

## THE TASK

The disadvantage of laser cutting organic substances is the creation of aerosols that can only be captured and separated by the installation of costly mechanical systems. The resultant contaminants can clog dry working filters in a short period of time. Cleaning has been accomplished by washing, the use of catalytic converters during operation, or with thermal combustion, but an innovative dry-working exhaust system would be a preferable economical alternative.



Example of a designed system, VARIO with activated carbon filter



Laser processing of Example of a designed system, L-Cut 4 DOS with activated carbon filter and automatic CO<sub>2</sub> extinguishing system

Laser process	Materials
Engraving	Timber
	Plastics
Cutting	Leather
	Textiles
Perforating	Paper
	Paper-Plastics-Compound

Examples of use - realized systems for:	
Beverage packing	Press cylinder gravure
Plastic foil keyboards	Die making
Flat screen technology	Cigarette tube production
Acrylic processing	Textiles
Abrasive paper processing	Removal of varnish layers
Wooden floor technology	and paint stripping machines

## THE SOLUTION

Sticky substances that are created during laser cutting will normally clog each filter surface. We solve this problem by applying an additional layer on the filter element's surface. When the system is activated, a layer of additive is distributed on the entire filter surface by means of a dosing device. A separate protective layer is created between the filter media and the aerosol particles.

Since the particles to be separated do not get in contact with the filter's surface, clogging of the pores by adhesive and humid substances is prevented. This process not only protects the filtering surface but also adsorbs a large portion of the hydrocarbons. In addition, the contaminants in the exhausted air become inert, creating effective fire protection.

When initiating the process, the dosing unit and the disposal bin are filled with the additive agent. During continuous operation, the dry additive agent that has become saturated with adhesive aerosols must be cleaned off the filter surface on a regular basis. This is accomplished by a series of compressed air pulses. At the same time, the additive agent within the disposal bin starts to rise, is pulled up again and automatically forms a protective layer on the filtering surface. The process is repeated with the aid of built-in solenoid valves that activate the bin dosing in adjustable time increments. When the additive becomes saturated with dust and aerosols, new material is fed by the automatic dosing unit.

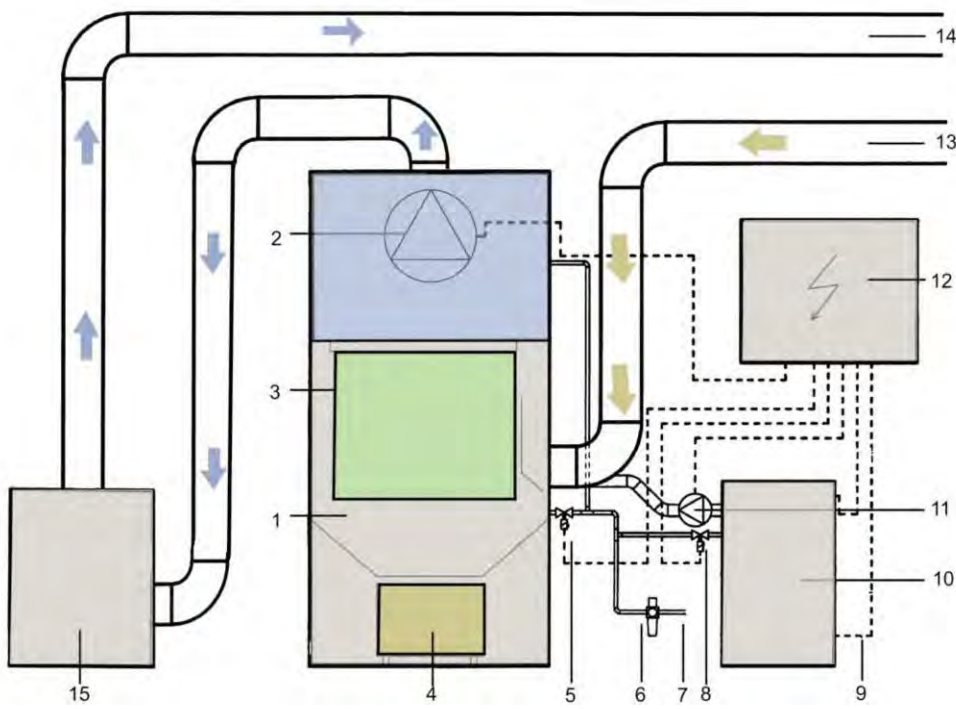
This process ensures that the air flow remains constant, even during 24-hour operation. All parameters required to maintain optimal operating conditions can be individually set at the specially designed electrical switch and control unit.

## ADVANTAGES

- compact size
- energy-efficient filter (Y-material)
- effective fire protection
- low maintenance efforts
- compressed air savings by individually programmable pulse cleaning
- long life, warranty up to approx. 15,000 operating hours (depending on the process)
- high availability during economic system operation



Example of a designed system, L-Cut 4 DOS with activated carbon filter automatic CO<sub>2</sub> extinguishing system



- 1 filtration unit VARIO
- 2 fan
- 3 filter elements
- 4 waste disposal bin
- 5 dosing solenoid valve
- 6 compressed air maintenance unit
- 7 compressed air supply connection
- 8 dosing solenoid valve at the dosing unit
- 9 level control
- 10 dosing unit
- 11 dosing fan
- 12 electric switch and control unit for entire system
- 13 contaminated air duct
- 14 clean air duct
- 15 activated carbon

System to separate organic substances that are created during laser processing.



Example of a designed system, VARIO with activated carbon filter



Example of a designed system, L-Cut 4 DOS with activated carbon filter automatic CO<sub>2</sub> extinguishing system



**Keller USA, Inc.**  
2168 Carolina Place Drive  
Fort Mill, SC 29708 USA  
Phone (803) 396-2000 Fax (803) 396-2905  
E-mail [info@kellerusa.com](mailto:info@kellerusa.com)  
[www.kellerusa.com](http://www.kellerusa.com)