Nederman

Welding & Thermal Cutting

Fume and dust control solutions for welding and thermal cutting processes

Take Control of your Factory Air

Nederman Welding Solutions

- Complete Solutions. Nederman specializes in each layer of the fume control system: Capturing the fume, conveying (duct design), collecting and filtering the fume and the controls.
- Industry Expertise. Assessing the initial requirements to managing the installation, Nederman can be a one-stop shop for fume control solutions.
- Future Proof Technology. Technology that is built for now and in the future to improve the operation and maintenance of fume control solutions.

Exposure to welding or thermally generated fume is a serious health and safety issue facing today's manufacturers. Health risks ranging from mild illnesses including sore throat, eye irritation, metal fume fever all the way up to long term or even terminal conditions like cancer.

In addition to the health risks, uncontrolled weld fume impacts factories by infiltrating machinery or electrical cabinets causing downtime and loss of productivity or accumulating on inventory requiring additional housekeeping or clean up work.

International health and safety organizations have recognized the importance of protecting workers from thermally generated fumes and have implemented strict exposure limits. While the regulations are more stringent for certain materials such as stainless steel weld fume generated from mild steel is now considered carcinogenic.

Protecting the workers from the fume, dust and smoke common in welding processes is best accomplished by capturing it at the source to prevent from entering the worker's breathing zone.

Did you know?

In 2019, the International Agency for Research on Cancer (IARC) classified weld fume as a known carcinogen that can lead to lung cancer.

What is weld fume?

1 **Complex mixture of gases and metals**
Welding fume is a mixture of metal and gases resulting from the base metal and filler metal being used. It can contain metals such as chromium, manganese, beryllium, lead, cadmium, aluminum, zinc, and many more.

2 **Factors that affect worker exposure**
Many factors influence the worker exposure including the welding technique, amperage, base metal, consumable materials, part geometry and local environment.

3 **Extremely small**
Studies have shown that over 90% of weld fume is less than 1 µm in size which is 50 times smaller than the average thickness of a human hair. The small size poses a significant risk to inhalation and requires high efficiency filters to capture.

Nederman is a global leader in fume control solutions

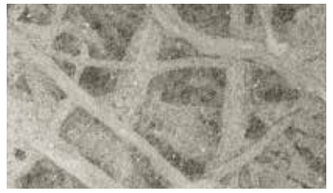
As the world's largest provider of fume extraction and control equipment Nederman is your total solution provider for control of welding and metal cutting fume. Whether the application is small or large, simple or complex, manual or automated, Nederman assesses each customers' unique needs to develop a solution that effectively and efficiently protects your workers and factory.

Solution range - Broad range of fume extraction solution making us a one stop shop for clean air..
Industry expertise - Decades or experience with thousands of successful installations.
Quality and reliability - Welders around the world trust our products everyday to protect them from the harmful effects of welding fume. We have the experience and reputation you can trust.
Turn key approach - From design, commissioning and service, we have all of your needs covered.
Sustainability - We are committed to deliver sustainable, clean air solutions to our customers.

Filtration technology

Nederman products are equipped with technology that improves performance, operation, use and maintenance of our products now and into the future.

Effective fume capture
Our designs and technology work together to ensure effective capture and control of the weld fume. Our extraction arms, hoods, controls and filters all have this goal in mind.



Advanced filter media
Our Nanofiber and ePTFE filter media is ideally suited for fume applications with high efficiency and excellent filter cleaning resulting in extended filter life, reduced energy consumption and fewer emissions.

Insight controls
Our SmartFilters include easy to use touch screen controls that are IIoT ready and enable remote monitoring technology that increases productivity, improves safety and reduces operating costs.

Right Solution for Unique Needs

Nederman offers everything from plug-n-play products to complete engineered solutions. We carry out feasibility studies, planning, design, installation and commissioning to ensure a one-stop shop for fume control solutions.

Capturing the fume

Understanding how the fume will be captured is the first step in designing an effective f...fume control and determining the best approach will depend on a variety of factors including the technical welding parameters, the types of parts being welded, exposure limits, customer performance expectations and potentially other unique factors. Ultimately an approach that aligns with the operation and that welders will consistently use will achieve the desired fume control.

On-torch extraction

On-torch extraction is a form of source capture where hi-vacuum (hi-vac) suction hoses are connected directly to the welding torch to capture fume during welding. This approach is common for confined space, maintenance, construction sites or large component welding. While convenient, on-torch extraction may not be as ergonomic or effective as local extraction but may be preferred by welders or in cases where extraction arms cannot be located close to the arc.

Local extraction

Local extraction uses source capture devices such as hoods or local machine connections and draws fume into a filter before it can enter the worker's breathing zone or migrate throughout the plant. This is the most common approach used in industrial welding, because it is offers superior fume capture, maximizing worker protection, energy efficiency and ease of operation.

Ambient

Instead of capturing the fume at or near the source, these systems draw "ambient" air from a large, open space into hood(s) or filter(s), clean the air and return it to the space. Typically, the system is designed to create air flow patterns favorable for capture and worker protection. Ambient systems are common when welding on large parts or where ducts or source capture are not practical. This approach uses more energy and offers less worker protection than source capture.

Application considerations

Many factors influence what the right product is for you and that is why Nederman offers a full range of product and service solutions that meet your needs. The chart below serves as a basic guide on what may be a good product style to consider for your applications.

Plasma Cutting
Charged gas stream that melts and cuts through metal

Laser Cutting
High intensity light beam with shield gas that melts and cuts metal

Flux Core Arc Welding (FCAW)
filler metal electrode; flux shield

Shielded Metal Arc (SMAW or Stick)
Electrode provides both flux and filler metal

Gas Metal Arc (GMAW or MIG)
Widely used; consumable electrode for filler metal, external gas shield

Tungsten Inert Gas (GTAW or TIG)
Superior finish; non-consumable electrode; externally-supplied inert gas shield

Soldering
Fusible metal alloy that creates bond between metal workpieces

Fume generation rates

Different welding processes and materials result in higher fume generation rates. For example, higher welding duty cycle, welding with flux or on oily / dirty surfaces will have higher fume concentrations and will need a more robust solution.

Number of welders

When you have multiple welders or machines generating fume, it may be more economical to have a central fume extraction or what we would call an engineered solution. Whether this would be for multiple welding robots, several welder workstations or just a complex arrangements where the typical plug-n-play solutions aren't a good fit.

Mobile Fume Extractors

Mobile Fume Extractors are common solutions for industrial weld fume extraction needs. These are source capture solutions that can be moved around within workstations or factories to capture fume and return clean air to the workplace. A variety of configurations, options and accessories are available to cater to the welder's unique needs including automated operation, filter cleaning, light kits, HEPA after filters and many more.

FilterCart Advanced+

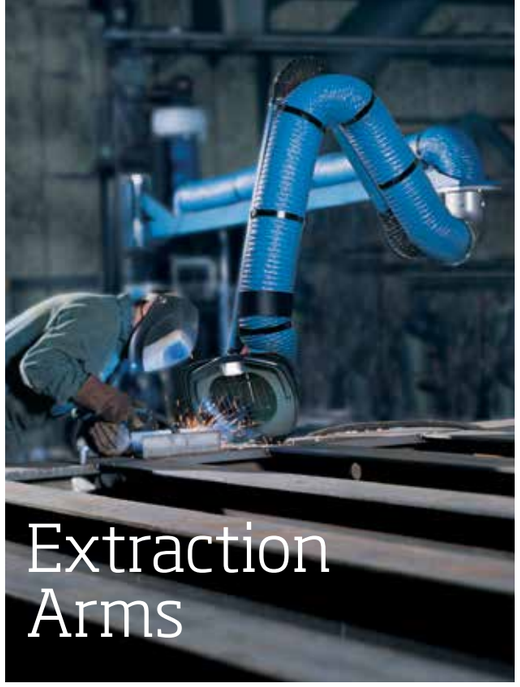
FilterCart Advanced+ designed for light to intermittent duty fume applications with a small footprint and lightweight construction making it easy to move and locate inside welding booths. Despite the small package, the unit is full of technology and features that monitor performance and make it easy to own and operate.

FilterBox+

The FilterBox+ is versatile solution for production welding and accessorized to cover a variety of needs and requirements. It features an on-board filter cleaning system that regenerates the filter to maintain airflow and fume capture. Welders appreciate the FilterBox because it can be configured to match their production process, has features that monitor airflow and filter life and has available options that automate operation to improve productivity.

Fume Eliminator 247

The FE 247 is an on-torch fume extractor that can handle up to two welders and is suitable for production, continuous duty welding. It features an automatic filter cleaning system, adjustable airflow and integrated spark trap for increased safety. Optional upgrades allow for automatic operation to increased productivity and energy efficiency.



Extraction Arms

Extraction arms are the welder's primary interface with fume extraction systems and therefore the design, quality and performance are vital for reliable and effective capture. Nederman's best-in-class extraction arms are designed to optimize fume capture, easy to operate and reliably hold their position so frequent adjustment is not required. The arms are durably constructed in order to handle the challenges associated of welding environments.

Nederman offers a broad range of extraction arms in different sizes, shapes and materials of construction that can be paired with mobile or stationary filters as solutions for various applications and types of environments. Additional options and accessories are available to improve safety, automation and increase productivity.

Portable Fume Extractors

Portable fume extractors are on-torch capture devices designed to go wherever welding needs to be done. These are great solutions for light production welding especially in tight spaces (confined space) where it would be difficult to use extraction arms. They are also great to have in maintenance departments or on-site repair work and can ben conveniently kept in service vehicles and carried onto construction sites.

Fume Eliminator (FE) 840 / 841

The FE 840 is a lightweight, portable and economical on-torch fume extractor intended for a light duty, single welder application. It features a large and ergonomic top handle making it easy to carry around and features adjustable airflow to adjust for various welding processes. The 841 features and automatic start/stop feature that improves productivity and improved performance.

Stationary Fume Extractors

For fume applications with multiple welders or increased fume generation rates, stationary fume extraction systems offer increased capacity and performance to handle these needs. These systems generally are design to support multiple source capture devices (i.e. on-torch hoods, extraction arms) that are connected through duct to a central filter that has the capacity and capability to handle the increased fume load. These are also the recommended solutions for machine tool or automation including laster / plasma cutting and robotic welding.

MCP SmartFilter

The MCP SmartFilter is a modular, reverse pulse-jet, cartridge fume and dust collector suitable for the most challenging welding or thermally generated fume applications including plasma/laser cutting tables or multiple welding hood. The MCP features the latest in filtration technology with Nanofiber filter media, IntelliPULSE filter cleaning and IoT ready Insight Control panel and has many available options to configure it for a variety of applications.

LCP SmartFilter

The LCP SmartFilter is a modular, reverse pulse-jet baghouse that is best suited for high volume airflows for large scale welding or thermal cutting operations. The LCP features Nanofiber filter media, IntelliPULSE filter cleaning and the Insight Control Panels which are IIoT ready.

L-PAK / E-PAK

The L-PAK and E-PAK are hi-vacuum fume extractors with models that serve up to six on-torch extraction points making them a great solution for central filters that serves multiple weld stations or robotic welding cells. These units have adjustable airflow, are energy-efficient and have low noise levels. Each unit has a compact design to reduce floor space and has fork truck slots in the base so it can be moved if required.

FlexPAK SmartFilter

The FlexPAK is an advanced hi-vacuum fume extractor suitable for multiple on-torch extraction points for fume guns or robotic welders. The filter includes a PLC control and sensors that monitor key operating parameters including filter life, airflow and dust bin level to automate operation for improved energy efficiency and productivity. The FlexPAK is also Insight (IIoT) ready and can be monitored remotely.

MFS Filter Kits

The MFS filter kits are a modular system that can build economical solutions for light, intermittent duty weld fume or soldering applications. The modular system makes this suitable for small operations or large scale manufacturing. Fans can be installed directly to the filter frame making the installation quick and easy. High Efficiency (HEPA) and carbon filters are also available for increased safety.

Air Purification Tower

When source capture is not practical due to overhead cranes, large weldments , ambient air solutions such as the Air Purification Tower are the best alternatives to control welding fume. These systems can be used by itself or in an array to create favorable airflow patterns to entrain contaminated air, filter it and return clean air to the work space. The Air Purification Tower features a pulse-jet filter cleaning system, comes with pre-wired fan and controls for quick installation and a silencer for reduced sound levels.

Engineering Capabilities and Solutions

For many weld fume applications, engineering and design assistance is required to implement a solution that meets performance, operational and compliance requirements. Nederman is The Clean Air Company and specializes in understanding our customer's unique needs, local regulations and leverage our industry expertise and engineering services to deliver an effective solution.

Product selection assistance

With all of the potential fume control approaches and products, it can be difficult to know what the optimal solution is for your operation. Nederman will review your welding or cutting process, operation parameters and provide a recommendation from our broad range of product solutions that best meet these needs.

Engineering solutions

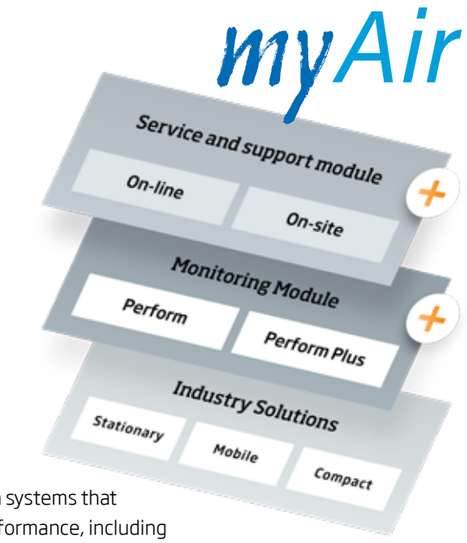
A plug-and-play product is not always the best solution and therefore Nederman has the capability to offer a complete turn-key solution including the system design, project management and commissioning.

The design begins with an effective way to capture the fume at each workstation using on-torch fume guns, extraction arms or even specially designed hoods. Next, the duct design that conveys the material from the fume source to the filter is critical to energy efficiency, consistent performance and combustible dust safety. Next, configuring the proper filter in terms of size, options and accessories that meet the established performance and operational requirements. Nederman offers a full line of fans and IoT ready system controls that makes us a one-stop shop for a complete fume control solution for today and for the future.

Combustible dust experts

While most fume applications are not considered combustible dust some of the associated metal working processes may be and require special design considerations. Worldwide standards and regulations exist on how to handle combustible dusts. Proper dust extraction at the source is just one of the necessary needs to have your facility compliant with these rules and keep your workers and facility safe. Unfortunately, too often, dust collections systems are installed without the full system being in compliance with the combustible dust codes and standards. As a world leader in providing combustible dust compliant system, Nederman can assist facilities in meeting the compliance needs of facilities subject to the standards and regulations such as ATEX, NFPA, OSHA and ACGIH.

Nederman myAir



Factories may not typically spend time thinking about the service or maintenance of fume extractors but these are systems that directly impact important operational areas including personal and asset safety, energy consumption, worker productivity and sustainability. To assist our customers in better managing these systems, Nederman created the myAir platform which is a scalable offering including industry filter solutions, traditional on-site inspection and maintenance services and a connected, digital monitoring service called Nederman Insight.

Nederman Insight

Insight is a cloud-based IIoT platform designed specifically for filtration systems that provides real time monitoring, visualization and tracking of system performance, including customized dashboards, alarms and reports Real-time data is accessible via the web or mobile devices and also stored in the cloud for trending and performance analytics. Insight empowers users to operate and maintain their filtration system more effectively - improving plant productivity, worker safety, regulatory compliance and energy consumption. Nederman Insight is an IoT ready, cloud connected solution that collects filter sensor data for proper performance and makes it available on remote and mobile devices in a customizable dashboard.

Insight ready

Why is monitoring and maintenance of fume extraction equipment important?

Below is a list of several key parameters which are important to monitor to ensure your system is delivering the performance required for a safe and healthy operation.

Filter pressure

Monitoring filter differential pressure (dP) is used to evaluate filter life, filter cleaning effectiveness and as an indicator of proper airflow. High filter pressure means more energy and higher level of emissions from increased cleaning cycles.

Duct pressure

Sufficient airflow necessary to capture the contaminant and protect workers is the primary purpose of the fume extraction system. Measuring the duct or hood pressure can be used to monitor airflow and ensure the system is effective. he primary purpose of these systems are to provide sufficient airflow in order to capture the fume and protect the worker and factory. Measuring the pressure at the hoods or in the duct can be used to evaluate the airflow and ensure the system is effective.

Filter cleaning pressure

If the cleaning pressure is too low, the filter will not be effectively cleaned resulting in reduced airflow, shortened filter life, increased energy consumption and higher operational emissions from increased cleaning frequency and added wear and tear. Pressure that is too high risks damaging the filters, increased noise levels and higher energy than required. any filters are cleaned with a reverse pulse jet powered by compressed air. If the pressure is too low, you decrease the cleaning effectiveness which shortens filter life, increases energy consumption by cleaning more frequently, added wear and tear and higher operational emissions. Pressure that is too high risks damaging the filters, increases noise levels and using more energy than required. Monitoring this level ensures tha.

Dust bin level

One of the regular maintenance activities for a fume extractor is to empty the dust bin to make sure it does not overflow or accumulate and blind the filters. Digital monitoring reduces time spent visually inspecting, emptying when not full and avoiding bin overflows.

Fan performance

The fan consumes the majority of energy required to operate the system so ensuring that the motor is operating properly and the fan is not experiencing excessive vibration that might cause a failure or shorten motor life saves money in the long run by avoiding unplanned outages. Many fans today are operated by Variable Frequency Drives (VFDs) which can also provide useful information about the life and performance of the motor. cause a failure or shorten motor life saves money in the long run by avoiding unplanned outages. Many fans today are operated by Variable Frequency Drives (VFDs) which can also provide useful information about the life and performance of the motor.

The Clean Air Company

Our promise – contributing to a sustainable future

Clean air is a cornerstone of sustainable production. Our customers want to boost profitability by making their operations as efficient as possible. They want to meet high environmental standards and keep employees safe from fumes and dust. Nederman can help them on all counts. That's how we create value.

The Clean Air Company - Vision 2025

Nederman celebrated its 75th anniversary in 2019. From the very beginning, the business idea was clean air. Today, the environment and sustainability are more relevant than ever and the demands are increasing to contribute actively to more efficient production and reduced emissions in industry. The next generation of solutions for clean industrial airflows is under development. Nederman is at the forefront of this development.