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# The hazardous material work station A multi-purpose solution

Discover the diverse uses for hazardous material work stations in practice.



Processes used to separate, synthesise, analyse, or filter materials are key to today's process industry. Chemicals are required in many techniques applied in such processes. And whenever harmful chemicals are used, or final products posing health or environmental hazards are produced, care must be taken to optimally protect both humans and the environment against such hazards. If toxic vapours or gases are produced during everyday work, hazardous material work stations can protect against harm.

## How do hazardous material work stations protect workers?

When working with hazardous materials, it is important that hazardous vapours, gases, or suspended particles are extracted immediately at the point where they are produced or emitted. An optimal combination of air supply and exhaust ensures hazardous materials are retained and extracted reliably and efficiently within the hazardous material work station, before they can pose a danger to people or the environment.

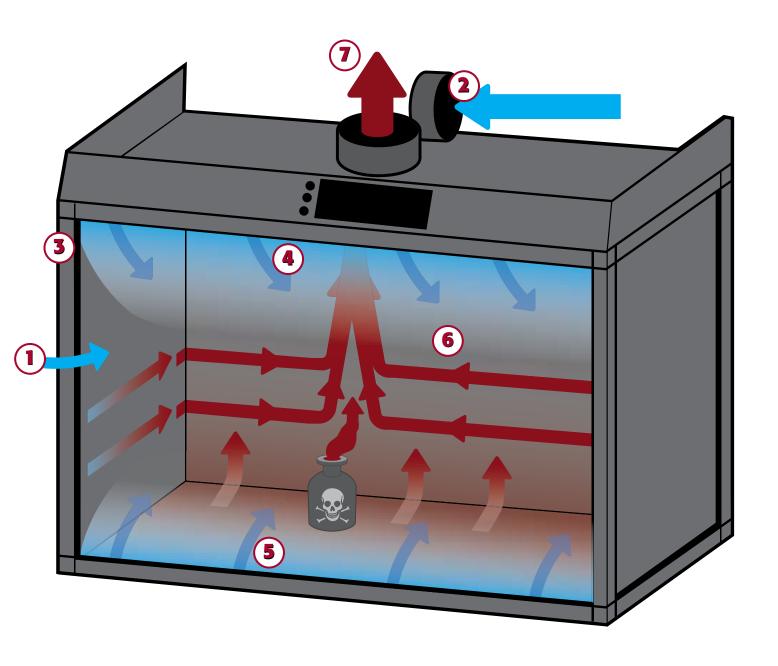




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- 1 air entering through the front opening
- 2 radial fan air intake
- 3 aluminium tubular frame
- 4 upper fresh air curtain
- 5 lower fresh air curtain
- 6 deflector
- nexhaust air



## How does the asecos hazardous materials work station work?

The capacity of the hazardous material work station to hold pollutants in check depends to a large extent on the air speeds achieved by the device's inlet air.

Increasing the inlet air flow increases the exhaust air flow at the same time. High air speeds are needed in the area of the front opening in order to capture pollutants optimally and direct them elsewhere.

It is only this interaction that can prevent the possibility of pollutants "rebounding" from the rear wall and being pushed forwards out of the hazardous material work station.

#### Fresh air curtain

Thanks to the optimised exhaust air ducts, and to the use of fresh air curtains in the upper and lower parts of the front opening, the asecos hazardous material work station can satisfy the requirements described above:

- air supply to the fresh air curtain through a powerful radial fan
- air required is sucked in from the work area
- fresh air transported through the aluminium frame sections jointed at corner nodes
- excess pressure developed in the tubular frame feeds the fresh air nozzles, which point inwards at 45°
- hazardous materials (gases, vapours or suspended solids) present or being generated in the working area are securely captured and transported back towards the rear wall
- for optimised evacuation, efficient capture of the hazardous materials through the suction slots and transfer to the exhaust air system, the hazardous material work station must always be connected to a suitable exhaust air system

#### Secure pollutant capture

The hazardous material work station offers the user a highly efficient form of pollutant capture through blowing carefully directed fresh air curtains at the front, and through a vacuum at the rear wall.

#### **Secure function**

- permanent display of the air system parameters through monitoring equipment fitted as standard
- monitoring the air in the exhaust and supply ducts through pressure measurement
- integrated pressure cells with adjustable nominal value, adjusted for the required (minimum) quantities
- alarm signal (audible and visible) given if the parameters drift outside a 10% tolerance from the specified figures. The visual alarm only stops when the nominal values are reached again.
- optional isolated alarm contact for signaling to a central control point
- integrated back-up battery to maintain function of the monitoring unit in the event of a power failure

#### Conclusion

The hazardous material work stations from asecos offer

- **A** optimal matched fresh air curtains in the region of the front opening
- **B** optimised exhaust air ducts
- **C** equipment to monitor the air parameters as standard

and so guarantee the user the highest levels of safety and protection against hazardous vapours





## **Ventilation testing in accordance with EN 14175 – Part 3**

#### What does that mean?

#### EN 14175 consists of the following parts:

Part 1: Terms

Part 2: Requirements for safety and

capacity

Part 3: Type test methods

Part 4: On-site test procedure

Part 5: Recommendations for installation

and servicing

Part 6: Exhausts with regulated volume flow rates

Part 7: Fume cupboards for special application with high thermal load and/

or acidic load

#### Aim:

The aim of Part 3 of the European standard EN 14175 is to specify the type testing procedure for evaluating the safety and the airflow capacity of exhaust equipment.

In accordance with the hazardous materials regulations and the work station regulations, hazardous vapours, gases or suspended solids that are released must be fully captured at the place where they emerge or where they are created before they can damage health or the environment

The asecos hazardous material work station is a highly effective way of ensuring that no vapours, gases or suspended solids involved in handling hazardous working materials (for instance when filling containers, gluing, cleaning, preparing, weighing etc.) pollute the breathable air.

This has been proven in tests that accord with EN 14175 Part 3, Type Testing Procedure for Exhausts, paragraph part 5.4.4 (Robustness of the retention capacity), if properly used they also ensure that no explosive gas-air mixtures accumulate inside the device (proven by an additional test according with DIN 12924 Part 1, Concentration of hazardous gases inside devices).

#### Comment

The lowest known explosion limits are around 6000 ppm (the lower explosive limit (LEL) of hydrogen). Testing in accordance with DIN 12924 Part 1 for the maximum pollutant concentration in the interior of the device defines a maximum permissible concentration of 2000 ppm of pollutant (which represents a safety factor of at least 3). In this test it has been clearly demonstrated that the maximum pollutant concentration in the asecos hazardous material work station has not exceeded 320 ppm. This offers the user a safety level that is 20 times higher and thereby far exceeds the requirements of DIN 12924 Part 1.

All tests have been carried out by recognised and certified test institutes.

#### Test setup:

- In order to test the robustness of the retention capacity, nine samplers are positioned on a grid directly in front of the hazardous material work station in a measuring plane that is parallel to the front opening (refer also here to Picture 2).
- In addition, a flat, rectangular board with a height of 1900 mm and a width of 400 mm (movable along a line parallel to the front opening) is constructed in front of the hazardous material work station.
- When testing the robustness of the capture capacity, the board is moved back and forth at a speed of 1 m/s transverse to the front side, across the full width of the hazardous material work station.
- A mixture of sulphur hexafluoride (SF6) and nitrogen (N2) is used as a test gas, in which the proportion of SF6 by volume is 10%.

#### Test procedure:

- The board which is vertical and oriented at a right angle to the work station, is moved back and forth at a speed of 1 m/s transverse the front face.
- At each side the board is moved to a point at least 600 mm beyond the total width of the work station.
- Thirty seconds elapse between each transit.
   The concentration of test gas is measured and recorded
- The movement of the plate is started after 60 s and six complete transits are carried out.
- The gas analyser continues to measure the signal for a further 30 s.
- The test gas outlet is shut off, and the data evaluated.

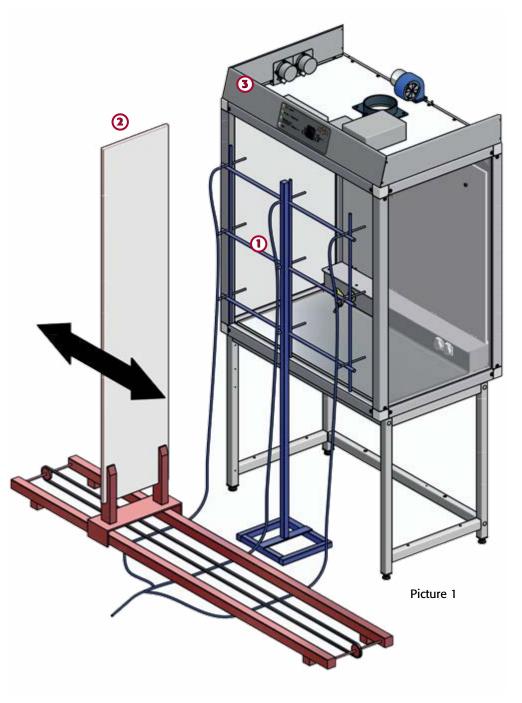
All the evaluated measurements are collected and listed on the test report.

The results achieved in the tests underline the outstanding performance of the asecos hazardous material work stations:

#### **Conclusion:**

If the hazardous material work station is used properly, the resulting pollutant concentrations are far below the levels permitted by DIN 12924 Part 1, thus preventing the formation of explosive gas-air mixtures!





- neasuring grid with 9 samplers
- 2 moveable board positioned parallel to the front of the hazardous material work station
- 3 hazardous material work station







### At a glance: model line GAP-LINE



#### **Exhaust air monitoring**

- with visual and audible alarm
- optionally including potential-free alarm contact
- integrated on/off switch and light switch



#### **Anti-glare lighting**

- energy-saving lamp with removable cover
- easily accessible, easy replacement of the fluorescent tube



## Disposal system for type 90 under bench cabinets

- suitable for your hazardous material work station
- for further information see chapter UB-LINE



#### Aluminium tubular frame design

- robust, rigid design, low weight, low floor stress
- anodised surface, chemically resistant



## **Electrical sockets with earthing contact**

- splash-proof IP 54, integrated into the media duct as standard (min. 2)
- additional sockets by request (sockets also possible without media duct)



#### **Transparent side panes**

- optimum brightness in the hazardous material work station, transparent side panes made from 5 mm toughened safety glass
- closed version also available as an option, special material boards coated in melamine resin





#### Compatible with a variety of under bench cabinets

- for storing flammable liquids, acids, alkalis etc.
- can be used together with support frames
- matching cover for uniform appearance (optional)



#### **Media duct**

 optional, for fitting a wide range of media supplies such as water, gas, compressed air etc.



#### **Working surfaces**

- choose, according to need, from: special material board coated in melamine resin,
   1.4301 stainless-steel or technical ceramic (high resistance to many acids and alkalis)
- the hazardous material work station is also available without a working surface, ideal for mounting on existing working surfaces



#### **Support frames**

- can be chosen for standing or sitting work
- strong tubular frame design, material strength 4 mm, light grey powder-coated (similar to RAL 7035)
- height can be set by means of adjustable feet, covers optionally available



#### **Deflector**

- easily dismantled for optimum cleaning
- easy cleaning throughout the interior
- a transparent version of the rear wall and deflector is optionally available, ideal for placement in the middle of a room





For further information about our products please contact your specialised dealer.





# Hazardous material work stations - Real life application



- Hazardous material work station for bonding, casting and cleaning at Endress+Hauser Flowtec, Reinach, Switzerland.
- Hazardous material work station with supply systems for the Chemical and Vetinary Investigation Institute, Rhein-Ruhr-Wupper, Krefeld, Germany.
- 2. Hazardous material work station for restoring books using solvents at the City Archives, Bochum, Germany.
- Hazardous material work station for investigating chemical samples at Bayer CropScience, Monheim, Germany.
- Hazardous material work station for investigating tissue samples at the Medical University, Innsbruck, Austria.
- Hazardous material work station on mobile trial vehicles at the Fire Brigade, Cologne, Germany.





# One thousand four hundred degrees

No other mid-sized company can easily match the history of our company, a manufacturer of cast iron products headquartered in Karlstadt. The foundation of today's Düker company was laid in the second half of the 15th century, in the year 1469 to be exact. Many manufacturing industries at the time, such as glass blowing, required cast iron parts. For centuries, such materials were used for peaceful (such as church tower bells and water pipelines) and less peaceful purposes (such as canons). Today, roughly

550 years later, Düker is one of Germany's largest cast iron foundries: Around 700 employees at the company generate over 105 million EUR revenue each year (as of 2010).

#### **Glowing iron**

The raw material iron is melted from scrap metal and other materials in giant furnaces at 1,400 degrees Celsius. The melted material pours, glowing orange, into moulds made of a specially solidified sand mass. This process is used to make

a wide variety of moulded pieces, fittings, and products for drainage technology. A specialised "centrifugal casting process" is used to produce iron pipes: during the process, hot iron is fed into so-called chill moulds that rotate to create particularly smooth pipelines.

Third party manufacturers can also produce cast iron parts with Düker through our "Customer casting" department.

The complex expertise and long-term experience of the foundry benefit machine



manufacturing companies, for example, who produce high-quality cast iron parts for their own products. Models and negative moulds to cast ordered parts are produced in one of the warehouses in front of the foundry, where asecos' hazardous material work station (HMW) is located.

#### In the beginning was the drawing

Mathias Huber is the head of the model building department: "In the beginning is our customer's drawing", he explains. "Drawings might deal with totally different things like housings for industrial sewing machines or lawnmowers, or they might depict gearbox housings for a truck or locomotive". To produce a casting mould for an ordered part, model builders first create three-dimensional representations of these drawings by making a plastic model. They might do so through a computer-supported process or manually.

Plastic is blended and processed in the asecos hazardous material work station: Model builders blend two components, epoxy resin and a hardening agent, in a highly specific ratio to create their desired degree of hardness. Without suction by the HMW, the process would be a dangerous and damaging one. Materials evaporating from the components can irritate eyes and respiratory tracts, for instance.

#### Protecting health - reducing costs

Düker employees protected themselves against the hazardous health effects of plastic casting and processing with the HMW even before the model building department moved into the new warehouse building. In the past, however, they used a separate room for this work with a large suction system specifically designed to vent harmful vapours. This proved to be unnecessarily large and complex, since the percentage of work model builders do that is hazardous to their health is very small - albeit sufficient to require a workstation for the purpose. Choosing a HMW solution, therefore, resulted in significant cost savings. Now Düker can not only save space, but heating and energy costs as well.

Model builders got the chance to check out the solution's practical benefits in person in the asecos testing and application centre in Gründau. The company needed a custom depth work surface to ensure the 650 x 850 mm model plates would fit easily into the HMW – along with a mixing vessel with drain for stirring the plastic resin. The result has been in use for years now, and Mathias Huber tells us Düker model builders are satisfied with the system: The HMW found acceptance immediately as a safe, efficient, and practical system.



#### **Project summary**

**Application** Hazardous material work station with special dimensions

for producing plastic models

Company: Düker GmbH & Co. KGaA

**Location** Karlstadt

Industry: Manufacturer of fittings and pressure pipe fittings

Implemented by

**asecos partner:** Günther Fachhandel, Bad Neustadt/Saale







## Clinical picture

Prof. Hartmut Arps, Director of the Institute for Pathology at the Fulda Clinic, can tell from just a look: If he's looking at diseased tissues under his microscope, their pale pink structures will differ more or less clearly from those of healthy tissues – for instance in their staining, the arrangement of cell nuclei, or cell sizes. Seeing these kinds of differences requires an intimate knowledge of their normal condition and appearance. You need a comprehensive and pictorial knowledge of our internal textures and all their specialised cell

shapes – from connective to nerve tissues, and from heart to liver cells. Combined with long-term scientific expertise, this knowledge allows pathologists to decide whether patients are ill, and what they're suffering from.

Apart from examining dead bodies (as part of medical quality management), the field of pathology focus primarily on supporting treating physicians in the clinic itself and adjacent practices in detecting illnesses and their causes – working

closely with pathologists. These, as Prof. Arps emphasises, are playing more of a consulting role today in finding the right treatment.

#### From formalin to xylene

Before visual comparisons can even be completed, tissues must be prepared to be processed into sections, which are thin samples of even thickness. Pathologists need a range of hazardous materials to do so, such as xylene or formalin: The latter is used to affix fresh and infectious materials.



Another processing step is even more important: Deviations in tissue composition only become visible after specialised staining processes — pathologists use roughly 30 to 40 different procedures of this type. One standard process, for instance, is HE staining using haematoxylin and eosin. It takes a total of roughly 15 different chemicals to complete such a stain.

#### **Comprehensive safety concept**

The asecos hazardous material work station that protects against vapours from these materials functions as a comprehensive safety concept, as Werner Hüfner explains. He is the safety engineer responsible for the entire clinic. Hospitals are required to have safety engineers by their trade associations – safety engineers ensure compliance with occupational protection regulations.

A large number of safety measures keep health hazards and the danger of explosions and fires as low as possible, providing optimal protection to personnel: By keeping chemical inventories well organised in hazardous material cabinets by asecos — and ensuring that individual, disconnected work steps are equalised by being divided into different rooms: "That means employees whose work involves biological hazards aren't unnecessarily endangered by chemicals they don't even need in the same area as them", explains Werner Hüfner.

#### **Convenient and safe**

Pathology employees use multiple, individually customised asecos hazardous material work stations when working with chemicals. Nicole Sturm, Medical Technology Assistant, appreciates a variety of benefits of the HMW she works with every day: "The suction is easy to turn on, so users are exposed to absolutely no hazardous materials. The work station is also very well lit, and there are plenty of sockets".

The transparent plastic front offers extra safety: It is divided horizontally and can be folded up, so employees can work and see what they're doing through the pane. When a worker closes the HMW after finishing work, they can observe any sample follow-up reaction times from the outside without having to open the HMW.

Prof. Arps considers the combination of hazardous material work stations and universal hazardous material cabinets by asecos as a practical one offering significant advantages. Prof. Arps praises the latter specifically for its well-developed fresh air management technology, high fire protection classification (F 90), and practical folding doors. Overall, the system now provides not only highly effective protection for employees, but also a "highly secure, modular overall system with easy maintenance and operation".

#### **Project summary**

#### **Application**

Hazardous material work station with base cabinet and front panel for preparing tissue samples, use of xylene and formalin, for example

#### Company:

Klinikum Fulda gAG, Pathology

**Location** Fulda **Industry:** Hospital

Implemented by asecos partner:

Vogel GmbH & Co. KG, Gießen











### In the flow

Flow rate is one of the most frequently recorded process variables in industrial settings. Water, natural gas, oil, chemicals, and waste water are just some examples of materials measured each day. There are a wide variety of available measuring techniques, but none of them are suitable for every application. That's why Endress+Hauser Flowtec AG produces an extensive range of products used to measure the flow rates of liquids, gases, and vapour.

#### Ultrasound

Endress+Hauser Flowtec AG, as its name indicates, specialises in flow measurement technology and is a leading international manufacturer.

The company uses all modern measurement principles, including ultrasound flow measurement.

Ultrasound flow measurement using the transit-time difference process is based on a simple physical fact: Swimming against

the flow takes more energy and time than swimming with the flow.

Two or more pairs of sensors transmit and receive ultrasound pulses in parallel. At zero flow, the sensors will receive emitted ultrasound pulses at the same time, without any transit-time difference. If a material is flowing through the measurement equipment, in contrast, the ultrasound waves take different amounts of time (depending on flow rate) to reach the other sensor. This measured "transit-



time difference" is used to determine the flow speed and flow volume.

#### Protection from a single source

Measurement experts at Endress+Hauser needed an asecos hazardous material work station to produce these measuring devices. Among other tasks, they needed to ensure that water, moisture, and dust couldn't damage the sensitive electronic assemblies in the measurement devices. Electrical parts such as "piezos" that generate ultrasound waves through vibration could not come into contact with explosive atmospheres. Areas around piezos needed to be hand-insulated with grouting to ensure they were suitable for explosion hazard environments as well.

The company needed a variety of solvents and adhesives to handle this adhesion and casting process, and to clean the moulds used to produce measuring equipment. These processes all create hazardous vapours that employees need to be protected against.

#### **Ergonomic and safe**

An asecos hazardous material work station is the ideal solution to meet these demands, as Andreas Suter reports. The mechanical engineer handles production support in the "Coriolis" division of Endress+Hauser: He analyses individual work steps to define efficient workflows for fast, rational, safe, and ergonomic work.

Before deciding to purchase a HMW, Andreas Suter paid a special visit to the asecos testing and application centre. There, he could complete some practical testing of specific applications. This option convinced Endress+Hauser to purchase the system, alongside asecos's comprehensive 24 hour service for replacement parts or repairs. Additional sockets and compressed air connections were available on request - along with a RAL 5012 paint scheme in the Endress+Hauser company colour. The purchase price was also competitive with standard hoods according to Andreas Suter, who also praises his collaboration with asecos technicians. Above all, however, employees noticed the positive change right away thanks to a significant reduction in unpleasant odours.

#### **Project summary**

#### **Application**

Hazardous material work station for gluing casting, cleaning

#### Company:

Endress+Hauser Flowtec AG

Location Reinach (CH)

**Industry:** Electronics

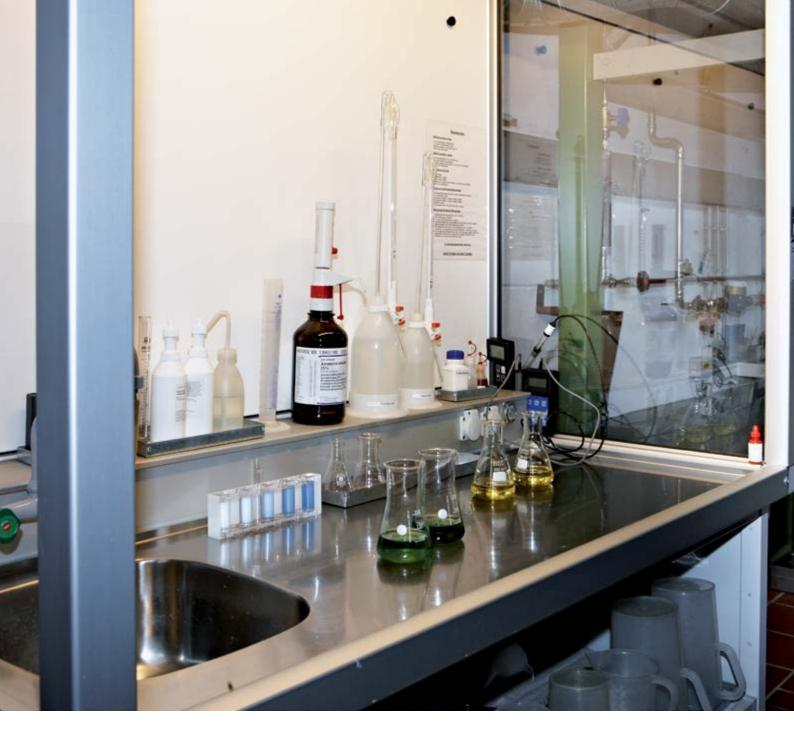
Implemented by

asecos partner: Waldner AG









## **Behind bars**

Although it's not strictly necessary for occupational safety reasons, the asecos hazardous material work station in the boiler house at the Landsberg am Lech correctional facility is the most secure of its kind. To access the work station "from the outside", a correctional facility employee has to pull out a heavy keyring half a dozen times to open different gates and doors. After all, the historical prison still houses an average of 700 prisoners serving their sentences at any one time.

The "panoptic" building – a design allowing prison personnel to view all of the prison wings radiating in a star shape from a central point – was constructed during the first decade of the 20th century and has been renovated frequently. New buildings and refurbishments have been common especially since the 1960s, and it's not hard to imagine the murderer of Bavarian Prime Minister Kurt Eisner imprisoned here (1919), or Hitler, Heß and Streicher, who were all also former prisoners.

#### **Energy from water vapour**

The boiler house serves as the prison's own power plant. Four large steam boilers are installed in the room. Two of them handle the prison's heating system, and two other boilers heat service water and supply the kitchen: The prison kitchen cooks on an industrial scale on steampowered ovens. The correctional facility's laundry also runs on steam: Its rotary ironing machines, washing machines, and dryers use heat produced by the steam and don't have to use heating coils.



The entire correctional facility is heated and run from this room — including the seven factory halls where prisoners work and receive training. The halls house a book-binding workshop, a tailor's shop, and a vehicle workshop.

#### **Corrosion-free boilers**

This means the whole correctional facility depends on the boilers to work well. Trained central heating and ventilation equipment fitter Martin B. (we can't provide his whole name for security reasons) is one employee responsible for monitoring the system. He alternates with his colleagues in monitoring and inspecting the system on a three-shift work schedule.

Every boiler is installed upstream of a gas burner operated on city gas. It starts off by heating normal water, which the boiler uses to produce steam like a pressure cooker. Steam is then delivered to the kitchen, laundry, etc. To ensure the boiler isn't damaged, the water must be decalcified in an osmosis system — with an oxygen binding agent added to ensure the system doesn't become corroded. A phosphate compound prevents deposits on the wall of the boiler for this purpose.

#### Measurements, shift by shift

Martin B. and his colleagues take water samples from the boilers regularly to check the degree of hardness in the water. In addition, they use measurements to ensure the boilers contain the right blend of water, silica, and oxygen. They follow the boiler manufacturer's specifications to do so, and the TÜV inspects the system regularly. Workers use hydrochloric acid and ammonia to complete these regular measurements, for instance — both hazardous chemicals. Ammonia is heavier than air, meaning it does not evaporate but rather collects on the floor, which can cause workers to suffocate.

Martin B. and his colleagues always take measurements in their asecos hazardous material work station, which ensures hazardous vapours are ventilated continuously. Before they purchased the system, workers needed to complete measurements outdoors to be safe until the correctional facility's occupational safety officer could find a better solution: "Now we have a very well designed, compact solution that meets all our needs: A hazardous material work station that reliably suctions all of the vapours produced - with plenty of lighting, sockets, and cold and hot water connections". The asecos safety storage under bench cabinet, where all of the chemicals used have an assigned space and can be stored safely, also impressed Martin B. He summarises the system's benefits with typical Bavarian brevity: "It works!"

#### **Project summary**

#### **Application**

Hazardous material work station with safety storage under bench cabinet to inspect water samples

#### Company:

Landsberg am Lech Correctional Facility

**Location** Landsberg

**Industry:** Official agency

**Implemented by asecos partner:** CVent









# Safe semiconductor cleaning at Canberra Semiconductor

CANBERRA develops, produces, and sells radiation measurement technology worldwide.

This measurement technology is used in environmental analyses and to monitor safety in nuclear power plants and public areas, as well as for radiochemical applications.

Canberra Semiconductor specifically develops and produces silicon detectors to record alpha and beta rays and germanium detectors to record gamma rays. The cells used to record these rays are produced using semiconductors.

During production, employees handle cleaning and other steps using heated solvents. Setting up hazardous material work stations allows employees in the Canberra production department in the Belgian town of Olen to clean semiconductors with protection against vapours, without having to deal with source extraction or protective panels.

Methanol, a highly flammable and toxic substance, is also used at three of the work stations. Acetone and Isopropyl alcohol are used in other areas. All of this work used to pose a fire hazard. The company was also exceeding statutory explosion limits. To limit the fire danger, Canberra was looking for a process that would avoid a build-up of flammable vapours. Then it set up new and practical safety storage cabinets for highly flammable substances to fulfil Belgian and Flemish legal requirements. The company first considered a laboratory hood to reduce



hazardous vapours. However, it needed to ensure that the system didn't interfere with sensitive manual finishing of expensive semiconductors. Employees have to have complete freedom of movement to handle this work. The available laboratory hood with spray guard wasn't a good solution, and the company was looking for alternatives.

#### **Past situation**

In the past, the company worked with source extraction. Source extraction loses much of its effectiveness at the suction opening itself. It also only works if the suction opening is installed directly adjacent to the source of the emissions. This requires discipline from users and, despite their best intentions, always having to change the position of the suction arm while working has proven unrealistic in practice.

The Canberra branch found the solution it needed in asecos hazardous material work stations from speciality retailer Denios BV. Thanks to its air curtain technology, a HMW has a completely open front side. This clean air supply prevents employees from breathing in hazardous vapours. Dangerous gases are suctioned at the rear wall. In Olen, the first step was to set up the HMW for working with acetone and Isopropyl alcohol. It's also equipped with a fireresistant type 90 safety storage cabinet. After a positive interim assessment, the

company decided to install three more HMWs for cleaning germanium crystals. A safety storage cabinet was added to each work station for storing chemicals. This makes inventory management and waste disposal much easier. Laboratory hoods where employees can work with strong acids are located in the direct vicinity. The HMWs are equipped with transparent deflectors to keep these hoods more clearly in view.

Quality, Safety, & Environmental Manager Steven Majewski is satisfied with the results of the project: "Both bio-monitoring and occupational hygiene measurements showed that employee exposure were below the handling levels, which are 10 percent of the limits applicable in Belgium. Working conditions have improved markedly".



#### **Project summary**

**Application** Hazardous material work station for cleaning work with

flammable liquids

Canberra Semiconductor Company: Location

Olen (Belgium)

**Industry:** Electronics manufacturer Implemented by

asecos partner: **DENIOS BV** 









## Passionate about rescue

Günter Reimann is a passionate person – especially when it comes to the written and printed word. He's lived in two worlds for decades now: In his personal time, he creates valuable bookbindings (an issue of Augustinus' Canticle of the Sun he designed is even on display in Mainz's Gutenberg Museum) – and he works to rescue old books and documents in the Bochum city archives. "For me it's a symbiosis you can't find in many other professions" says the master bookbinder, who studied book and paper restoration

in the Swiss city of Tessin in Ascona, back when the subject wasn't even available in Germany.

The scope of literature to be rescued in the Bochum city archives — including the inventory of the Heimatmuseum — is more extensive than most could imagine. Parchment paper contracts from the Middle Ages and ancient special editions of literary classics are stored here, as are bequests from private individuals and documents from disbanded offices. It's

an enormous collection that could "give someone a headache" as Günter Reimann says, considering that it includes Nazi era newspapers that need to be preserved for posterity just like today's parking tickets. All of these documents can give future generations information on the past, even if they are ephemeral and need to be restored.

#### Between yellowing and adhesive film

Worm-eaten and yellowed documents from past centuries aren't the only



challenges to restorers - Günter Reimann and his small team find newer legacies a major challenge as well. What used to take mould and woodworms quite some time is accomplished by administrative officials in a few years or decades: Tape was used, for example, to patch tears in the early 1960s - and notorious adhesive foils were used in the 1970s to completely embed documents and records. Although these kinds of materials were supposed to help preserve documents back then, over the long-term they have a destructive effect: resulting in callous, broken, and brown discoloured paper. "People didn't know any better back then", says Günter Reimann.

Ethyl acetate is the answer today's restorers have to official adhesive films. This highly flammable chemical, however, can damage skin and respiratory tracts and can only be used in asecos hazardous material work station (HMW). The same is true of highly toxic dimethylformamide. This formic acid amide is a carcinogen and can cause reproductive problems, but is used to remove old stamping ink that can destroy documents over the long term. Indelible pencils commonly used in administrative tasks can also be devastating. Senior officials used to use their own colours to sign documents with initials or a line through the invoice.

#### **Cost-efficient and practical**

Before purchasing the HMW, workers could only use chemicals to complete restorations outdoors - depending on the weather, this could be an unpleasant task. Günter Reimann discovered it at the A+A in Düsseldorf – and was convinced by its price-performance ratio and practical features for his needs. asecos offered some additional features as well: Chemicals could be stored in a separate safety storage cabinet and not underneath the HMW. Workers needed space to move their knees so they would have the patience and time to complete difficult repair work. Another benefit: The machine offers plenty of sockets - an important feature, for instance, for the UV lamp used in disinfection and sterilisation work, for instance to remove mould.

Günter Reimann can't even remember the days before the HMW anymore – there are endless tasks requiring hazardous chemicals: From the materials described above to 96% alcohol used to disinfect surfaces, to Pattex, which has highly flammable vapours and can even cause brain damage: Without suction, hazardous gas-air blends would stay in a room for quite some time. The hazardous material work station promotes the health of Bochum restorers – and helps them pursue their passion.

#### **Project summary**

#### **Application**

Hazardous material work station for restoration using solvents

#### Company:

City of Bochum – city archives

**Location** Bochum

**Industry:** Public facility

#### Implemented by asecos partner:

B+G Balandis + Grewe GmbH, Bochum









# Suction hood replaced with hazardous material work station

LSI (Laboratory Services International) is an independent commercial laboratory for analysing metals, bulk goods, and (waste) water. The LSI moved to a new operations building on Pittsburghstraat in Rotterdam in 2009, quickly expanding its range of services especially in water analysis.

As it constructed its new building, DENIOS was the right partner to provide systems for handling hazardous materials safely. Before setting up the new laboratory, the company took a critical look at its work stations for working with hazardous materials, consciously deciding to replace several initially planned suction hoods with hazardous material work stations (HMWs) from asecos. This allowed them to complete work in a highly safe manner despite the fully open front. Hoods are still used in areas where sprays could pose a hazard. Wherever the company needed weighing work stations, they chose a specialized HMW to provide

freedom of movement. This work station is also used to complete fire tests to determine the percentage of precious metals in ores.



#### Image 1:

LSI will provide even better service and offer an even wider range of functions in its new laboratory.

#### Image 2:

New gas cylinder cabinets were installed on the outside of the building, so no more gas cylinders are located in the laboratory. This not only improved internal company safety, but also greatly simplified logistics. The gas supplier can exchange empty gas cylinders for new ones without impacting laboratory operations.

#### Image 3:

Ejector technology with fresh air curtains allows for safe work in an HMW with a fully open front.



#### **Project summary**

**Application** Hazardous material work station for analytic work

Company:LSI Laboratory Services InternationalLocationRotterdam (The Netherlands)Industry:Institute

Implemented by

**asecos partner:** DENIOS BV









## The Spirit of Water

An elegant stylistic idiom and high-quality finishing make fittings and accessories by Dornbracht an object of desire for anyone who loves good and functional design. They are produced in a generous production hall lit by daylight in the Westphalian town of Iserlohn. The hall also includes an asecos hazardous material work station. Anyone checking out the highly modern production facilities will immediately understand the creative spirit and inspiring atmosphere of this company and its rich traditions.

#### **Galvanisation is beautiful**

Fittings are galvanised in the warehouse, as Sonja Tonat, Master Galvaniser, explains. In short, "water outlets" (called "taps" by laypeople) are made of brass. They owe their beautiful, resistant surfaces to a metallic coating applied using direct current. The coating is applied to raw parts on production lines surrounded in protective glass, where the individual parts are dipped into different rinsing and galvanization tanks on specialized hangers.

They typically start off with a layer of nickel that provides a smooth and glossy surface in polished, high gloss fittings. If fittings are to have a brushed surface, they are galvanised in specialised matte nickel bath to retain their texture. In both cases, this extremely thin layer of nickel, roughly 10 times 15 µm thick, also protects the fitting or accessory from corrosion. The piece gets its final visible and decorative layer — of gold or platinum, for example — in the last step.



#### **Protection for Gavaros Arm**

The asecos hazardous material work station is now situated in a highly innovative department within the production hall - near the "Gavaros, an acronym for "Galvanisation robot". This gripper arm robot, roughly 1.5 metres tall, is a joint development of Dornbracht, system builder Carat, and Kiesow, a supplier of basic chemicals used in galvanising technology. It handles the entire dip galvanisation process for a part within 9 minutes - in contrast to the 45 minutes required by a typical system, that's an enormous time savings. Robots dip parts into the individual baths in sequence based on a precisely calculated programme. The metal gripper arm has to be protected using a specialised rubber to avoid being galvanised as well.

This protective rubber layer needs to be replaced regularly. Galvanisers dip the robot's arm into a rubber mass to renew the layer. The mass is stored at a constant temperature of 130°C in a specialised tub to ensure it stays liquid - this would plunge half the warehouse into a horrible stench if it wasn't kept safe in an asecos hazardous material work station that reliably suctions vapours to the rear. Employees can use the station to work with the rubber mass any time - without any smells or hazards.

#### **Modularity and flexibility**

The hazardous material work station is an excellent addition to Dornbracht's modern production landscape for another reason too: The high-end manufacturer's production uses a "fractal warehouse" concept - with decentralised structures instead of hierarchies, and a strong emphasis on autonomy among its departments. Modularity and flexibility are two key principles: They anticipate and facilitate the shift in production and usage of space that allows the company to win out over its competitors.

The company doesn't use any "off the shelf" production materials or equipment, as Sonja Tonat emphases - and asecos fulfils the manufacturer's high quality demands with speed, accessibility, and needs-based implementation. They wanted, for instance, to strictly avoid any openings in the warehouse ceiling: asecos handled the issue by producing a specialized hazardous material workplace that can be placed anywhere in the room. The ventilation works without permanent exhaust tubes leading outdoors. This process would have required an opening in the wall or ceiling, which would interfere with a flexible production concept that demands equipment be able to be moved at any time. Instead,

the hazardous material workplace uses a flexible recirculated air filter unit that also fulfils increased environmental protection requirements. It uses an integrated active charcoal filter package to adsorb suctioned hazardous materials. That means Dornbracht's hazardous material workplace makes a key contribution to ensuring a safe, forward-thinking, and modular production facility.



#### **Project summary**

**Application** Hazardous material work station with recirculating air filter

system - no connection to building exhaust air

Company: Aloys F. Dornbracht GmbH & Co. KG

Location Iserlohn

**Industry:** Fittings manufacturer

Implemented by asecos partner:

ENVIBOW, Lohmar









## International research

Prof. Helmut Klocker's urology lab at Innsbruck Medical University is a multicultural space. English is the lingua franca at the bulletin board, and flyers advertise classes for German as a foreign language. The researchers working here are such an international group thanks to the laboratory's research focus: early recognition of prostate cancer, partially through a Tirol-wide screening programme. The global exchange of information between scientists is a key feature of this research field. In addition, researchers

work on European projects here such as the Marie Curie programme, taking part in international doctorate programmes.

Advancements in prostate cancer research are undeniable if we look at the developments of the past two decades, Klocker says. Statistics show a significant drop in deaths attributable to the illness. Researchers have been running systematic early recognition programmes for roughly 18 years – and the number of patients dying from the cancer has continued

to drop since the mid-1990s. From a professional standpoint, this success is due to wide scale screening able to detect tumours earlier and earlier. In the early stages, they can be treated using therapies such as surgery or radiation, then healed with appropriate follow-up care.

#### **Resistance-forming mechanisms**

The main problem the 25 employee urology research laboratory is facing is the development of resistance to hormone therapy treatments used in



advanced tumour stages. They are trying to better understand the mechanisms that specifically result in this resistance formation. One key method for doing so is looking for markers: These are specific, measurable values in the blood, urea, or tissue that indicate specific pathological processes in the body — these, in turn, indicate the presence of a tumour.

Systemic biological methods that consider all organic processes as a totality are used to find these markers by Innsbruck researchers. These allow them to clearly differentiate between harmless and aggressive tumours. "Currently, this is one of the main research areas in our field" Helmut Klocker says. Results of this research help the team find tumours that need fast treatment early on — as well as those that don't.

#### Cellular and molecular biology

The laboratory's work involves examining tissue samples of patients undergoing operations or patients who have completed treatment. Cell culture models are used to complete cellular and molecular biology examinations. They can be treated with medications, or researchers can test how cell cultures react to different conditions: Do they

grow quickly or slowly? Do they die off? What are the causes of these responses? In these experiments, researchers also sometimes handle volatile solvents. Breathing them in is hazardous, so they're only used under asecos hazardous material work stations.

The toxin xylene, for example, is used to examine tissue sections - for instance to remove the paraffin used in histology. They also use mercaptoethanol to isolate RNA or DNA. This is another toxic material that can cause skin irritation, among other effects. Some of the materials used are also dangerous because they can create flammable gas-air mixtures. Because of this, according to Prof. Klocker, "we need reliable and long-lasting equipment". In addition to the hazardous material work station, the laboratory also purchased an asecos safety storage cabinet for its move to the new facility, where it can store all of its hazardous laboratory solvents. The department now has a comprehensive solution that fulfils Austrian regulations on employee safety. A special 1.8 meter wide design with a large number of media connections for power, compressed air, water, and gas allows the hazardous material work station to provide optimal support in the researchers' everyday work.



#### **Project summary**

**Application** Hazardous material workplace with special dimensions for

examining tissue samples

**Company:** Medizinische Universität Innsbruck – Urology laboratory

Location Innsbruck, AT Industry: University clinic

Implemented by

**asecos partner:** Bartelt GmbH, Graz







## In the name of the consumer

Turbot is a delicacy, and a favourite of many gourmets. Nowadays, there are chefs who throw much less expensive fish in the pan — even though they might charge the same price. If serious suspicions are raised that a restaurant might be falsifying its menu items, animals might be sent to the Rhein-Ruhr-Wupper Chemical and Veterinary Examination Institute (CVUA-RRW) for further investigation. This institute is a consumer protection agency responsible for official inspections and food controlling functions

in a regional area boasting roughly 9.6 million inhabitants.

#### Planned or ad hoc

Ad hoc actions like this restaurant example are just one of many different situations the institute might be involved in — often, their work simply focuses on hygiene controlling: Are the foods sold safe for consumption? Are there any health risks from spoiled foods? However, the institute also handles routine food inspections planned with official agencies: Samples

from every stage of the food production process are delivered to the Krefeld testing facility: It randomly reviews the entire process used to produce the foods we eat: "From the pitchfork to your lunch table", as Dr. Werner Henning, Head of the Analysis and Development department, likes to say.

The importance of these inspections – whether planned or initiated to review a specific suspicion – is quickly clear when we consider the list of risks that could harm consumers and result in foods unfit



for sale. These include plant protection residues on salads that exceed the legal limits, polluted cattle, pig, or chicken feed, and specific seasonal problems: In winter, for instance, nuts are specifically inspected for dangerous mycotoxins, and germs in ice cream are a focal point in the summer.

#### Pollutant free and hassle free

The investigative laboratory purchased asecos hazardous material work stations as part of a comprehensive lab renovation. In addition to their general practicality and technical updates, including supply and safety equipment, providing consistent protection to personnel was one key factor behind this new concept. The primary focus was on finding an improved solution for handling hazardous chemicals.

Such chemicals are in constant use in the lab: They are used to dissolve the materials being tested for from the tested foods. Methanol is one such extraction solvent, but touching it with your bare hands can cause irreversible health damage. Employees also handle ethyl acetate and acetonitrile (both highly flammable and toxic) while preparing and processing samples.

#### Safe and unconstrained work

Werner Henning notes that employees need to be able to "refill, mix, and set down samples with the least possible exposure to pollutants and the least possible hassle". Simply breathing in these chemicals could cause hazardous materials to be incorporated into the employee's lungs. Hazardous material work stations prevent such damage, while ensuring employees can move freely and ergonomically. This lets them work more practically than under a classic hood while providing seamless protection, Henning says.

Hazardous material work stations are integrated fully into laboratory logistics, which also helps make them more ergonomic. This allows asecos to create an elegant solution by placing drums of goods in safety storage under bench cabinets underneath the hazardous material work station working surfaces. Solvents stored in drums are connected using supply lines and integrated filling guns, making them as easy and simple to use as a water tap.

#### **Project summary**

#### **Application**

Hazardous material work station with supply system

#### Company:

Rhein-Ruhr-Wupper Chemical and Veterinary Examination Institute

**Location** Krefeld

**Industry:** Institute

Implemented by asecos partner:

Wesemann GmbH, Syke











## Hunting the white fly

Their opponents are called pollen beetles, powdery and downy mildews, or white flies — aphids and moulds that can cause leaf blight also have a bad name at Bayer CropScience. The roughly 200 chemists, biologists, and other scientists working at the giant facility in Monheim primarily develop insecticides and fungicides. This research work helping to ensure undamaged and bountiful potato and grain harvests is certainly a Sisyphean task to some extent — with the key difference that researchers' work actually

becomes more difficult over time, as Dr. Winfried Etzel from Research Analysis at Bayer CropScience emphasises: This is due to resistance formation, for instance the resistance leaf blight moulds can develop to fungicides. Only a new active mechanism can help destroy an immune mould population — and finding these mechanisms is becoming more and more difficult.

There aren't any simple general rules to research such active mechanisms,

according to Winfried Etzel. There's no other option but trial and error and ongoing, intensive testing. The scientists maintain their own greenhouses for this purpose, where they raise all kinds of cultivated plants used as foodstuffs. These include grains, rice, soy, and fruit. Materials are first tested in vitro. If they're successful there, they have to be tested in the complete organism. Once they've passed that hurdle, an extensive official permitting process follows, based on strict guidelines.



#### **Getting to the core**

Researchers working at the Monheim laboratory are on the hunt for these kinds of new active ingredients. Their path to finding them involves lots of trials and synthesis steps, frequently with unexpected results. That's where the analysts at Dr. Winfried Etzel's laboratory come into the picture: Their task is to investigate and understand molecular structures. Sooner or later, the laboratory can understand the identity of practically any substance.

Their most important tool for doing so is nuclear magnetic resonance spectroscopy (NMR). This technique is based on the fact that atomic nuclei, which are key components of organic molecules like hydrogen, carbon, phosphorous, fluorine, or nitrogen can be measured using this method. To do so, researchers expose the samples to a powerful magnetic field generated using superconducting magnets weighing many tonnes, to which the magnetic moments of the nuclei align. This allows researchers to monitor signals in the nuclei, which can then be interpreted as a molecular structure.

## Hazardous material and weighing work station

Samples must be prepared to be placed into this magnetic resonance spectrometer. Some materials provided by the individual synthetic laboratories are solid substances

and must first be used to create a solution with a specific concentration. To protect employees, materials may only be used under a hood or in the asecos hazardous material work station. After all, according to Winfried Etzel, the potentially toxic effects of newly developed chemicals are unknown at this stage. The Monheim company had its hazardous material work stations constructed without a protective panel. Constant suction of hazardous materials functions seamlessly, and employees can handle samples freely at any time without interference.

The asecos weighing work station offers a fresh air curtain, allowing analysts to complete fine sample weighing processes while hazardous materials are reliably suctioned away. In addition to structural analysis using NMR, they also work to determine the purity of substances using nuclear magnetic resonance spectroscopy, an internal customer analysis requirement that has become more and more important recently. Samples can be weighed exactly at the weighing work station despite air movement, without any danger of contamination for employees. This isn't a simple task since "we're talking about two decimal points behind a milligram" as Dr. Etzel emphasises. That kind of precision weighing isn't possible under a traditional hood. Thanks to a specialised fresh air curtain in the front level, weighed goods can't blow away, and the scale is placed on a vibration-proof granite block decoupled from the HMW itself. Purchasing the weighing work station was a good decision for Winfried Etzel and his colleagues for several reasons: It ensures ergonomic, safe, and precise work.





#### **Project summary**

**Application** Hazardous material work station for inspecting

chemical samples

**Company:** Bayer CropScience AG

**Location** Monheim

**Industry:** Chemistry / pharmaceuticals

Implemented by

asecos partner: ENVIBOW, Lohmar





## A Cologne task force

If a layperson were to visit the Cologne fire department, the first thing they might notice is a large red box, about the size of a luxury RV. If they walked into the "AB-ATF" - which stands for "Rolling container, analytic task force" through the door on one of its long sides, they'd be surrounded by a work station filled with measuring instruments, computers, and an asecos hazardous material work station.

The Cologne fire department is one of seven ATF locations set up by the

German federal government. These analytic task forces play a key role in non-police emergency response by the fire department, as Dr. Volker Ruster, Head of the Cologne ATF location, emphasises: For example, if the materials involved in a fire aren't clear, the AB-ATF can be used for more extensive analysis of hazardous materials. This is primarily a qualitative analysis focused on identifying materials.

#### Isocyanate or benzoyl chloride?

Typically, the fire department finds out what hazardous materials it's dealing with, if any, when it pulls out of the station Volker Ruster says. This information might be in a freight company's bill of loading or stated on the hazardous materials identification posted on a vehicle that's been in an accident. In case of accidents in the chemical industry, the fire department will speak to a contact person who can tell first responders what they're dealing with. However, things become more difficult if



this kind of information is missing. That's where the AB-ATF comes in.

Sometimes the bill of loading might have been burnt, or there might be doubts about whether the identification is correct. Volker Ruster describes one example: A forklift in a nearby area drove into a stack of barrels. The freight company had transportation documents that didn't match the stickers on the barrels. They said the barrels were holding an isocyanate (a material used in plastics manufacturing), even though it was actually benzoyl chloride. The difference between these two is crucial to provide the right medical care quickly. In other cases, it might be a life or death issue.

### Five men on board

Whenever it's needed, the container is loaded onto a truck for transportation. It has rollers allowing it to be moved and set up anywhere. It's manned by five fire-fighters, one of whom is either a chemist or a chemical engineer. They have all also completed a specialised "analytic task force" training programme. In addition to all the accessories they need, from radio equipment to desktop phones to internet access and a weather station, the container also includes a gas chromatograph and mass spectrometer to measure gaseous and vaporizable materials and an infrared spectrometer for liquid and solid materials.

The hazardous material work station (HMW) plays a key role in the practical analysis process. First responders working outside place materials into a sample lock through an exterior flap. This leads directly to the HMW, separated by an interior flap. That means samples can be moved directly to the hazardous material work station from the lock for processing piece by piece. Toxic vapours or materials themselves, as well as evaporations from solvents, are suctioned continuously. This allows chemists to process the samples for measurement equipment safely.

## **HMW** specialised design

The asecos hazardous material work station in the AB-ATF is a special design with a magnetic, securely fastened acrylic front panel that can be folded back. It also has an interior flap for the sample lock. And the bottom of the HMW is connected to a hazardous materials cabinet provided by asecos, where all required chemicals such as solvents, acids, and lyes can be stored safely.

Luckily, the container rarely needs to be used in serious incidents, as Volker Ruster explains. However, the AB-ATF undergoes continuous endurance testing with practices on every shift, every day. Fire fighters, technology, and the hazardous material work station prove themselves around the clock, each and every day.

## **Project summary**

## Application

Hazardous material work station on mobile investigation vehicle

## **Company:**

Cologne city fire department

**Location** Cologne

**Industry:** Fire department

## Implemented by asecos partner:

Dünschede Fahrzeugbau GmbH & Co. KG, Meschede









## Better protection from formaldehyde

The "Laboratorium Pathologie Oost Nederland" foundation in Enschede is responsible for the regions of Twente and Achterhoek. The laboratory is the largest of its kind in The Netherlands. It focuses on cell and tissue analyses of biotopes, tumours, bones. and skeletons.

A hazardous material work station with displacement flow was constructed at an existing cutting table in the lab in early 2010. This allowed the laboratory to reduce its formaldehyde levels to desired limits.

Pathologists use the gas to fix tissues. To reduce risks to the minimum, tissues are prepared on a specialised stainless steel table equipped with a specially designed ventilation system. The laboratory in Enschede has a height-adjustable system with a drip pan, formaldehyde outlet, and formaldehyde tap. The work surface is 1900 mm wide and 850 mm deep, and was equipped by the supplier with a suction system that suctions directly from the work surface. The system offers a suction power of 1000 m³ per hour. This

ventilation process works well in principle, since aldehyde vapours are heavier than air and do not rise very far. However, if the gas is stirred up it can flow upwards, especially if a large amount of gas is used in a short time period. In this case, suctioning aldehyde through the openings in the ventilated cutting table was no longer sufficient. Even with an additional direct suction device, concentrations in the Laboratorium Pathologie Oost Nederland were still too high.



They needed different equipment to ensure the maximum permitted concentration wasn't exceeded. Because of this, they installed a hazardous material work station (HMW) without counter top on the existing cutting table in early 2010. The ventilation system on this HMW generates a displacement flow. This creates a parallel flow of air on the back of the work station. The HMW safely discharges harmful gases and vapours so employees breathe in as little of them as possible. This provides sufficient protection from dangerous pollutants in conjunction with the suction system.

### **Absolute improvement**

According to laboratory employees, working conditions have improved markedly since the hazardous material work station was installed. "Thanks to this solution, we were able to bridge the gap until the move very well" according to one managing lab employee.

"I don't see any other way to lower levels in this building. We just don't have the space. We'll be here for another two years. Of course, in the meantime we're also facing stricter requirements. We were releasing too many vapours, especially when doing certain work like sealing. The cutting table was designed to suction a specific quantity of material per hour. If the quantities were too high, some formaldehyde was able to escape". The suction hood is now switched on all

day long. As it should be, according to lab employees: "This work station is in use almost constantly. We've been able to reduce excessive emission levels. It's just a stopgap solution, but we are fulfilling requirements". The HMW was installed over the weekend. This allowed employees to continue their work without interruption the next business day. "Denios handled everything very well.". asecos now completes a safety inspection of all suction equipment each year, testing safety storage cabinets for proper function. An external company measures table ventilation. Things have certainly improved for employees".

## **Formaldehyde**

Formaldehyde is a volatile organic compound with a distinctive bad smell. The gas can cause eye, nose, and respiratory tract irritation. Long-term contact with the substance can even cause cancer. New information on the risks of formaldehyde has come out over the years. Formaldehyde is now understood to be much more dangerous than previously known. This has led to stricter regulations, lowering permitted maximum aldehyde concentrations.



## **Project summary**

**Application** Hazardous material work station for tissue examination

**Company:** Laboratorium Pathologie Oost Nederland

**Location** Enschede (The Netherlands)

**Industry:** Clinical laboratory

Implemented by

asecos partner: DENIOS BV









## Customised solutions when working with hazardous materials

The preceding pages have shown that a wide variety of work procedures require unique solutions when handling hazardous materials. The modular hazardous material work stations by asecos guarantee the ideal product is found quickly.

## A safe decision

Do you have a quite specific application but are not sure if this can be done with an asecos hazardous material work station? No problem — in our test and application centre in Gründau (Germany) you can test the application while totally protected by the asecos hazardous material work station. See for yourself, and without risk, how effective our products are.

For more information simply visit us online at: **www.asecos.co.uk** 



## **Special requests welcome**

Bushings, sinks, special connections, and various work surfaces with cutouts or balance table accessory – our experts will advise you on the many options available to personalise your specific hazardous material work station.

Complete supply and waste disposal systems are also available along with asecos underbench cabinets so that hazardous material storage is thus possible directly on site.





## Hazardous material work stations height 1100, depth 600/750 mm with fresh air curtain



## **Standard equipment**

- exhaust and fresh air monitoring with visual and audible alarm
- interior lighting (energy-saving lamp, anti-glare arrangement)
- opaque, fold-away deflector
- melamine resin coated rear wall

## **Hazardous material work station**

(support frame optional)

- required occupational exposure limits are maintained
- testing of the air equipment according to EN 14175 Part 3 (5.4.4)
- maximum user safety
- for mounting on existing working surfaces
- robust construction made of chemically resistant, anodised aluminium profiles
- transparent side panes made from 5 mm (toughened safety glass)
- highly effective capturing of hazardous materials inside the work station through special fresh air curtain technology
- prepared for connection to the on-site exhaust air system and for electrical supply (230 V / 50 Hz)



Hazardous material work station for easy mounting on existing working surfaces

Height (mm)	1100	1100	1100	1100	
Width (mm)	900	1200	1500	1800	
Depth (mm)	600/750	600/750	600/750 600/750		
Extraction air	160 NW	160 NW	160 NW	160 NW	
Amount of air ducts	1 piece	1 piece	1 piece	2 pieces	
Differential pressure per air duct	52 Pa	99 Pa	163 Pa	61 Pa	
Nominal volume flow	370 m³/h	510 m³/h	650 m³/h	790 m³/h	



## Hazardous material work stations height 1400, depth 600/750 mm with fresh air curtain

- required occupational exposure limits are maintained
- testing of the air equipment according to EN 14175 Part 3 (5.4.4)
- maximum user safety
- robust construction made of chemically resistant, anodised aluminium profiles
- transparent side panes made from5 mm (toughened safety glass)
- highly effective capturing of hazardous materials inside the work station through special fresh air curtain technology
- prepared for connection to the on-site exhaust air system and for electrical supply (230 V / 50 Hz)

## **Standard equipment**

- exhaust and fresh air monitoring with visual and audible alarm
- interior lighting (energy-saving lamp, anti-glare arrangement)
- opaque, fold-away deflector
- melamine resin coated rear wall



Hazardous material work station with stainless steel work surface

(support frame optional)

Height (mm)	1400	1400	1400	1400	
Width (mm)	900	1200	1500	1800	
Depth (mm)	600/750	600/750	600/750 600/750		
Extraction air	160 NW	160 NW	160 NW	160 NW	
Amount of air ducts	1 piece	1 piece	1 piece	2 pieces	
Differential pressure per air duct	96 PA	185 Pa	305 Pa	114 Pa	
Nominal volume flow	500 m³/h	690 m³/h	890 m³/h	1080 m³/h	



## **SAFE DISPOSAL OF SOLVENTS**

Today the safe and legally compliant storage and handling of hazardous materials is common in laboratories and in the industrial field. Flammable liquids though contain specific risks.

The safe and convenient disposal of solvents – e.g. after completion of cleaning processes, test series or out of HPLC systems –- makes high demands on the safety technology used.

The requirements of the components used in relation to fire protection, conductivity in materials, material resistance, monitoring options and many other aspects are of great importance.

## Systems made by experts

In the last two years, we – as the leading manufacturer of fire-resistant safety storage cabinets according to EN 14470-1 – together with the leading producer of high quality disposal systems – S.C.A.T Europe GmbH – fulfilled and implemented these requirements successfully – as proven by numerous projects at well-known companies.

Together, both companies stand for the highest possible fire protection in connection with technically developed, high quality and electrostatic conductive disposal systems.

This combined manufacturing expertise offers our customers the highest level of safety according to state of the art design together with the best possible comfort for the disposal of solvents at the workplace – in both current and future projects with our standardised disposal systems.

## Flexible and safe

Together we developed a selected range of Type 90 under bench cabinets with integrated disposal systems of SymLine®.

The modular disposal system components, in combination with a matching Type 90 safety cabinet, form a complete disposal unit. Solvents can be directly disposed from the workplace via hose or pipe systems into the disposal canister inside the storage cabinet.

Different filling options provide additional comfort. Optional control devices, such as the level indicator or monitoring of correct technical ventilation complete the programme.





For further information see www.asecos.co.uk or contact info@asecos.co.uk.



# Weighing work stations with fresh air curtain - air equipment tested according to EN 14175-3 (5.4.4)

- for weighing and portioning compounds
- required occupational exposure limits are maintained
- usable for analytical scales with a measuring range of up to 0,00001 g
- robust construction made of chemically resistant, anodised aluminium profiles
- vibration-free facility for mounting the analytical scales on a granite block decoupled from the hazardous material work station
- weighed materials are not scattered by the fresh air curtain at the front
- prepared for connection to the on-site exhaust air system and for electrical supply (230 V/50 Hz)

## Standard equipment

- monitoring electronics
- work station light
- fold-away deflector
- melamine resin coated rear wall
- electrical connection socket (230 V) on the roof
- pre-installed empty socket incl. empty conduit for data cable
- 2 sockets (230 V / 50 Hz)
- support frame for sitting work with decoupled granite block, cutout 400 x 400 mm





Height (mm)	1400	1400
Width (mm)	900	1200
Depth (mm)	750	750
Extraction air	160 NW	160 NW
Amount of air ducts	1 piece	1 piece
Differential pressure per air duct	96 PA	185 Pa
Nominal volume flow	500 m³/h	690 m³/h



# Pharmaceutical exhausts according to EN 12924 Part 4 (2012)



- safe handling of chemicals, protection from hazardous vapours and potentially explosive atmospheres
- easily mounted on a table top
- robust construction made of chemically resistant, antibacterial powder-coated sheet steel
- testing of the air equipment by recognised test institute

## Standard equipment

- exhaust air fan
- monitoring electronics
- work station light
- height adjustable front sash made from acrylic glass
- 2 sockets

## **Pharmaceutical exhaust**

(media supply optional)

Height (mm)	1460	1460
Width (mm)	750	900
Depth (mm)	600	600
Extraction air	100 NW	100 NW
Amount of air ducts	1 piece	1 piece
Differential pressure per air duct	315 PA	315 Pa
Nominal volume flow	330 m³/h	330 m³/h



Radial fans – safe technical ventilation of hazardous material work stations in accordance with regulations

- impeller of PPS, housing of PP
- CE compliant
- protection class IP55
- incl. mounting bracket with shock absorber
- also available as explosion protected version



FAN
EPVE.29421, CE compliant:
C II \_/3G c e IIB T4



Current limiting circuit-breaker required in case the radial fans need to be switched on / off by the hazardous material work station

EP.VE.29424, CE compliant:
C   II 3/2G c e IIB T4,
explosion proof

Fan	EP.VE.29421	EP.VE.29422	EP.VE.29423	EP.VE.29424	EP.VE.29427	EP.VE.29425	EP.VE.29428	EP.VE.29426	EP.VE.29429
for explosive area	-	-	-	II	1	II	I	II	I
External dimensions	360 x 350 x	420 x 440 x	530 x 540 x	360 x 350 x	360 x 350 x	420 x 440 x	420 x 440 x	530 x 540 x	530 x 540 x
W x D x H (mm)	430	540	670	430	430	540	540	670	670
Frequency (Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Max. current consumption (A)	0,65	1,1	1,2	0,47	0,47	1,1	1,1	2,25	2,25
Noise level (dB)	41	49	56	41	41	49	49	56	56
Weight (kg)	7	10	21	10	10	11	11	22	22
max. volume flow m <sup>3</sup> /h	600	1200	2500	600	600	1200	1200	2500	2500
min. volume flow m <sup>3</sup> /h	250	350	750	250	250	350	350	750	750
Diff. pressure (Pa)	240-125	400-250	620-300	240-125	240-125	400-250	400-250	620-300	620-300



## The asecos safety concept You are always on the safe side with our services.

Our competence as developers and manufacturers of safety-related equipment is also reflected in our service package: We offer you a flawless and professional service programme that leaves nothing to be desired:

- Safety-related inspection of your systems including maintenance
- >>> Customised rates for you
- >>> Manufacturer's warranty up to 10 years
- Transport of safety storage cabinets and hazardous material work stations
- >>> Filter exchanges for recirculating air filters, smoking cabins, and air purifiers

- >>> Assembly of ventilation modules
- >>> Inspection of shelving systems
- >>> Inspection of hazardous material work stations
- >>> Repairs





## Rely on asecos original service!

We understand each and every detail of our products - after all, we developed and produced them. Therefore, you should trust only the asecos original service and the competence of our service technicians when maintaining your safety-related equipment - because they are specialists in their field.



## Move better with asecos

Expert maintenance extends the service life of your products; it manages calculable costs and minimises the risk of failure. In the worst-case scenario, we, as manufacturers, have 98% of the spare parts of all the common types available en route and can immediately repair your asecos product during the safety-related inspection.



## Why is the safety-related inspection so important?

The functioning of all the systems is ensured at all times. You'll have legal security, and you'll be doing everything necessary to protect the health of your employees, your company, and ultimately the environment as well.



## The asecos original service: Safety that is assuring!

Save yourself unnecessary trouble and expenses. Have trust in the expertise of asecos service professionals when it comes to maintenance for your safety-related systems. You do not need to do more. We will regularly remind you of upcoming due maintenance dates and safety-related inspections.



Find more information on the asecos service programme at: service@asecos.com or at www.asecos.co.uk



## **Product overview**



INDOOR STORAGE OF HAZARDOUS MATERIALS



STORING HAZARDOUS MATERIALS INDOORS AND OUTDOORS







EXTRACTION AND
FILTER SYSTEMS FOR
HAZARDOUS VAPOURS



HANDLING
HAZARDOUS
MATERIALS INDOORS
AND OUTDOORS



SOLUTIONS FOR THE PROTECTION OF NON-SMOKERS AND AIR-POLLUTION CONTROL









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