

Nederman

Welding & Thermal Cutting

Fume and dust control solutions for welding
and thermal cutting processes



Take Control of your Factory Air

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 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.

Benefits of proper weld fume extraction

Investing in proper extraction for welders, robots or other thermally generated fume is an essential component of a clean, safe, healthy and sustainable operation.

Worker Health and Safety - Exposure to weld fume proven to cause respiratory diseases including cancer.

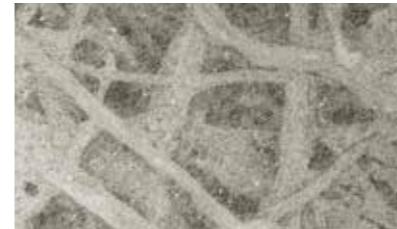
Productivity - Improved air quality is proven to improve cognitive ability and reduce absenteeism which drives productivity gains with your workforce.

Regulatory Compliance - Exceeding permissible exposure limits (PEL) for materials found in weld fume can open the organization up to fines or increase insurance rates.

Welder Recruitment - Welder shortages are expected to get worse. Clean, safe workplaces help your business stand apart from competition and attract the best welding talent.

Clean Air Optimised

With our products, people and technology, Nederman strives to offer solutions that not only effectively manage the fume, but do so in a way that helps customers achieve increased productivity, health and safety, compliance and energy efficiency.



Source capture

Capturing fume at the source is the most effective and energy efficient method.

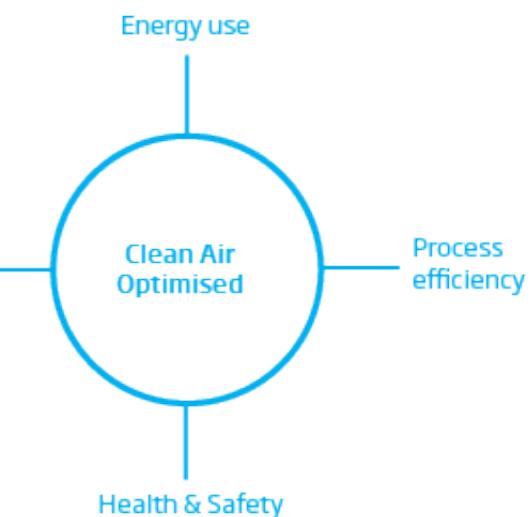
Advanced filter media

Nanofiber and ePTFE are ideal for fume applications with excellent efficiency, filter life and energy savings.

Compliance

Advanced services

Performance monitoring sensors and IIoT platform support safer and cost-effective operation and maintenance



The Clean Air Company

- Complete Solutions. Broad range of fume extraction solutions that allows us to provide the right product.
- Industry Expertise. 80 years of experience with tens of thousands of successful installations globally.
- Quality and Reliability. Welders around the world trust our products every day in harsh environments to deliver clean air.
- Turn-Key Approach. From design, commissioning to service and maintenance, we have all your needs covered.
- Sustainable Partner. Commitment to deliver clean air solutions to help manufacturers protect people, planet and production.

Right Solution for Unique Needs

Nederman partners with manufacturers to determine the best approach to capturing fume and offer the product that will deliver the performance they require to protect workers and keep them productive.

Capturing the fume

There are three general approaches to fume extraction: on-torch, local exhaust and ambient. Trade-offs exist while evaluating worker protection needs, energy consumption and cost. Welding technique, welder preferences, part geometry and factory layout all factor into selection criteria. The information below provides some general points about each approach and where commonly applied. Nederman offers solutions with each approach and can help you make the decision that best fits your factory.

On-torch extraction

Form of source capture where hi-vacuum (hi-vac) suction hoses are connected directly to the welding torch to capture fume during welding.

- Improved ergonomics and capture efficiency on modern torches have made more practical for everyday applications.
- Common applications include confined workspaces, maintenance, construction or large fabrications where hoods or extraction arms are not practical.
- Ability to integrate into robot or cobot welding applications



Local exhaust

Fume is extracted with extraction arms or hoods positioned near the welding zone drawing it away from the worker's breathing zone preventing it from escaping the weld cell.

- Offers most effective capture efficiency with a properly designed and positioned hood.
- Maximizes worker protection, energy efficiency and ease of operation.
- Wide range of hoods and extraction techniques allow it to be applied to most manual and automated welding applications.



Ambient

In cases where source capture or ducting is not practical, the ambient air can be collected, filtered with clean air and returned to the workspace. Ambient systems are designed to create air flow patterns favorable for capture and worker protection.

- Does not directly protect worker breathing zones and typically increases the energy consumption relative to source capture approaches.
- Can be used as a complement to on-torch or local exhaust to ensure stringent air quality standards are achieved.
- Common on large fabrications where cranes are needed to assist with handling.



Selecting the right solution

With the appropriate fume capture method has been determined, selecting the right product that will deliver the proper performance is the next step. Four mobile or one central extractor? Do I have the floor space needed or will installation need to be outdoors? What is the most cost effective and energy efficient solution? The chart below is a general guide that relates the fume generating process with the number of welders or complexity and how these influence product choice. Additionally, the chart illustrates where Nederman's extensive range of products are generally applied.



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 and will require a more robust solution. Higher amperage, duty cycles, welding with flux or on oily/dirty surfaces create heavier fume concentrations.

Number of welders / complexity

As fume generating points increase, it becomes more economical to consider central fume extraction systems. Whether for multiple welding robots, several welder workstations or just a complex arrangement where smaller workstation solutions are not a good fit.

Portable & Mobile Fume Extractors

Mobile and portable fume extractors are common solutions that capture fume at the source with added flexibility to be moved around within workstations or factories to return clean air to the workplace. With their flexibility and variety of configurations, these solutions are excellent choices for both manual and automated welding cells.

On-Torch (Hi-Vac)



Fume Eliminator

The Fume Eliminator (FE) is a portable on-torch fume extractor intended for light duty, single welder applications. It features a large and ergonomic carrying handle, making it easy to transport. The FE860 model features adjustable airflow to match torch requirements, airflow monitoring alerts and automatic start/stop for enhanced safety and productivity.

Fume Eliminator 24/7

The FE 24/7 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 for increased productivity and energy efficiency.

Local Exhaust



FilterCart+

FilterCart+ is 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. The advanced models are loaded with technology and features that monitor performance and make it easy to own and operate.

FilterBox

The FilterBox is a 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. Configured to match the production process with features that monitor airflow and filter life and available options to automate operation to improve productivity.

MFS Filter Kits

The MFS, Modular Filter System, filter kits are a modular, economical wall mount fume extractor for light, intermittent duty fume applications. Fans install directly to the filter frame for a simple installation and zero-footprint. High Efficiency (HEPA) and carbon filters are also available.



Extraction Arms & Hoods

Extraction arms are the welder's primary interface with fume extraction systems making the design, quality and performance vital for reliable and effective capture. Nederman's best-in-class extraction arms are designed to keep welders productive by reliably holding their position and extended capture zone reducing necessary adjustments.

Comprehensive range for effective source capture



Standard Arm

Light duty and economical fume extraction arm.



Original Arm

Extraction arm design with optimised capture hood and handle for positioning.



Telescopic Arm

Extraction arm that swivels and extends making it great for tight work spaces.



NEX MD

Enhanced design with improved motion control, extended airflow and temperature range for more demanding fume and dust applications.



NEX HD

Designed for the most demanding fume and dust applications with enhanced design that increases the capture zone, airflow and temperature ratings.



Hi-Vac Magnetic Hoods

Optional accessory for hi-vac extraction that can be secured near weld for source capture. Useful for confined spaces, cobots or applications where on-torch extraction is not preferred.

Accessories

Nederman's extraction arms can be equipped with a variety of accessories that can cover greater distances, automation options that increase productivity and energy efficiency, improved lighting to see work better and increased safety through spark control. This range of options allow our extraction arms to adapt to each customer's unique needs.

Extension Arms



Automation Controls



Hood Switches & Light Kits



Spark Management



Configured Solutions

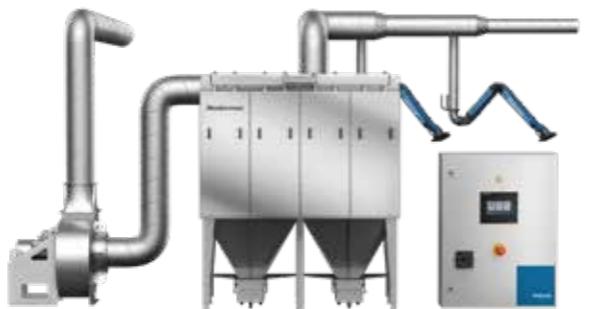


Nederman is the Clean Air Company and helps customers achieve Clean Air Optimised with configured solutions designed specifically for their unique fume extraction needs focused on keeping welders safe, productive and regulatory compliant. Our solution range covers on-torch, local exhaust or ambient configurations with built-in technology to meet the requirements of an automated future. In addition to products, we offer design, project management, technical training, combustible dust expertise, and service packages to help keep your systems running optimised.

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 hoods.

- Nanofiber and ePTFE filter media
- IntelliPULSE filter cleaning algorithm
- SmartFilter sensors monitor key performance metrics including filter life and bin level
- IIoT-ready Insight control
- Configurable with a wide range of accessories to adapt to unique applications



FlexPAK and FlexFilter

The FlexPAK and FlexFilter are advanced hi-vacuum fume extractors suitable for multiple on-torch extraction points or robotic weld cells.

- PLC and VFD controls for consistent extraction
- Sensors that monitor key operating parameters including filter life, airflow and dust bin level
- Automated operation for improved energy efficiency and productivity
- IIoT-ready and can be monitored remotely through Nederman Insight



MJC Mini Cartridge Collector

A compact, plug-n-play option for light to medium duty production, thermally generated fume and dust applications. The MJC Mini has robust, fully welded construction and is suitable for indoor or outdoor installations. It features a variety of filter media for different applications and a patented filter cleaning system that maximizes filter life.

MCP Air Purification Tower

When source capture is not practical due to overhead cranes or large weldments, ambient air filtration such as the MCP Air Purification Tower is 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 energy efficient Nanofiber filters, pulse-jet filter cleaning, pre-wired fan and controls for quick installation, low sound levels and configurable outlets to adapt to your workspace.

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.

Shaping the Future of Clean Air

Nederman SAVE

Nederman SAVE enhances the performance of new or existing fume and dust extraction systems. By utilizing machine and process information, SAVE automatically adjusts dampers to regulate airflow, ensuring effective extraction and safe material transport. This process minimizes energy consumption, reduces combustible dust risks, expands operational capacity, and reduces maintenance time, making it a valuable addition to any metal fabrication process.

■ Energy reduction

Achieve up to 70% savings through improved airflow control. Reduced load on HVAC systems also yields additional savings.

■ Production and maintenance data

SAVE technology monitors machine activity to optimize airflow allowing it to capture arc time or productivity information on each connected workstation.

■ Quieter operation

Less exhaust air means lower fan speeds and fewer filter cleaning reducing the noise level in the factory and in the dust collector operation.



Energy and process monitoring

Energy process data collected with Nederman SAVE can be monitored and visualized through Nederman Insight allowing users to track operation data such as workstation productivity, process parameters and energy savings.



Nederman ProQuote

Nederman utilizes ProQuote, a state-of-the-art design tool, to quickly prepare accurate solutions that meet specifications, are energy efficient, and compliant with local regulations. The tool's 3D visualization feature helps manufacturers gain a clear understanding of the installation process, operation, and maintenance of the system, which in turn helps keep the project within budget.



Nederman myAir™

Service and maintenance for fume and dust collection systems are essential to keep workers safe and while also helping to reduce risks of fire and improve sustainability. In order to help metal fabricators better manage these systems, Nederman has developed the myAir platform.

This scalable offering includes SmartFilter solutions, traditional on-site inspection and maintenance services, as well as a connected, digital monitoring service called Nederman Insight. With this comprehensive platform and based on their unique needs, our customers can proactively address filter-related issues and improve their overall operational efficiency.



Benefits of active monitoring and proper service

Safety. Welding fume and metal dusts presents risks to workers and facilities from dust exposure and combustible dust hazards.

Productivity. myAir keeps welders healthier through proper extraction and helps keep them welding instead of focusing on fume extractor maintenance.

Energy Efficiency. Optimally designed and operated filtration systems can reduce energy consumption and costs, improving sustainability.

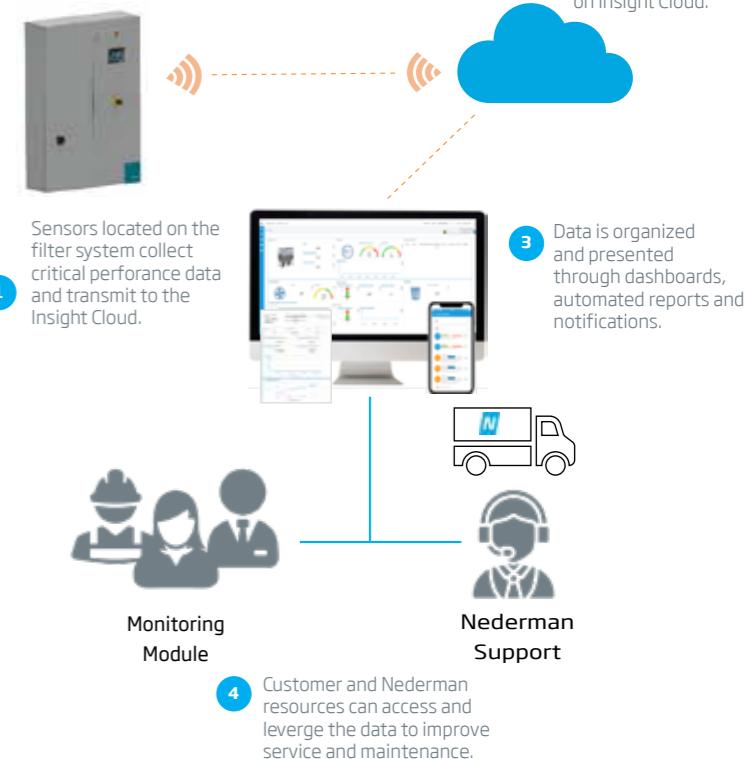
Reduced Emissions. Poorly maintained filtration systems increase emissions and pressure drop, reducing component life and maintenance needs throughout the facility.

Maintenance. Ineffective fume extraction allows fume and dust to migrate throughout the facility causing increase maintenance on machines and factory cleaning. Avoid this with trained professionals who understand how to efficiently maintain the system's performance.

Future-proof technology with traditional care for maximum value

Nederman believes in providing maximum value to its customers, and that's why we combine the precision of digital monitoring with the care of traditional services. With our Nederman Insight service, customers can remotely monitor their dust collection systems in real-time, receiving alerts about any issues that require attention. Our service team can then use this information to provide proactive, on-site maintenance and repair services, ensuring optimal system performance and minimizing downtime.

Nederman Insight also provides valuable data analytics and reports, helping customers optimize their systems and improve their overall operations. By combining digital precision with traditional care, we can offer our customers the best of both worlds and maximize their value.





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 celebrates its 80th anniversary in 2023. 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.