



LAS



## Solutions for Laser Fume Extraction

Extraction. Filtration. Persistence.





*Laser processing equipment may only be operated with fume extraction technology of high performance and quality*

# Laser technology is great. When it stopped smoking.

Lasers weld metal or plastic components, cut sophisticated contours, mark and structure surfaces. Also printing and medical technologies benefit from laser technologies. But all of them have one problem in common: laser fume.

## Laser fume

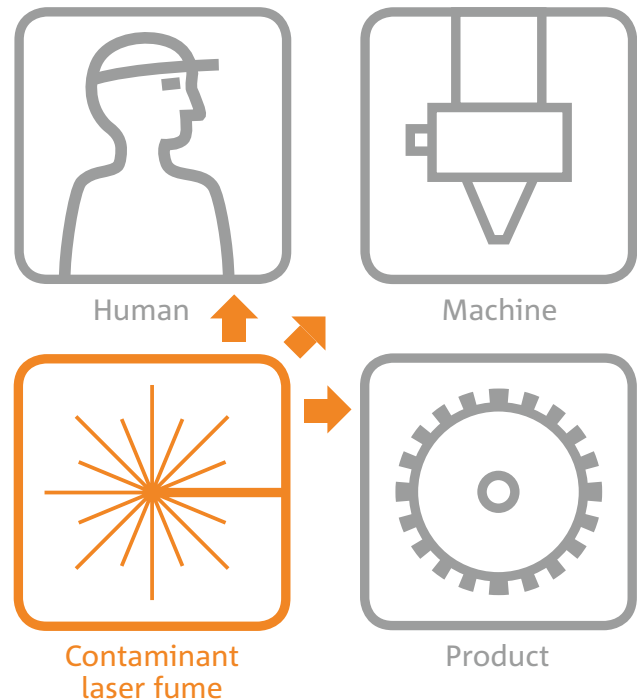
No matter, whether processed materials are harmless — laser fume is not. The energy input during processing triggers pyrolytic and oxidation processes. As a result, a caustic, toxic mix of aerosols, gases and nanoscale particles is released. The latter are extremely hazardous. Once inhaled, they overcome the lung-blood barrier and enter into the nervous system, partly settling in the brain.

It is about human health, but not only: machinery and products are damaged by laser fume that builds up firmly adhering layers of contamination.

## Fume extraction technology

Given this, extraction and filtration technology for laser fume faces high requirements. It is about capturing each and every particle, right where the laser beam hits the workpiece. The filtration systems must be absolutely safe. Even during filter changes. Many laser processes are being operated in highly automated production. ULT's laser fume extraction technology meets all these specific requirements.

## The threefold damaging effect of laser fume



## Typical fields of application

- » Laser cutting
- » Laser sintering
- » Laser welding
- » Laser marking
- » Laser structuring
- » Laser ablation
- » Medical laser treatment
- » Laser printing
- » Laser engraving

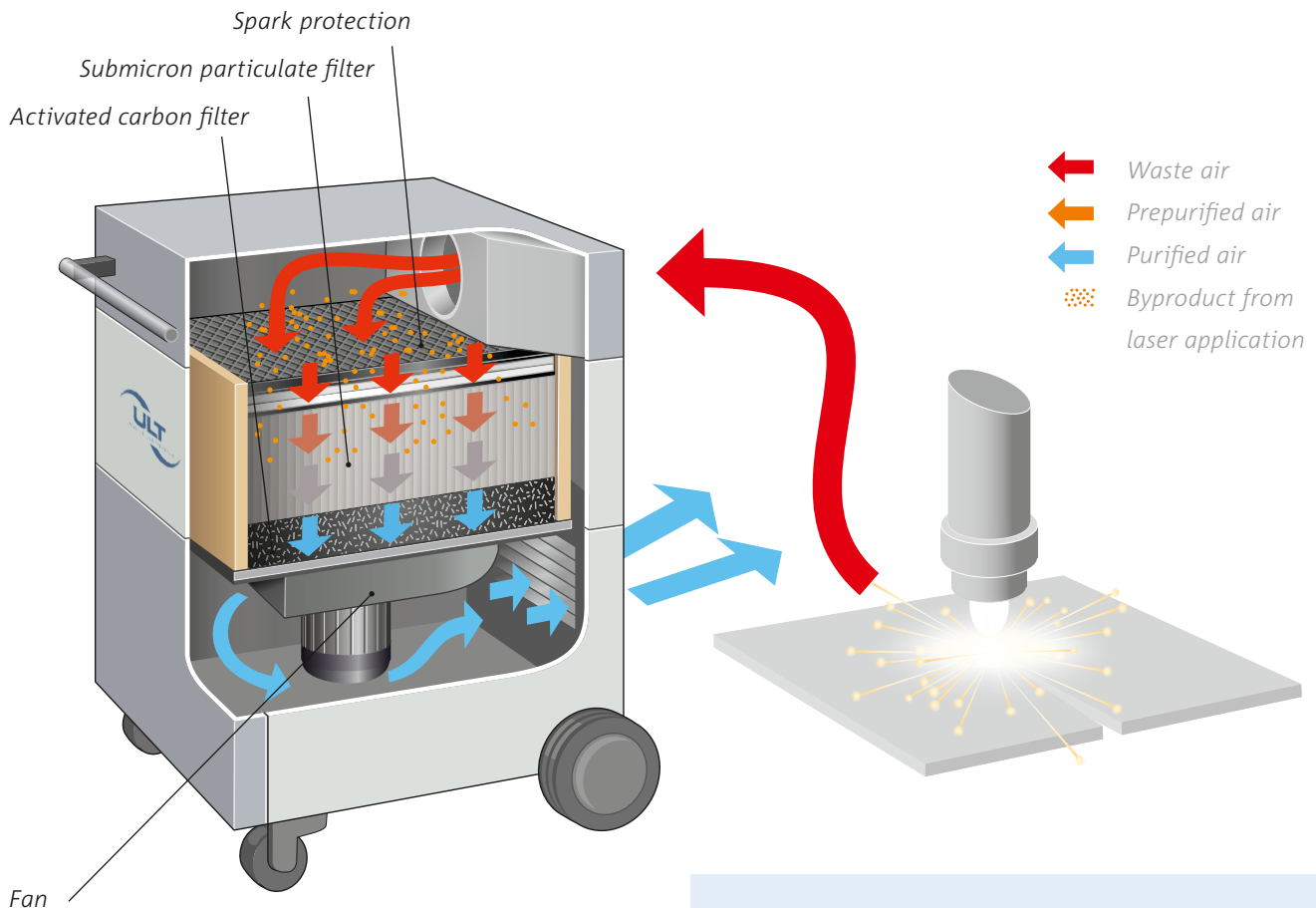
# Every fume is unique.

## Two filtration principles – one goal.

With operating processes, extraction precedes filtration. When selecting fume extraction technology, however, the reverse order applies. The first question calls for an adequate filtration system. LAS systems offer users the choice between two alternatives.

### Disposable filter units

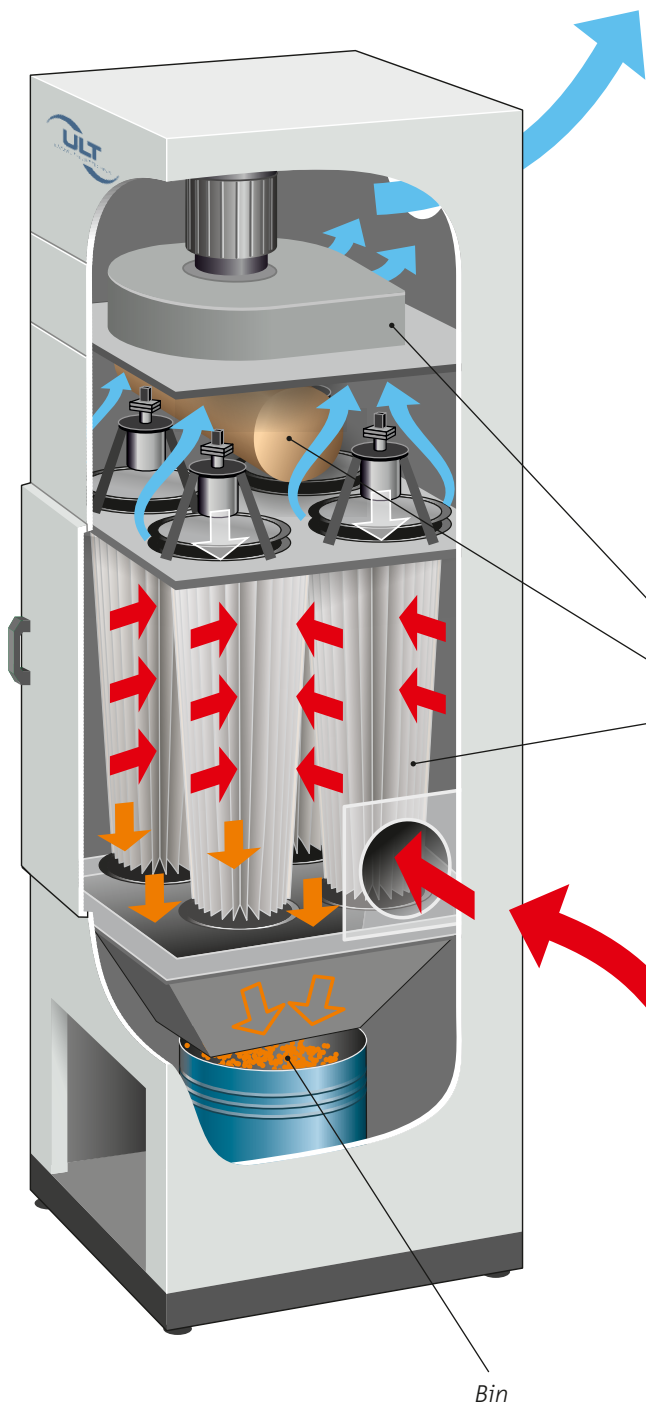
Disposable filter units are mainly used, where the amount of laser fume is comparably small, for removal of sticky laser fumes, odors and vapors. Dusts and gaseous pollutants are retained by the filtration systems; the purified air is redistributed back into the work area. At the end of their service lives, saturation filters are to be replaced.



Functional principle of disposable filter systems






### Disposable filter units

- » For low laser fume concentration
- » For sticky laser fume
- » For additional odor pollution



## Cleanable filter units

Cleanable filter units are mainly used to remove dry, intensive laser fume in rather high volumes. They feature long service life and low operating costs. Pollutants are being collected on the surface of the filter cartridge. The filter cartridge is cleanable. For cleaning, compressed air is distributed to the inside of the cartridge, shredding off dust into a bin. Purified air is redistributed back into the work area.

-  Process exhaust air
-  Byproduct
-  Purified air
-  Particles blown off
-  Compressed air flush

Functional principle of cleanable filter systems

## Cleanable filter units

- » For high laser fume concentration
- » For dry laser fume
- » For high demands on service life

# Also essential: extraction capacity.

Type and volume of the laser fume are not the sole criterion when selecting the adequate filter system. Extraction capacity is also a key feature. Workplace layout and source capturing are most essential here.

Disposable filter units are primarily designed for low to medium laser fume intensity. They are suitable for numerous single-user workstations in labs, manufacturing, or industry.

*LAS disposable filter units*

<b>LAS Series</b>	<b>Volume flow max. [cfm]</b>	<b>Vacuum max. [Pa]</b>	<b>Nominal capacity [cfm at Pa]</b>
160 MD.11	112	3,200	47/1,900
200 MD.20	374	3,200	147/2,000
260 HD.16	118	22,000	94/6,500
260 HD.19	200	8,300	118/5,000
300 MD.16	530	3,650	147/3,000
300 HD.13	235	12,000	118/7,500
300.81	235	20,200	159/5,000
1200 MD.18	883	3,250	589/1,700

*Examples of disposable filter units:  
LAS 1200, LAS 260  
and LAS 160*



*LAS cleanable filter units*

<b>LAS Series</b>	<b>Volume flow max. [cfm]</b>	<b>Vacuum max. [Pa]</b>	<b>Nominal capacity [cfm at Pa]</b>
300 MD.16	530	3,650	147/3,500
300 HD.13	235	12,000	118/7,500
1500 MD.60	1,270	3,200	471/2,500
1500 MD.61	1,907	3,450	706/2,500
2500 MD.63	1,913	5,000	1,177/3,000

For high amount laser fume, LAS cleanable filter systems are the devices of choice. Due to integrated dust collectors, they require slightly more space than disposable filter units. The highest-performing systems are stationary. They are perfectly designed for extraction at large or central laser workstations. Their efficiency is second to none.

*Example of cleanable filter units: LAS 300, LAS 500 and LAS 1500*



# An eye on the real laser process.

## Flexible performance

Quite often, an individual work place is used to process different materials with changing laser tools. Occasionally, it may be foreseeable from the get-go that the laser system will be expanded and the fume extraction technology must

then adjust accordingly. Modules can be substituted or added for a better performance. A variety of different filter set-ups is available to perfectly suit specific applications.

### Variable system configurations to suit the application conditions:

#### Areas of application

- » Metal
- » Wood
- » Rubber
- » Plastics
- » Paper
- » Leather

#### Available type of drive

- » Fan with EC drive: maintenance-free, low energy consumption
- » Turbine with EC drive: maintenance-free, medium collection volumes, compensation of high pressure losses in tubes, hoses and ducts

#### Available main filter modules

- » Cartridge filter for high amounts of laser fume
- » Dust filter combination for medium-intensity laser fume
- » Combination filter for special applications

#### Available add-on filter modules

- » Pre-filters for high amounts of sticky laser fume
- » Spark arrester
- » Automatic dosing systems for filter aids to bind and inert particles
- » Automatic pre-coating system for sticky fumes extends lifespan of filters tremendously

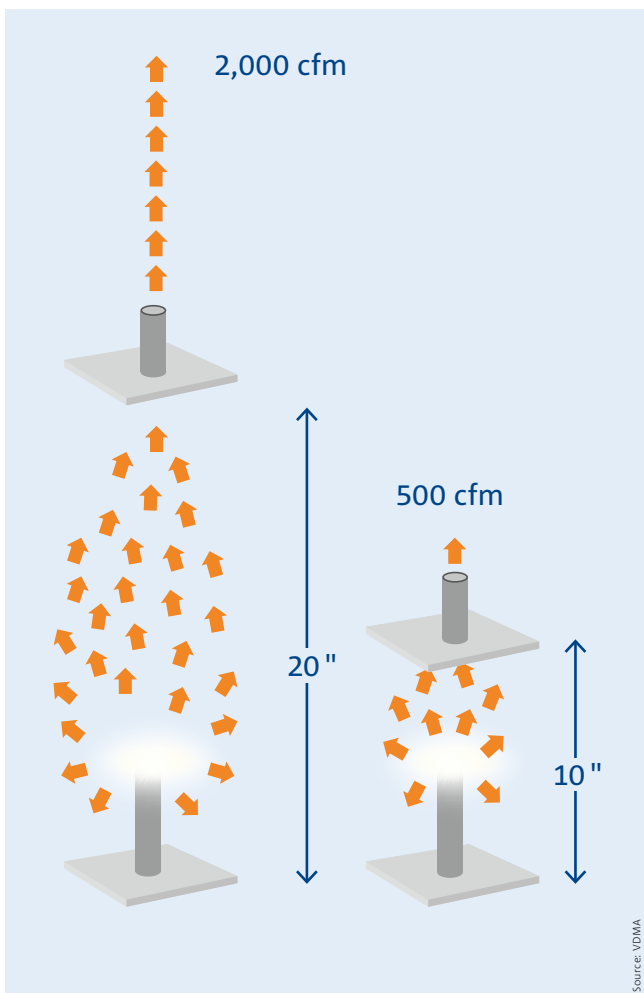


# You can only filter what's been captured.

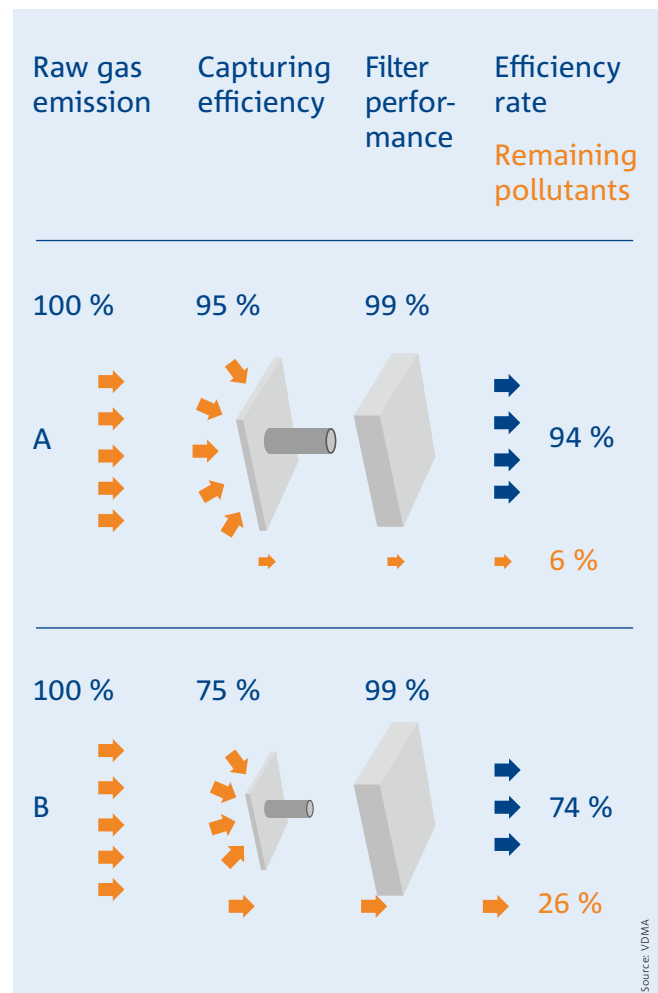
## Source capturing

Accurate capturing of particles is the key. In particular, closest proximity to the source of pollution is of critical importance. An example: doubling the distance between the source and the capturing element of the fume extractor means a fourfold increase in required cfm and an exponential increase in energy consumption

to achieve the same result. The type of capturing element has an immediate effect on the system efficiency. ULT carries wide portfolios of leading suppliers of capturing elements. Hoods, tips, pins, extraction arms and enclosures are available.



Impact of the distance of the collecting element on the required air capacity



Impact of the extraction rate on efficiency

# Made in Germany - built to last.

LAS is a sophisticated series of modular systems. Perfectly engineered concepts enable an effective adaptation to individual local demands making the systems an integral part of your production.

## Small and large solutions

ULT's solutions range from mobile units for individual work places to stationary solutions for entire production facilities. Even when limited footprint is available.

## Particularly user friendly

Low noise emissions and less energy consumption. Easy operation and minimal maintenance. Easy and hassle-free filter exchange.

## Individual extraction solutions

The design of the extraction point gets adapted to the individual work place condition.

## Safety for automated production lines

The extraordinary long lifespan of the system significantly reduces down times and maintenance costs.



*Laser welding system with integrated fume extraction system*

## Open to special requirements

Systems can be configured for ESD applications or with explosion protection. Stainless steel housings for corrosive gases, special supply voltage and frequency, digital control for pressure stabilisation, timer function, filter analysis and interfaces for remote control are also available.

## ULT LLC

ULT LLC provides fume extraction technology that really works: developed in-house and built for 24/7 operations by German engineer-

ing. From single work places to hall solutions. Permanent research ensures that even the latest production processes are safely covered.



LASER FUMES



DUST AND SMOKE



SOLDERING FUMES



ODORS, GASES, AND VAPORS



ADDITIVE MANUFACTURING



PROCESS AIR DRYING



WELDING FUMES



OIL AND EMULSION MISTS



COMPLETE SOLUTIONS



*Based on sophisticated series devices, ULT AG provides adapted fume extraction solutions*

## **ULT Limited Liability Company**

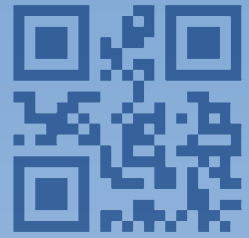
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ULT is certified according to ISO 9001:2015.  
The plants are designed meeting international standards such as EC or UL.

These products are covered under one or more European / international patents and / or patent pending applications.

Detailed technical information can be found on device specific data sheets or on our website. All technical data is general and not binding and does not guarantee the suitability of a product for a specific application.

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