

## ■ Process: Laser cutting of polycarbonate



## ■ The Task

Within the processes of laser cutting and laser engraving of polycarbonate sticky fumes are generated.

These fumes are harmful to health and cause damage to the laser optical system and machinery. Thus it is necessary to exhaust these substances and to separate them by a filter.

Conventional fabric or cartridge filters do not meet the customers' requirements for the following reasons:

- ▶ Sticky fumes tend to clog conventional filter media
- ▶ Due to the extremely small particle sizes of polycarbonate smoke the dust may break through the conventional filter media and pollute the clean gas

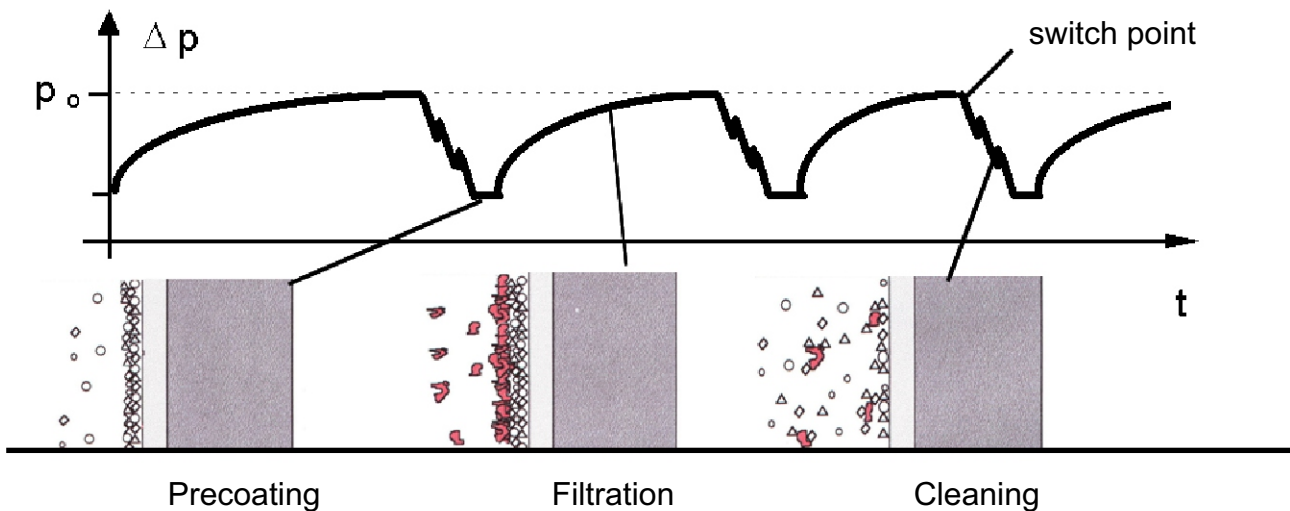
## ■ The Solution

### Herding® Filtration System with MultiCoater

Technical Features:

- ▶ Filter type HSL with integrated fan; dust discharge into a dust bin; exhaust air flow of up to 500 m<sup>3</sup>/h; constant differential pressure of the filter elements at 2,200 Pa
- ▶ Reliable and cost-effective dust/smoke separation by application of the Herding® Sinter-plate Filter Elements
- ▶ High separation efficiency even with superfine dusts < 1µm
- ▶ No clogging of the Herding® Sinter-Plate Filters due to the MultiCoater and thus constant exhaust air flow over the filter elements' total life time

■ Laser processing of polycarbonate ...  
... and working principle of the Herding® MultiCoater



The **Herding® MultiCoater** works on the basis of dosing and inserting calcium carbonate into the filter unit in regular intervals. The calcium carbonate builds up a protective layer on top of the filter elements which prevents the filter surface from clogging during the subsequent filtration cycles. This pure surface filtration enables to separate dust particles with a size of  $< 1\mu\text{m}$  at a consistency of  $< 1\text{mg}/\text{m}^3$ .

If a pre-set pressure drop of the filter elements is reached, the dust is cleaned off by reverse jet-pulse cleaning. Dust and calcium carbonate fall from the filter surface via a hopper down into the dust bin.



■ Benefits from the Herding® Sinter-Plate Filters

- ▶ Consistency of  $< 1\text{mg}/\text{m}^3$ , filter elements rated as HEPA grade R (EU 12)
- ▶ Reduced pressure drop due to a maximum specific filter area
- ▶ Pure surface filtration by PTFE-coating on top of the filter elements
- ▶ High mechanical stability due to the compact and rigid matrix
- ▶ Lint-free and contamination-safe filter elements



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