

Interview in Germany's leading Mechanical Engineering Magazine "maschine + werkzeug"



Chief editor Manfred Flohr (graduated physicist) interviewed Sven Rentschler (graduated mechanical engineer). The interview was published in the October edition of *maschine + werkzeug* www.maschinewerkzeug.de

Mr. Rentschler, which are the activities of the company Reven Rentschler?

Reven is a family-owned company that has been active in the field of air cleaning and air pollution control since 1905. Today we are suppliers to the food industry and the mechanical sector. In both sectors, our task is to remove particles, aerosols and vapours from the exhaust air and clean it from pollution this way.

In more than one hundred years, many things have changed, haven't they?

In the beginning, it were mainly wood chips that had to be filtered out of the air. Filters, however, had always been affected by filter cake and clogging. In the nineteen seventies, separators came up, first in the form of simple baffle plates. On the basis of these simple plates, we developed separators that were optimized to the airflow. The optimization required computer simulation, however. In the meantime, we are able to calculate the track of particles of different sizes in the airflow. Therefore, we can remove them very efficiently.

What is the state of the art in this respect?

Grinding machines with very high cooling lubricant pressures and corresponding rotation rates can produce extremely small particles that are more like vapour than solid matter. We deal here with the molecule range with sizes of about 0.001 micrometre. You can cope with this problem, however, with the help of modular accessory equipment.

Is everything possible from a technological point of view then?

Yes, it is only a question of expenditure. Our Venturi systems, for instance, are at the upper end of the scale. They have been conceived especially for eroding processes. This technology is also used in operating theatres.

But rather ignored in manufacturing industry?

This is exactly our problem. We produce high-grade technology but find it often hard to sell it because existing limits can be adhered to with rather simple solutions in many cases.

At which level are these limits?

We have absurdly high workplace exposure limits for fine dust. The fine dust pollution in the outside air has been a matter of discussion for several years now. Vehicle and industry emissions are in the focus of attention. The term fine dust refers to the mass of all particles with a diameter below 10 micrometres included in the total dust quantity. According to the findings of the World Health Organization, respiratory and cardiovascular ailments increase with exposure to high concentrations of these fine particles. In order to ensure health protection, limiting values for outside air concentrations have been introduced by the authorities. Since 2005, a limiting value for daily exposure of 50 microgrammes per cubic metre air was adopted Europe wide. In the wake of this regulation, the badge system for urban traffic was created in Germany among other things.

And which limit values apply at workplaces?

The admissible air pollution WEL is 10 milligrammes per cubic metre for cooling lubricant vapours and aerosols with a flash point above 100 degrees Celsius that are emitted during metal processing. The same limiting value applies to processing machines with a minimum lubrication system. This WEL is two hundred times as high as the limit for outdoor air pollution.

Is fine dust always the same?

Fine dust in city traffic pollution is surely not the same as that generated on processing machines. The latter is not fine dust in the traditional sense. It consists of cooling lubricant particles that are emitted during chip removal processes. However, those cooling lubricant vapours and aerosols are very similar to fine dust with regard to the particle sizes and the health hazards involved. With a diameter below 10 micrometres, these cooling lubricant particles enter into the vascular system via the lungs. Therefore, they are considered to be particularly harmful. Even though several studies have proven that a fine dust load of 50 microgrammes in the outdoor air reduces measurably the life expectancy of exposed people, we still allow operators on processing machines to be exposed indoors to levels that are 200 times as high. I can hardly understand that. These regulations are not consistent.

Is there only a health risk in the immediate surroundings of the machine?

No. In metal processing workshops, the air inside the shop is extracted frequently, cleaned and returned to the workshop. According to our experience, many of these extraction systems achieve a filtering performance of merely two milligrammes cooling lubricant vapours and aerosols per cubic metre of cleaned air. The concentration of pollutants imposed on the operators is still 40 times as high as the permissible limit concentration for outdoor air. Professional associations should take the matter in hand without delay and update and harmonize the WEL regulations reasonably.

You also conduct measurements in companies. What are your findings there?

The total bandwidth of air pollution can be found. You have everything from the manufacturing company with clinically clean workplace air to factories where the WEL of 10 milligrammes is largely exceeded. The processing machines carry the EC label, but you can put them into operation without any efficient filter because many manufacturers offer the filters on option. I cannot understand that.

Are there positive examples too?

Yes, of course. Groups of companies increasingly adopt their own standards and apply them to their sites all over the world. Volkswagen for example maintains a very high level of air purity in their factories. I also know that GM and Ford have internal guidelines that go far beyond governmental regulations.

www.reven.de

CV of Sven Rentschler

From 1989 to 1995, Sven Rentschler studied mechanical engineering and business administration at the University of Stuttgart and graduated in mechanical engineering. He joined Rentschler Reven-Lüftungssysteme GmbH in 1995 as a technical manager. The family-owned company was founded in 1905. From 1998 to 2008, he built up the X-Cyclone[®] air cleaner product programme for mechanical applications and established a worldwide distribution network. Since 1998, Sven Rentschler has become managing director of the family-owned company in the fourth generation.

