



Engineered Air Handling Filtration Systems

Custom engineered solutions for improved indoor air quality in today's welding and fabrication facilities

Have you ever noticed the formation of a layer of welding fume in the air within your welding and fabrication facility? Fume and metal particulate from metalworking applications such as welding, plasma cutting, arc gouging, and grinding, can form a layer of particulate in your facility that can settle back to the floor. Lincoln Electric, a world wide leader in welding fume control has a proven ventilation solution that dilutes and filters this layer of particulate. Effective welding fume control can significantly contribute to a cleaner work environment and higher productivity.

Welding Fume Control

There are many methods to providing "adequate" welding fume control to protect the worker. However, even with successful implementation of one method of control it may be advisable or even necessary to implement a secondary method of control. For example, when fabricating large weldments, or when the welder needs to shift positions frequently there is greater potential for fume to escape and rise into the air.

A plume of welding fume and gases is created during the intense heating process of the arc. The thermal properties of the plume cause it to rise quickly into the air where it finds a layer of air with matching thermal properties. When the fume cools it will settle back to the floor. Lincoln Electric's Push/Pull Systems are custom designed to dilute and filter this layer prior to it cooling and re-entering the work zone.

www.lincolnelectric.com/safety
www.lincolnelectric.com/weld-fume-control

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Lincoln's Push/Pull System... an indoor air quality

Four Elements: Extraction, Filtration, Fan, Re-circulation

Here are some Examples of Where or When to Apply a Push/Pull system:

- ▶ Supplement source extraction for difficult applications.
- ▶ Fabricating large weldments or welding on large work pieces.
- ▶ The welder needs to shift positions frequently.
- ▶ Shops utilizing robotic welding and hard automation.
- ▶ Welding locations within a facility are variable.
- ▶ Personal protective equipment is used to control the welder's potential exposure.



1. Extraction (Pull)

To move and extract the layer of particulate in a controlled direction, an extraction duct is designed according to your specific operation and facility layout. The extraction duct is provided with airflow grids. Proper design will allow for the most effective and controlled extraction of the metalworking particulate in your facility.

2. Filtration

The extraction duct is connected to a self-cleaning filtration unit. As the particulate moves through the extraction duct, it is collected on the filter media which is periodically cleaned by an automated, pneumatic cleaning system. When the pressure over the filter reaches a certain point, the internal blow back mechanism begins to clean the filter, resulting in the particulate dropping into a collection container at the bottom of the filtration unit. The container can be easily emptied and the collected particulate should be disposed of according to Federal, State and local regulations.

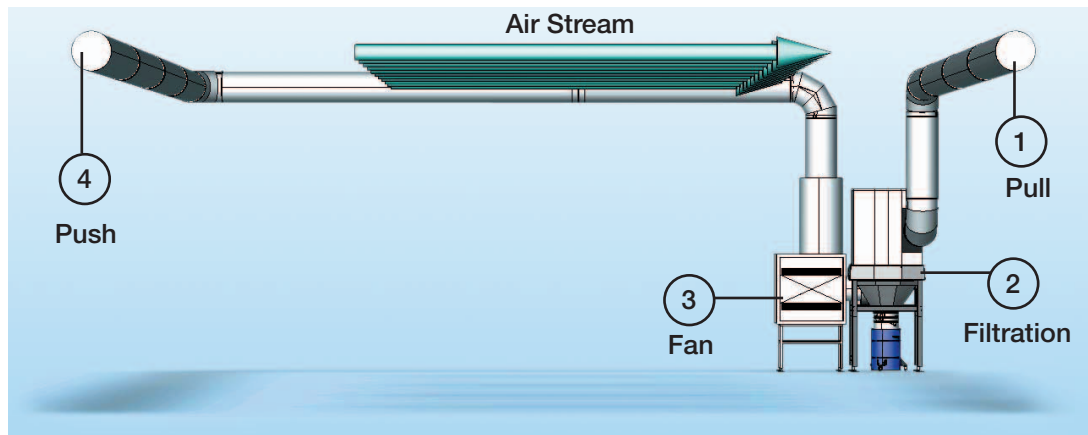
3. Fan

The continuous extraction (pulling), filtration and re-circulation (pushing) process is generated by a fan unit specifically sized for the system and positioned downstream from the filtration unit. To significantly reduce the system's noise level, the fan is mounted in a sound absorbing box and powered and controlled by intelligent controls.

4. Re-circulation (Push)

Once the particulates have been filtered, the filtered air can be re-circulated⁽¹⁾. By re-circulating the air, energy cost savings, specifically in climate controlled environments, can be recognized. The re-circulated air is also used in a controlled manner to dilute and push the layer of particulate towards the extraction duct. To effectively control the direction of re-circulated air, a re-circulated air duct with volume regulated airflow grids is designed according to your specific operation and facility layout.

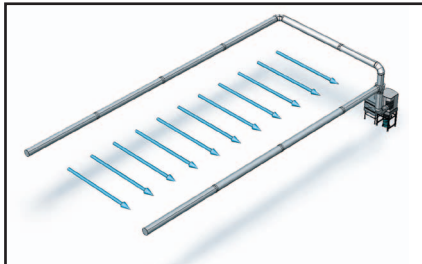
⁽¹⁾ It is the responsibility of the owner/operator to comply with local codes and regulations regarding the air quality. Gases are not removed by the filters.



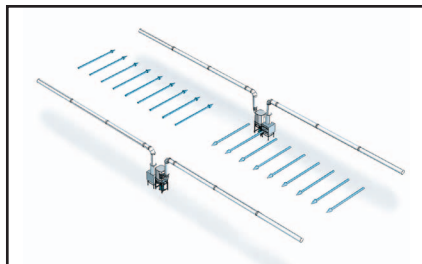
ty solution that effectively controls particulate!

Suitable Solutions for Various Facility Layouts

Illustrations of typical Push/Pull Systems:



U-shaped Push/Pull System with one filter unit and one fan



Parallel Push/Pull System with two filter units and two fans

Evaluation of Operation and Facility Layout

To design a Push/Pull System for your facility and application needs, an in-depth evaluation and analysis of your building layout and operation must be completed.

The evaluation includes parameters such as:

- Application/manufacturing processes,
- Operator procedures,
- Existing ventilation and air movements,
- Overall volume and general construction of workshop and obstructions.

Upon evaluation of your facility, your company will be presented with an engineering design specification and system quotation. These documents will include information about the system layout, recommendations based on evaluation of your facility and detailed list of system components.

Green Initiative Awareness Program

Filtered Air Can Save Heating/Cooling Costs



THE LINCOLN ELECTRIC GREEN INITIATIVE

Filtered Air
saves heating/cooling costs

www.lincolnelectric.com/green

Lincoln Electric's new Green Initiative Awareness Program promotes the company's initiatives to reduce environmental impact of its products and manufacturing processes. Continued investment in technological advancement underlines Lincoln's commitment to creating products that help customers reduce welding costs and adhere to environmental standards.

Environmental systems from Lincoln Electric include industry-leading portable, wall mounted and shop-wide solutions for capturing and extracting welding fume and particulate from metalworking operations. Most of these systems feature either a disposable or self-cleaning filter. Recirculation of filtered air instead of exhausting non-filtered air to the outside may result in significantly lower heating/cooling costs. In addition, the high efficiency electric fan/blower motors used in these systems minimize their impact on overall power consumption.

Dispose of exhaust system filters and collection bin debris according to your company's waste generator status and in compliance with OSHA, EPA and local regulations.



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The Smart Solution

Lincoln Electric Circulator Systems

The Lincoln Electric Circulator System has been custom designed to improve indoor air quality in smaller shops or work areas. The system handles this task by continuously moving cleaner, filtered air into the facility preventing the formation of a welding fume layer in the ceiling and/or rafters. The filtration is provided by Lincoln Electric's Statiflex® 6000-MS, which is a self-cleaning central filter unit with a filter surface area of 150 m². The Lincoln Electric Circulator System is a smart solution for welding safety, workplace cleanliness and an overall positive manufacturing work environment.



For Lincoln Electric's complete line of solutions for weld fume control visit www.lincolnelectric.com/weld-fume-control

SYSTEM EFFECTIVENESS AND OCCUPATIONAL EXPOSURE LIMITS

The operation of welding fume ventilation control equipment is affected by many factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. If properly installed, operated and maintained, Lincoln Electric's Push/Pull System will reduce the background concentration of welding fume. However, the Occupational Safety and Health Administration's (OSHA) standards are performance based and the worker's breathing zone exposure level should be monitored to ensure the ventilation is adequate. Worker exposure levels should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA Permissible Exposure Limits (PELs) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs).

CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.