



# Fume cupboards

A safe choice

# Future-proof fume cupboards



Fume cupboards must always effectively protect users from the effects of harmful substances. Labflex offers functional fume cupboards, ensuring efficiency for all users and a safe environment in the laboratory

The users and the type of work being performed in laboratories vary, and it is rare that preferences and requirements are the same. The benefit of Labflex is that we can meet all of these diverse needs in the laboratory. Labflex has a wide range of standard fume cupboards and can supply specific, customised fume cupboards and ventilated solutions for laboratories. Fume cupboards from Labflex can therefore meet complex user, energy and safety requirements.

## CHOICE OF SOLUTION

Labflex's configuration and ventilation

solutions are based on a thorough, preliminary analysis of requirements and the work environment. Positional requirements, usage patterns and design specifications are included in the analysis, and form the basis for designing the appropriate solution. Depending on the ventilation requirements, Labflex can supply laboratory solutions with fume cupboards that include integrated control systems, sensors, alarm, automatic sash control etc. The solution can be with or without a VAV solution and can include features like process ventilation with replacement air, signal boxes etc.

## LABORATORY TYPES

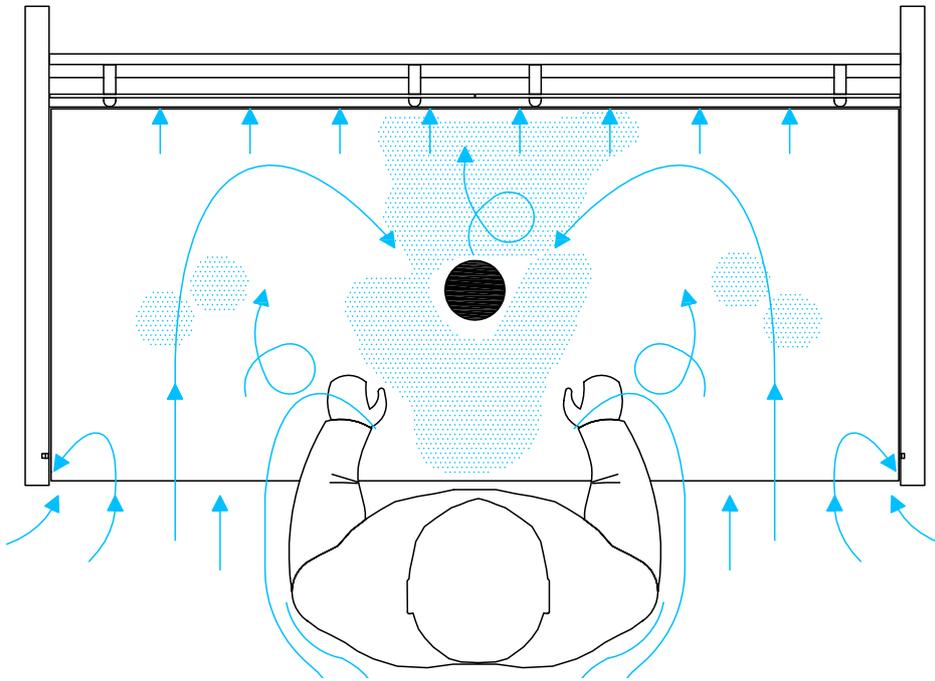
Labflex is capable of supplying products with variable or constant air-flow and with integrated control solutions. With its broad and well-documented product portfolio, Labflex can supply fume cupboards for all kinds of laboratories – from analysis to GMO laboratories.

The product portfolio contains a wide selection of standard models for complex and large walk-in fume cupboards and specially developed pathology fume cupboards. Isotope or perchloric acid fume cupboards are also part of the standard product range from Labflex.

## FUTURE-PROOF LABORATORIES

Designing and manufacturing fume cupboards correctly and optimally requires an in-depth understanding of standards, regulations and trends. This know-how is embedded in our global team, which consists of architects, engineers, constructors, consultants, product specialists and laboratory technicians. This guarantees that our customers always receive the best advice and an optimal and future-proof solution.

A fume cupboard must be able to adapt to the laboratory's existing and future needs, as well as to the various



**VENTILATION FLOW**

Correct air volume and correct placement of air replacement injection prevents turbulence in the fume cupboard.

furniture systems. The ability to adapt to specific user needs and behaviours, the given building conditions and the current regulatory requirements ensures high efficiency and a long service life for fume cupboards. All Labflex fume cupboards can be integrated into both new and existing furniture systems.

**SPECIAL FUME CUPBOARD SOLUTIONS**

Labflex also designs customised solutions using our own engineers and architects. For example, fume cupboards for isotope laboratories have a fully-welded, stainless steel insert that provides optimal hygiene and safety conditions. Isotope fume cupboards are approved by the Radiation Hygiene Institute according to Class B and C, and also meet the requirements of the National Board of Health's regulations regarding the use of open radioactive sources in hospitals, laboratories, etc. Acid fume cupboards are designed to work with perchloric acid. The cabinet's lining insert is fully-welded and coated

with acid-resistant polypropylene, which ensures an optimal working environment.

**AUTOMATED VENTILATION SOLUTIONS**

Labflex's interior and ventilation solutions include automated ventilation control for laboratories as an integral part of the fume cupboard design. These solutions have been developed over a number of years and have been optimized in cooperation between Labflex and competent subcontractors. Both standard and customised controls are available.

Both technical IT and product-specific control systems can be supplied, and all product solutions are explicitly developed for implementation in laboratories. The control systems make the fume cupboard intelligent and provide a safer working environment as well as optimized energy consumption.

**ROOM TURBULENCE**

Our fume cupboards are designed so

that the turbulence inside and in front of the fume cupboard is controlled and minimized to stay within approved levels. Aerodynamic structures in the design ensure smooth and uniform air-flow, creating a balanced ventilation environment and optimal ventilation.

**AIR SPEED**

The air speed in a fume cupboard can be adjusted by the user. Labflex's fume cupboards are designed so that an automatic control system adjusts the air speed, depending on the sash opening height and the use of the fume cupboard. In most cases, Labflex recommends configuring the fume cupboard for an air speed of between 0.3 m/s and 0.5 m/s, depending on the specific situation and safety standards. The norm in Denmark is 0.5 m/s. Labflex's consultants can provide advice on this.

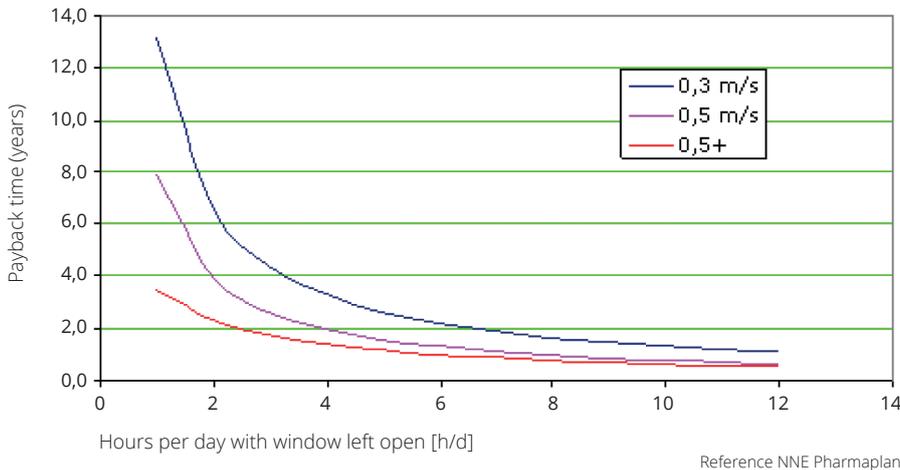
**AIR-FLOW ADJUSTMENT**

The Labflex operating system is intelligent

# Intelligent fume cupboards



### EnergySaver payback time



EnergySaver installed in a new 1500 mm fume cupboard with an older ventilation system.

Under normal user conditions, the payback time on an investment in EnergySaver will be maximum 2 years.

and interprets the user's behaviour so that the airflow is automatically adjusted depending on the height of the sash. For example, if the sash window is closed, the air volume will be automatically reduced. The air volume is adjusted and adapted to a new window level within 1 second. The short reaction time increases safety in and around the fume cupboard.

#### AUTOMATIC SHUT-DOWN

Labflex supplies several kinds of sash controls, including the product EnergySaver, which is an energy-saving feature in the fume cupboard.

The primary function of EnergySaver is to ensure that the fume cupboard's sash closes automatically when the fume cupboard is not in use. This reduces and optimizes energy consumption, while also maintaining safety.

The EnergySaver controls are integrated with the general fume cupboard

automation, such that the automatic window closing and air-flow adjustment are regulated simultaneously. The automatic sash closing on EnergySaver can be programmed so that the intervals are adapted to the specific work and usage patterns in the laboratory. The user defines the time intervals. Sash closing can also be activated at specific times, such as after working hours.

The system can employ advanced and sensitive technology to detect any resistance in the window caused by test equipment (e.g. flasks) so that the automatic closing stops immediately. This eliminates the risk that experimental set-ups and equipment can be damaged or destroyed if they are sticking out of the fume cupboard. The product can be fitted in both new and existing fume cupboards.

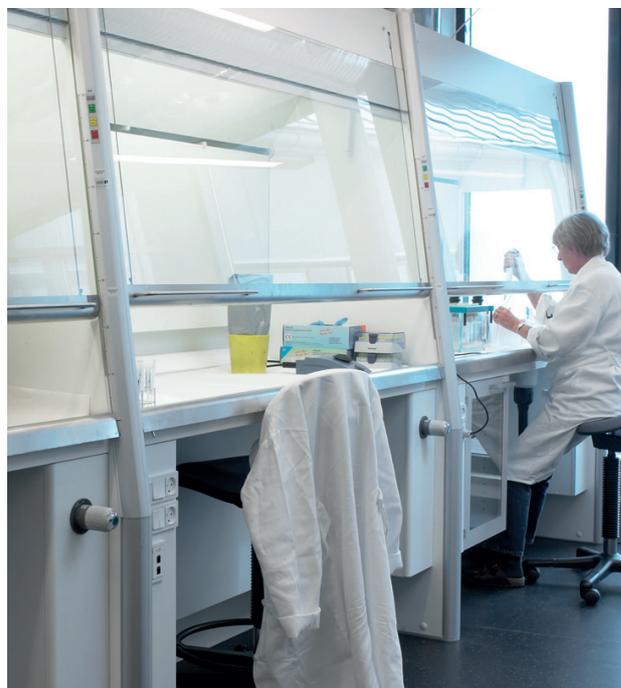
#### AUTOMATIC OPENING

The intelligent control system also provides a high level of user friendliness in

#### Energy-efficient installations

- The laboratory's fume cupboard is equipped with the automatic window closing system, EnergySaver, which closes the window on the fume cupboard when the fume cupboard is not in use.
- The fume cupboard is equipped with a control panel with a person sensor which, when the fume cupboard is not in use, sends a signal to the automatic sash closing system, EnergySaver, to close the window.
- The laboratory's point exhaust is equipped with an ON/OFF damper which automatically closes down outside normal working hours.
- The laboratory is also equipped with a CO<sub>2</sub> / temperature sensor. The sensor reduces the air change in the laboratory outside normal working hours.
- It is possible to install night lowering or turn off the fume cupboard completely outside normal working hours.

# Ergonomic and easy to clean



daily work around the fume cupboard. The fume cupboard's control panel is equipped with a sensor that detects movements in front of the window. If a user with equipment in both hands approaches a closed window, the window will open automatically, thus optimizing workflow.

## ERGONOMICS

Laboratories are dynamic environments where workflow and space requirements change. Labflex's flexible fume cupboard solutions can be adapted to new, specific application requirements and ensure efficient, integrated systems.

Fume cupboards are available with integrated, height-adjustable insertion frames and work-benches and walk-in designs that are available in different heights, depths and widths. The fume cupboards sloping sash design optimizes the working position. This

flexibility means that the fume cupboard can be adapted to the most complex ergonomic requirements. The sloping front design of the fume cupboard provides the most comfortable working position and is the least stressful for the body.

The fume cupboards are also designed so that they can be moved and adapted to any new work-flow.

Good lighting is an essential component of an excellent working environment. The light levels in the fume cupboards comply with the guidelines in DS/EN 14175 according to Type Approval part 3.

## NOISE REDUCTION

Labflex's standard fume cupboard is one of the quietest in the industry. The noise level is less than 39 DB when the window is open 500 mm and with an air speed of 0.5 m/s. The construction and design of the fume cupboard helps to ensure this

low noise level and maintain an optimal working environment, even if the laboratory has multiple fume cupboards.

## CLEANABILITY

The design and choice of materials mean that the interior and exterior surfaces can be cleaned easily and effectively. The back panels inside the fume cupboard are removable, and cracks and corners are avoided.

## CERTIFICATION OF FUME CUPBOARDS

As one of the few European manufacturers of fume cupboards, Labflex conforms to the EN14175 standard, including the stringent type approval of fume cupboards (FCS/EN/78/2005 & FCS/EN/79/2005).

Labflex helps set the documentation and guarantee standards for fume cupboard safety.



Labflex's choice of materials for fume cupboards and its internal work processes have, for many years, relied on and conformed to the standards in EN14175 part 2. The requirements of part 2 are used as guidelines for product specification, production documentation, component layout and production implementation, including the requirements for the manufacturer's working procedures related to fume cupboards.

Labflex's standard fume cupboards are also tested according to NTVVS095, ANSI / ASHRAE 110-195 and BS 7258. The fume cupboards therefore meet the standards that apply in Denmark, Europe and the United States. Labflex also complies with CE-labelling.

The abovementioned certifications, labelling and defined processes ensure that the standard of safety for fume cupboards from Labflex is always optimal.

#### QUALITY ASSURANCE

Labflex's own production of fume cupboards ensures efficient input and output control of materials and products. The fume cupboards are tested and inspected before they are shipped from the factory. Sealing and pressure testing is carried out on all plumbing installations as part of the extensive inspection and testing that takes place before a fume cupboard leaves the production facility. The final inspection and testing is carried out at the customer's after installation and assembly, and before use. After the fume cupboard has been installed and connected, it is inspected by a Labflex technician as well as a project manager before its final delivery to the customer.

#### PIPING AND FITTINGS

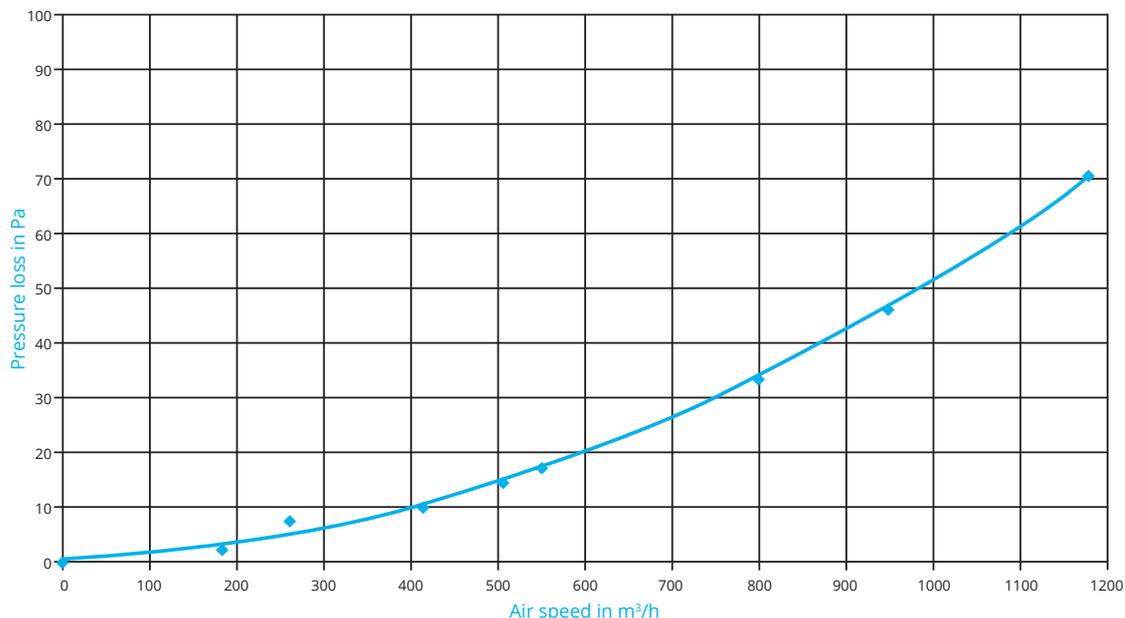
All piping in fume cupboards and ventilated products can be supplied with flexible hose systems and quick connect solutions. These are among the most

secure solutions on the market and also provide the greatest flexibility for users. Naturally, if the customer prefers copper pipes for the media in question, this is also an option. If other options such as luminaires are required, Labflex can supply these according to the customer's specific needs.

#### MAINTENANCE

It is important to maintain a fume cupboard in order to maintain the required safety standards and extend the product's life cycle. Labflex's fume cupboards are designed with this in mind, so the technical fittings and automation are easily accessible. Labflex offers fume cupboard service performed by our own specially trained service team using a combination of knowledge and overview.

## Pressure loss in fume cupboards



## Air volume in fume cupboards

Work opening Meter	1200 mm		1500 mm		1800 mm		2400 mm	
	m <sup>2</sup>	m <sup>3</sup> /h						
0.10	0.112	202	0.142	256	0.172	310	0.232	418
0.15	0.168	302	0.213	393	0.258	464	0.348	626
0.20	0.224	403	0.284	511	0.344	619	0.464	835
0.25	0.280	504	0.355	639	0.430	774	0.580	1044
0.30	0.336	605	0.426	767	0.516	929	0.696	1253
0.35	0.392	706	0.497	895	0.602	1084	0.812	1462
0.40	0.448	806	0.568	1022	0.688	1238	0.928	1670
0.45	0.504	907	0.639	1150	0.774	1393	1.044	1879
0.50	0.560	1008	0.710	1278	0.860	1548	1.160	2088
0.55	0.616	1109	0.781	1406	0.946	1703	1.276	2297
0.60	0.672	1210	0.852	1534	1.032	1858	1.392	2506
0.65	0.728	1310	0.923	1661	1.118	2012	1.508	2714
0.70	0.784	1411	0.994	1789	1.204	2167	1.624	2923
0.75	0.840	1512	1.065	1917	1.290	2322	1.740	3132
0.80	0.896	1613	1.136	2045	1.376	2477	1.856	3341

Calculated air volume in fume cupboards. The air speed in the work opening is 0.5 m/sec.

Labflex is one of Europe's leading suppliers of innovative customised laboratory solutions to industrial and university laboratories and to the research and hospital sector. Labflex offers consulting, project planning, concept development, project management and a wide, well-documented product range as well as installation and service. Further information on [www.labflex.com](http://www.labflex.com)

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