

COMPONENTS FOR CUTTING PROCESSES / ENERGY SAVINGS

THE TASK

Multiple tasks must be managed when extracting cooling lubricants, which necessitate a controlled extraction process.

Several factors should be taken into consideration depending on whether the machining process uses combustible (oil-based) coolant or non-combustible (water-based) coolant:

- Pre-separation of coolant directly at the machine in order to reduce the concentration in the mist collection system
- Preventing accidental suction of chips into the extraction system
- Reducing energy consumption with adjustable air flow controls
- Air flow controls as a safety measure
- Fire barrier within the extraction system or inside central systems linked to other machines when machining with combustible oil-based coolant

There is always the risk of fire when using combustible coolants in machine tools. An ignition source could be a broken tool or even glowing chips because of an inadequate supply of coolant.

Fire may spread from the source to other machinery within a centralized mist collection system.

SCOPE OF APPLICATIONS

Modular options for interfacing machine tools and extraction systems

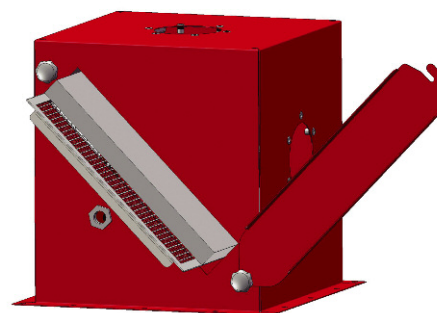
Machining processing such as drilling, turning, milling, broaching, honing, and grinding

CNC machine tools, machining centers

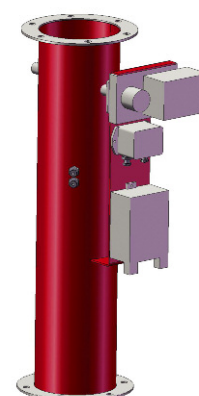
CNC grinding machines

THE SOLUTION

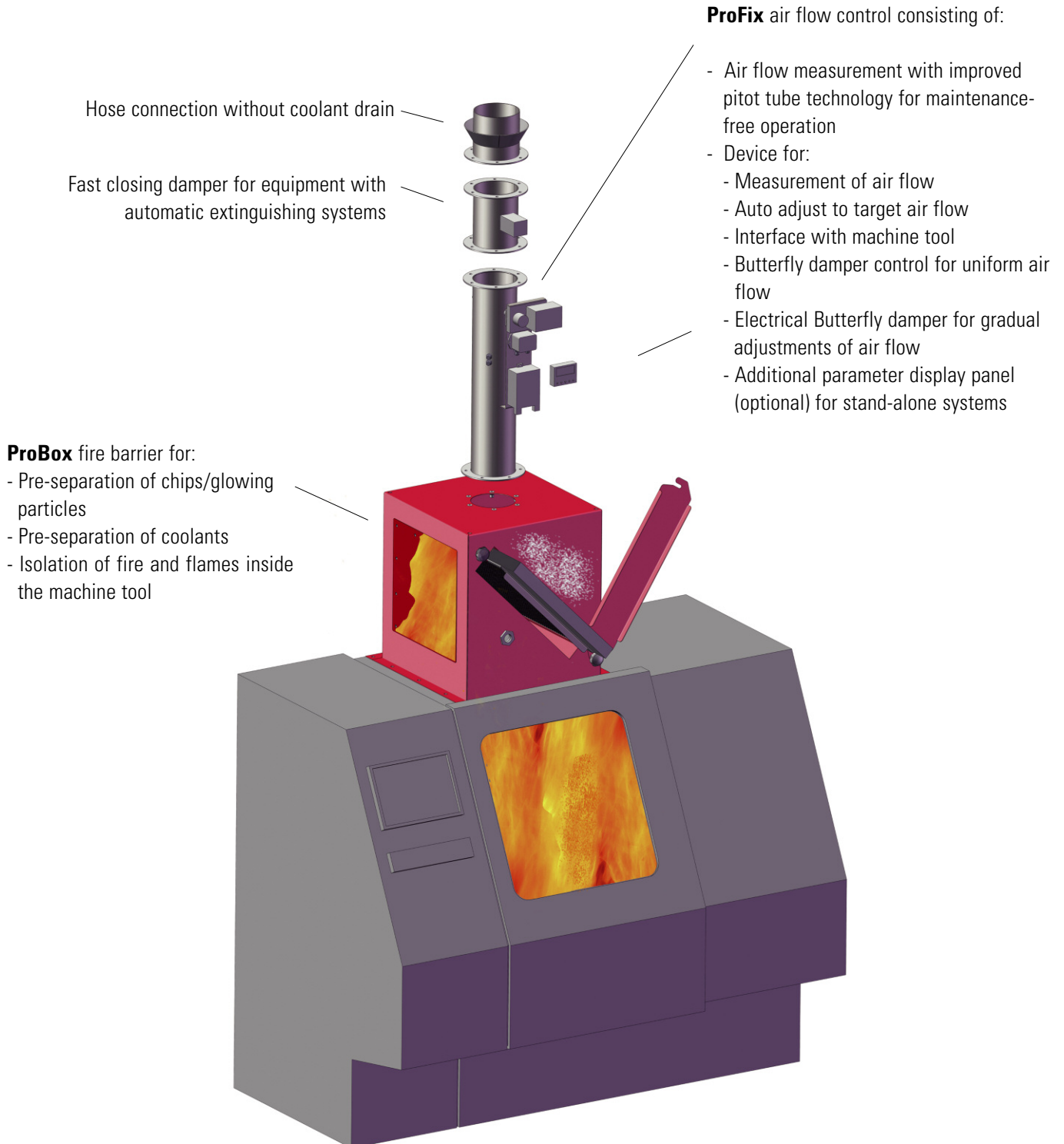
In the event of fire, the **ProBox** ensures that flames from the machine tool are blocked from spreading through the ductwork. In addition, the ProBox is equipped with a chip pre-separation device that ensures no glowing chips can enter the mist collection system. This improves the performance of the machine, and coolants can be pre-separated.



With the **ProFix** air flow control, it is possible to pre-set, monitor and automatically adjust the air flow requirement for each machine in a centralized mist collection system.



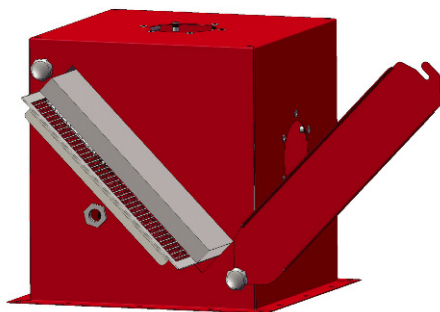
COMPONENTS FOR CUTTING PROCESSES



FUNCTION ProBox

The ProBox is a solid-state flame barrier which consists of a cascaded deflector plate made of stainless steel, and an integrated chip pre-separator. The ProBox can either be attached directly to the machine tool or, for lack of space, integrated in the ductwork. Several air flows are feasible due to its modular design.

The chip pre-separator can be easily dismantled for maintenance, and is re-usable after cleaning.



TESTING

The ProBox was inspected and tested by an independent organization under actual operating conditions, in accordance with UL requirement 1046.

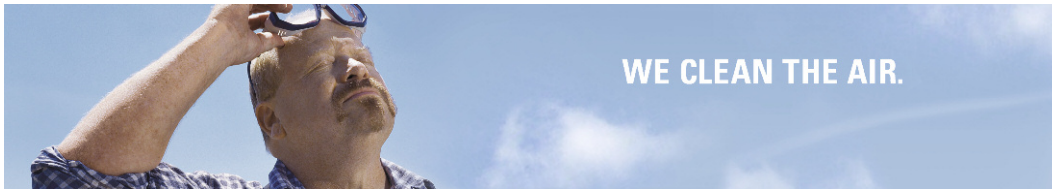
No flames escaped despite an air flow of 1 m/s with a ProBox that was saturated with combustible coolants. UL requirement 1046 was exceeded.

ProBox ADVANTAGES

- Flame barrier, certified by an independent organization, according to UL 1046
- No flames downstream: UL 1046 regulations exceeded
- Solid-state design, i.e., no sensors or actuators necessary
- Easy access for chip pre-separator cleaning
- Pre-separation of coolants results in a reduced concentration on the mist collection system
- Ideal for top-mounted machine installation
- Retrofits easy to install
- Modular design for different air flows



ProBox TECHNICAL DATA	ProBox 1	ProBox 2	ProBox 4
Air flow:	each module max. 900 m ³ /h	each module max. 1800 m ³ /h	each module max. 3600 m ³ /h
Pressure loss at max air flow:	approx. ca. 200 Pa	approx. 200 Pa	approx. 200 Pa
Dimensions:	510 x 510 x 560 mm	1020 x 510 x 560 mm	1020 x 1020 x 1120 mm
Weight:	approx. 40 kg	approx. 75 kg	approx. 150 kg
Options for inlet connection:			
on the side (round)	yes	yes	yes
bottom (rectangular, direct attachment to the machine tool)	yes	yes	yes
bottom (round, with transition piece)	yes	yes	yes
Options for outlet connection:			
on the side	yes	yes	yes
at the top	yes	yes	yes



FUNCTION ProFix

Adjustment of fixed air flows:

With ProFix it is possible to adjust a preset air flow, which is controlled and adjustable at several machines. The ProFix readjusts automatically to the air flow variations within the system, such as during loading and unloading of the work-piece.

Use as flow control:

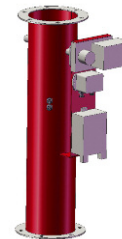
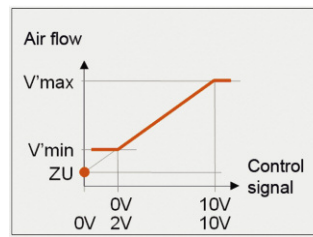
The active target air flow is indicated as a 0-10V signal. Upon a sudden decrease in target air flow, a time-delayed alarm is triggered at the machine tool control.

Energy savings:

The mist collector is normally designed for the maximum air flow requirements of the machine tool. Depending on the machine process, lesser air flows are sufficient with closed doors during operation. It is possible to set the parameters in the ProFix individually according to the maximum (open) and minimum (closed) air flows gradually via a signal from 0-10V.

ProFix ADVANTAGES

- Adaptable control device optimizes settings automatically
- Constantly monitored air flow ensures reliable operation
- Energy savings due to adjustable necessary air flow control
- Lower investment costs and reduced space requirements through smaller mist collection system



TECHNICAL DATA ProFix

Switch size	NW [mm]	Length [mm]	Measurement range [m ³ /h]	Measurement range with 10 % control tolerance [m ³ /h]
ProFix125	125	650	150 – 1000	500 – 1000
ProFix140	140	650	250 – 1200	600 – 1200
ProFix160	160	650	350 – 1600	800 – 1600
ProFix180	180	650	400 – 2000	1000 – 2000
ProFix200	200	750	500 – 2500	1250 – 2500
ProFix224	224	750	650 – 3200	1600 – 3200
ProFix250	250	750	800 – 4000	2000 – 4000
ProFix280	280	750	1000 – 5000	2500 – 5000

ProFix TECHNICAL DATA

- Regulating time of the flap motor: max. 4 seconds
- Tolerance: approx. 10 %
- 4 nominal values to be directly controlled (Closed, Vmin, Vmax, Opened)
- Continuous air flow adjustment through 0 - 10 V signal (e. g. through control of machine tool)
- Operating voltage: 24 VDC
- Horizontal or vertical attachment
- Flange according to DIN 24154/2 on both sides, welded
- Material black-welded, painted
- Paint: RAL 3000



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