

“A completely different mindset is required”

The topic of high purity is on everyone’s lips in parts cleaning. But what exactly is behind it, who does it affect and how, and what are the challenges and prospects? We spoke to Gerhard Koblenzer, Managing Director of LPW Reinigungssysteme, which specializes in technical cleanliness in the process chain.

High Purity, the term is omnipresent in component cleaning. What exactly is behind it?

“In fact, you could get the impression that the term has now become a buzzword and that everyone is suddenly an expert on it. This is because the traditional core businesses have almost disappeared since 2019 and the market has to find its way in the new fields of activity. As a result, there are many misconceptions surrounding high purity. For example, some players associate it exclusively with tasks in the sem-

iconductor and high-vacuum industries as well as in medical technology. These are certainly important areas, but they are clearly not the only ones. The term is not linked to specific industries, but to the specific requirements of the respective industries. And these are constantly changing, as can currently be seen in additive manufacturing, sensor technology and the automotive sector, for example. In summary, it can therefore be said that high purity defines the focus of all activities on avoiding and eliminating undesirable minimal con-

tamination within a process chain. And to achieve the new parameters for technical cleanliness, a completely different mindset is required from both users and system manufacturers.”

Can you name certain sectors in which the topic is particularly relevant and are there any similarities?

As just described, high purity now affects many industries and almost all high-tech segments, such as aerospace technology, the defense sector, measuring and analysis equipment or new energy generation, keyword fusion reactors. The list is long, the tasks very various. And the demands are not only of a technical nature. It is often necessary to deal with official regulations or even industry- or OEM-specific regulations in the respective supply chain. The common features of high purity are as follows: The contaminants “hide” directly in the laminar boundary layer of the component and, depending on the geometry, are difficult to reach. In addition, the risks of cross-contamination and re-contamination must be considered in the overall process planning and when designing a suitable cleaning system. This is usually less about the cleaning processes themselves or the industry-specific cleanliness requirements. It is much more about traceability, reproducibility and monitoring – in other words, ultimately about the validation of the individual processes in the defined, ultra-clean overall process.”



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“Not only do we need to change our way of thinking, we also need to restructure the company,” emphasizes Gerhard Koblenzer, CEO of LPW.

Working in ultra-clean environmental conditions – typical for high-purity tasks. In many high-tech industries, these require a special mindset when planning and maintaining process chains.

How do the high cleanliness requirements change component cleaning?

“In short, cleaning alone is no longer enough, and the cleaning technology used is not the only solution for achieving the goal. The right choice of symphony must be composed, taking all factors into account. This is detailed work that begins at the boundary layer of the component with its contamination itself and the influences from the process steps, as well as cross-contamination, the environmental conditions and the media and components used. Finally, the actual place of use with its specific functional requirements plays an important role.”

What new challenges does this pose for suppliers in the field of parts cleaning?

“It’s not just a change in mindset that is needed, but also restructuring within the company. For example, additional knowledge of specific applications is required in conjunction with experience in selecting suitable measures. Therefore, the qualification of personnel in the areas of technical sales, engineering, production and service as well as the development of consulting and support capacities regarding high-purity applications will be at least as important as the development of process engineering solutions. In addition, the establishment of cleanroom-based test and trial capacities for development tasks and customer trials, as well as for gaining experience in high-purity processes via contract cleaning, is also important. It is also about know-how in media supply, process chain integration and monitoring as well as the establishment and verification of suitable references in all ultra-pure segments. But that’s not all: component suppliers and chemical partners must learn that their products are tested to see whether they are stable and whether they have a direct or indirect impact on the process and the cleaning result.”

And what does this mean for users? Is the role of parts cleaning changing and what do they need to consider?

“Parts cleaning is and remains an important industry component. The major users, such as OEMs and Tier 1, often have their own experience and process definitions. However, these are subject to change and therefore qualified partners are needed to develop solutions. The new players in the high-purity segment must increasingly deal with consistent monitoring and the



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Process engineering at eye level: High Purity requires sales, service and accompanying specialists to have in-depth application experience in the respective industry segments.

avoidance of re-contamination and cross-contamination throughout the entire process chain. It is also important to plan the process integration precisely together with the equipment supplier. The supplier ensures that no new contaminants are introduced during the actual cleaning process. The system manufacturer is also responsible for the “clean” transfer from the upstream processes via the cleaning system to the even cleaner downstream processes, for example in the cleanroom.”

What advice would you give to users, such as suppliers from high-tech industries, who are starting to get to grips with this topic?

“For one thing: The work starts in-house. Understanding the requirements of the processes and the qualifications of the personnel deployed are key prerequisites for successful work in this segment. Secondly, cooperation with real high-purity experts is recommended. This is because long-standing parts suppliers from the mechanical engineering sector or the traditional automotive supply industry in particular will find it very difficult to cope with the new tasks without external support. Whereas previously it was mainly large series components with medium particulate requirements that were machined, it is now individual parts or small series, as already mentioned, with high demands on the process. We also observe that many suppliers are dazzled by the

supposedly high price level of the components to be manufactured. However, they do not consider that this is also associated with significantly higher production costs. It therefore makes sense to deal with the new topic step by step.”

And in the future - how will the high-purity sector change? Will the requirements continue to increase?

“Purity requirements are always changing - and yes, they are also increasing. In some business areas, we are currently already moving towards the level of molecular or even atomic contamination. However, it is not the absolute requirements that are changing the industry. Rather, it is the potential risks due to deviations in the process. In the coming years, it will therefore be essential to be able to identify quality-influencing changes before they have a negative impact.” //

The interview was conducted by Martina Klein, editor of IST

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