

## 10 Golden Rules for Dust Control

### Rule 5: Optimise and regularly maintain extraction systems

For the construction of extraction systems for dust control it is generally recommended that a specialist company is contracted. This applies both to the simple vacuum cleaner and to complex large-scale systems. However this is still no guarantee that the investment effected for a lot of money also conforms to the state of the art!

**Unfortunately, all too often simple basic rules of ventilation and flow technology are not respected by the experts themselves with the result that the expensive systems do not meet the requirements placed on them.**

Although, based on simple basic rules and with some technical expertise, it is possible to easily assess the quality of an extraction system. It is important though that these rules are never to be applied in practice alone but always in cooperation. Each extraction task requires a specific combination.

#### Basic rules for correct exhaust ventilation

- 1. The source of dust is to be enclosed or encapsulated to the greatest possible extent.** In this way the intake of excess air or ambient air and interference as a result of draughts is minimised.
- 2. Collect dust as close as possible to the source.** Collection elements must be introduced as close as possible to the source of emission.
- 3. Correctly place the collection element,** i.e. no employee may remain in the flow of hazardous substance between the source of emission and the collection element.
- 4. Fully utilise the particular motion of the dust particles.** Dust particles sometimes obtain additional kinetic energy (e.g. as a result of fast-running equipment or as a result of thermal currents), which is to be observed in the arrangement of the collection elements.
- 5. Set an adequate air flow.** This always applies if rule no. 2 cannot be optimally implemented. However, it would be incorrect and expensive to simply increase the extraction capacity without taking into consideration the other basic rules. Oversized systems will lead the costs to downright explode!
- 6. Distribute air speed evenly in the suction zone.** In order to extract larger areas with various distances to the dust sources, the principles of fluid engineering are to be observed.
- 7. Supply an adequate quantity of fresh air.** The quantity of air extracted from an area is to be compensated for by a corresponding quantity of supply air so that there is no negative pressure and therefore a loss in power.
- 8. Avoid draughts.** As a result of interfering air flows, for example open windows or workshop gates, the effectiveness of extraction devices can be greatly impaired.

- 9. Take in non-contaminated fresh air.** The supply air in accordance with rule no. 7 may only be taken from non-contaminated areas and conversely exhaust air may not be discharged into the open air within the suction area of the supply air.

Many extraction systems are upgraded step by step over the course of time, in response to the needs of an increasing production. In doing so it must not be forgotten that, with a growing number of extraction points, the fan capacity also needs to be increased accordingly.

### **Maintenance of exhaust ventilation systems**

Even the most modern and most capable exhaust ventilation system will very rapidly lose its efficiency if it is not regularly cleaned and maintained. Here as well the basics of occupational safety apply: Safety, order **and cleanliness!**

In addition it is best practice to establish a maintaining and cleaning schedule in which the concerned system parts, the maintenance, inspection and cleaning intervals and the responsibilities are specified. The system is to be tested for operability in each case before starting work. Prior to the first commissioning, and regularly in at least annual intervals and after major modifications, the exhaust ventilation system is to be tested by a qualified person for sound installation, function and set-up.