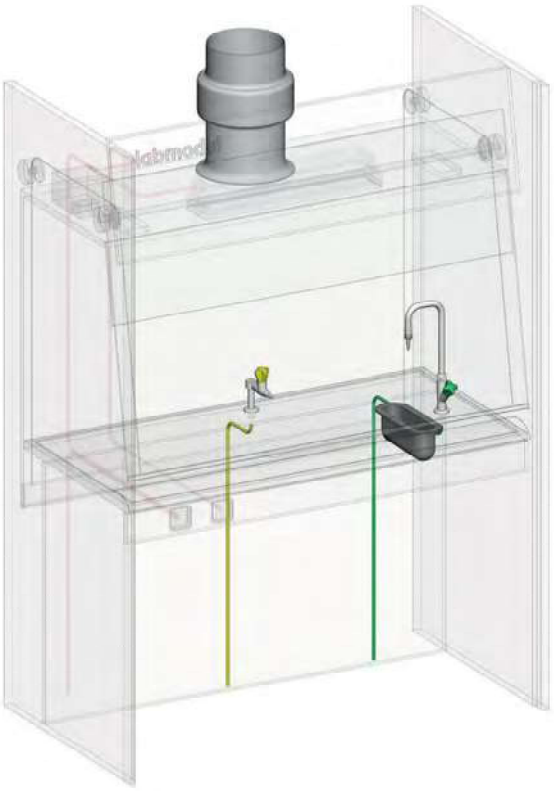
Plumbing installations

In general
Internal plumbing components are carried out in the BRIDGE UniFlex system. The system includes a wide range of fixtures and a unique concept of hoses for the conveyance and connection of plumbing installations.

The fume cupboard is supplied with coupling hose (plug'n play), that ends in a ½ "uniflex omliver, which also constitutes the contract price between" house "installations.

Fume cupboard with height adjusting function is performed with a flexible hose after water trap.

Manufactured pressure test.

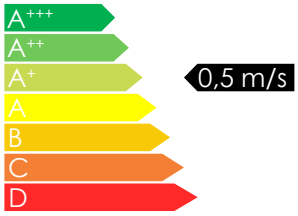


Media overview

- 01 - Water potable, cold (WPC)
- 02 - Water potable, hot (WPH)
- 03 - Distilled water (WDI)
- 07 - Water non-potable, cold (WNC)
- 08 - Water non-potable, hot (WNH)
- 10 - Natural gas (G)
- 12 - Liquified petrol gas (LPG)
- 14 - Butane (C_4H_{10})
- 16 - Propane (C_3H_8)
- 18 - Acetylene (C_2H_2)
- 20 - Hydrogen (H_2)
- 21 - Compressed air (CA)
- 22 - Oxygen (O_2)**
- 23 - Nitrogen (N_2)
- 24 - Carbon Dioxide (CO_2)
- 25 - Argon (Ar)
- 26 - Helium (He)
- 27 - Dinitrogen monoxide, nitrous oxide (N_2O)**
- 28 - Low vacuum - 100 kPa to 0,1 kPa (V)
- 29 - Fine vacuum - 0,1 kPa to 0,001 kPa (VF)
- 30 - High vacuum - 0,1 kPa to 0,0000001 kPa (VH)
- 35 - Tempered water (one handle mixer)
- 36 - Deionised water, cold (WDC)
- 39 - Water potable (WPC /WPH)
- 40 - Water non-potable (WNC /WNH)
- 46 - Methane (CH_4)

Air volume in m³/h at 0,5 m/s

Opening cm	10	15	20	25	30	35	40	45	50
Greenline Basic 120	200	300	400	500	600	700	800	900	1000
Greenline Basic 150	250	390	500	30	760	890	1015	1140	1270
Greenline Basic 180	300	480	600	760	920	1080	1230	1380	1540
Greenline Basic 240	400	600	800	1000	1200	1400	1600	1800	2000

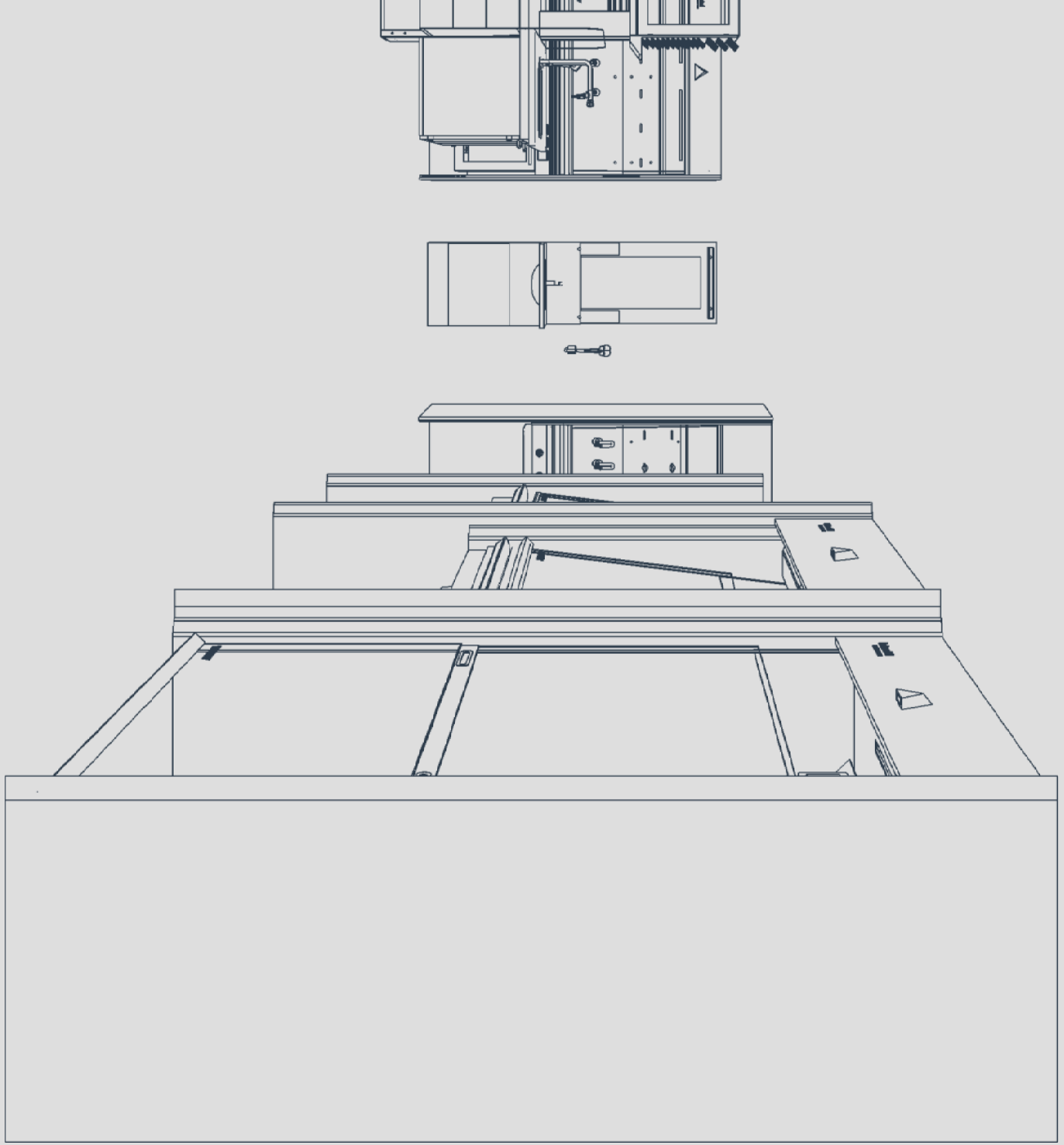


Ventilation connection

Model Basic	Greenline Basic 120	Greenline Basic150	Greenline Basic 180
Outside width (mm)	1200	1500	1800
Connection pipe for ventilation (mm)	Ø250	Ø250	Ø315
Height from floor to OK stud (mm)	2385		

Internal / external hose types & connections

Labmodul					INTERNAL / EXTERNAL HOSE TYPE & CONNECTIONS	installation-related			
Media	Tube	Pressure	Collection	Dimension		Dimension	Collection	Valve	Zone
Domestic Water	Uniflex (SPX)	Max. 10 bar	G½''	G½''		G½''	Nippel	Shut-off valve	A
DEM water	PA	Max. 6 bar	G½''	G½''		G½''	Nippel	Shut-off valve	A
Technic gas	Uniflex (SPX)	Max. 16 bar	G½''	G½''		G½''	Nippel	Shut-off valve	A
Burning gas	Uniflex (SS)	Max. 132 bar	G½''	G½''		G½''	Nippel	Shut-off valve	A
Clean gas	Uniflex (PTFE)	Max. 21 bar	OD10/Ø10	OD10/Ø10		OD10/Ø10	Nippel	Shut-off valve	A
Strainer	PP	-		G1½''		G1½''			B



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