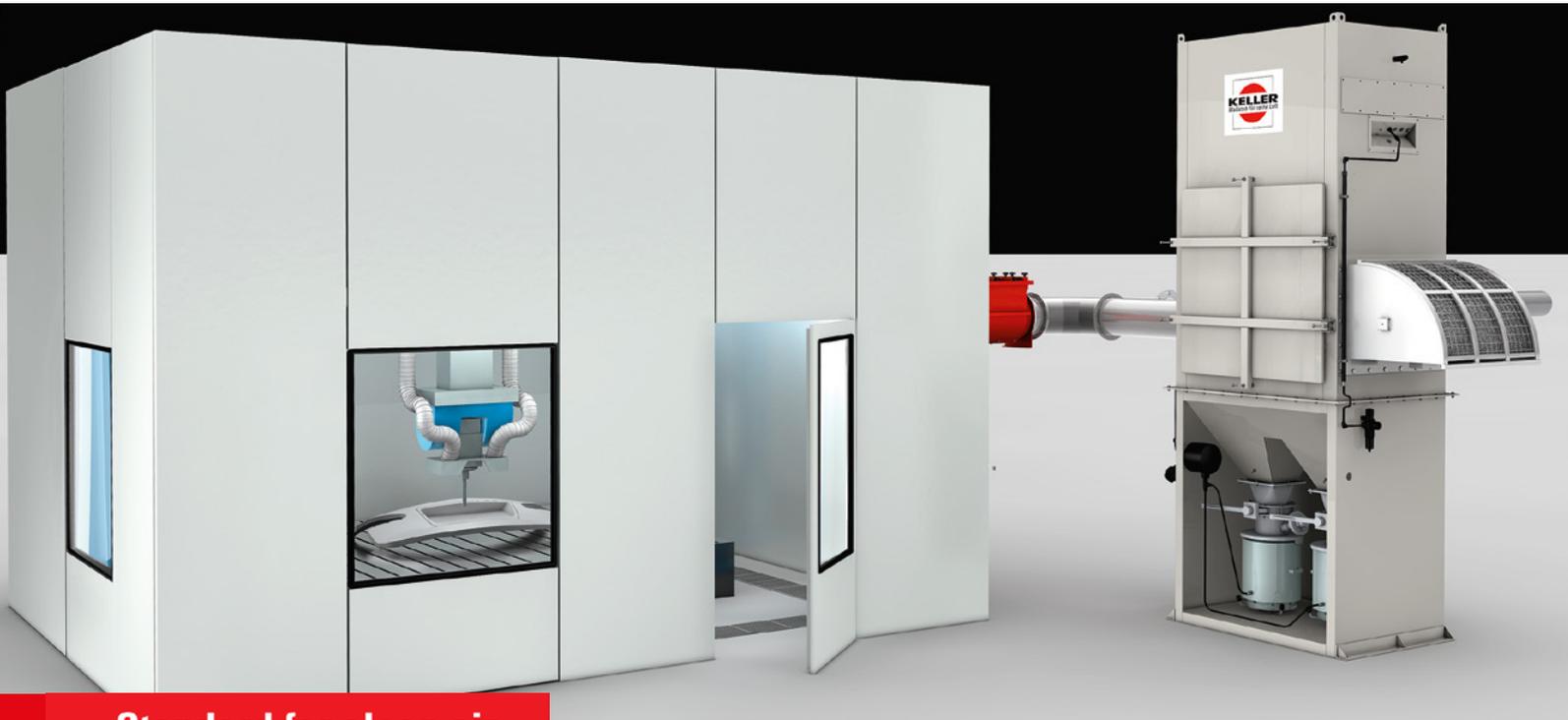


# Reliable extraction of dust created during fabrication of GRP and CFC composite molds



**Standard for clean air**

Keller offers total customized solutions for efficient and hazard-free separation of contaminants from plastic composites processing.

**Air pollution control to protect personnel and equipment for possible clean air recirculation, along with explosion protection.**



Vacuum suction system for high pressure extraction of process dust adjacent to the machine tool. Dust disposal is with Big Bag containers.

# Collection of dust emissions

## Dust extraction to protect workers' well-being and to ensure quality production

All machining processes with GRP (Fiberglass) and CFC (Chlorofluorocarbon) produce very fine fragments, fibers and particulate, depending on the material being processed. These dust aerosols can negatively impact human health. They can also inhibit the efficiency of

machine tools and plant equipment. A static electricity discharge presents a potential fire and explosion risk, as well. These are among the reasons why process dust from composites should be collected and discharged carefully. TRGS 900 (Technical Regu-

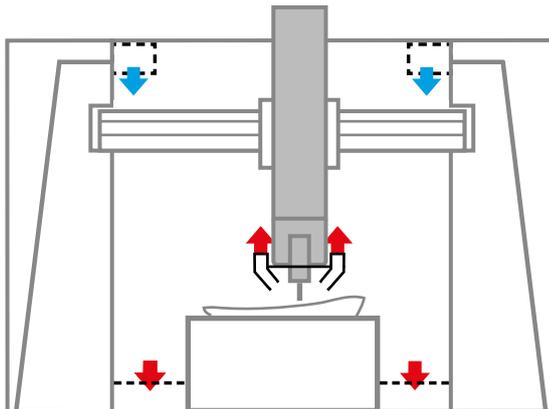
lations for Hazardous Substances) provide new guidelines for "Maximum Allowable Concentrations". They differentiate between breathable E-fractions (10 mg/m<sup>3</sup>) and alveolar A-fractions (1.25 mg/m<sup>3</sup>).

## Clean air recirculation according to VDI 2262-3

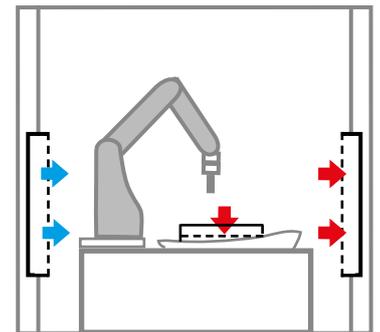
CFC and GRP dusts which are not classified as carcinogens are approved according to VDI 2262-3 guideline for clean air recirculation up to a 66 - 70 % ratio. Adequate fresh air must be ensured. Our KLR-Filter® in particular ensures that

a maximum dust concentration of 0.25 mg/m<sup>3</sup> can be easily achieved with the recirculated clean air while maintaining energy efficiency. Re-using process energy leads to a reduction in energy and operating costs.

## Extraction and separation of process emissions from inside the machine



GRP and CFC processing using a vertical suction flow inside the workspace, supplemented by nozzle extraction in close proximity to the spindle



Robotic cross flow dust extraction inside the processing booth. The dust can be collected at the exact location of the tool by means of movable suction

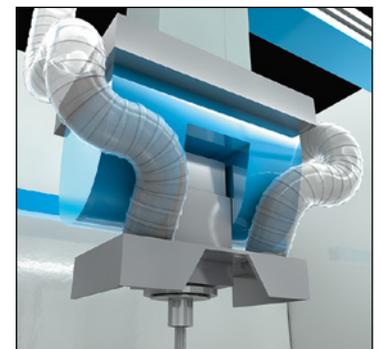
## High rate of dust collection with suitable extraction systems



Powerful extraction positioned by the tool



Cross flow extraction



Adjustable spindle extraction

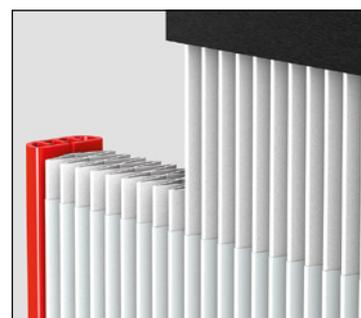
## VARIO dry separator filters particulate from separated air



VARIO dry separator can be utilized for each type of GRP/CFC process because of its modular design and supplemental components.



If necessary, finer filters will provide a secondary downstream filter stage



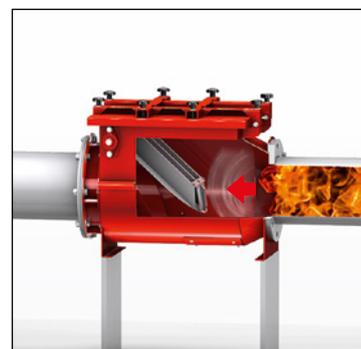
Filters with a vertical pleat configuration create a maximum filtration surface. Specific requirements can be met with a choice of designs. Illustration: Cross sectional view of the KLR-Filter<sup>®</sup> with a PTFE membrane

## Constructive explosion protection

Pulse cleaning of the filters momentarily creates a potentially combustible atmosphere created by dispersed dust. The accidental entry of a source of ignition sets off an explosion. CFC dust is classified as explosion Class 1. A practical preventive measure is explosive pressure relief.



Constructive explosion protection through harmless relief of explosion pressure. Q-Box is a flameless pressure relief system with a burst disk and metal mesh for rapid heat reduction.



In the event of an explosion, ProFlap prevents the spread of flames inside the machine housing.

# Dust extraction and air pollution control as system solutions



## Comprehensive project consultation

The issues of ambient air decontamination during GRP/CFC mold processes, prevention of damage from a dust explosion, and the possible re-use of energy from process exhaust air, can present highly complex topics which must also take into consideration applicable regulations and recommendations. We will support and evaluate your project plans with our extensive experience. Please refer to our dedicated website [www.keller-lufttechnik.de/en/explosionprotection](http://www.keller-lufttechnik.de/en/explosionprotection) for an informative overview of the subject, "Preventive and constructive explosion protection"



Portal Milling machine with enclosure

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