Schroeder INDUSTRIES
Advanced Fluid Conditioning Solutions®
PROUDLY MANUFACTURED IN THE UNITED STATES

With Excel-ZPlus®, Your Fluid Is Clean. But Are Your System Components Clean?

Technical Cleanliness:
These days, OEM parts cleanliness is no longer an option, it is an obligation!

The term **"technical cleanliness"** refers to minimizing or eliminating contamination on components so that particles will not impair the production processes or negatively affect the performance of a component or assembly.

The expectations and requirements of manufacturers and customers with respect to the finished components and production machinery are growing steadily. The power densities are increasing and the tolerances are shrinking. In the pursuit of energy and cost efficiency, as well as environmental concerns, the overall weights of vehicles and machines are being drastically reduced. In addition, there is a switch to lead-free materials which means more exacting requirements in terms of the surface quality. In the past, hard particles merely dented materials containing lead, today with modern new materials they cause immediate damage, leading to stoppages. The tolerance to solid contamination is constantly shrinking. Parallel to this, the manufacturer has to guarantee his customers an ever higher level of system availability. So more and more companies are monitoring and optimizing their technical cleanliness in production processes. Production stage breakdowns are reduced, quality and availability of machines and components are increased and system downtime can be significantly reduced. The result is a cost savings due to fewer warranty claims which in turn boosts customer satisfaction. This further strengthens customer confidence and market acceptance.

The main causes of contamination in a production environment start with how the components are delivered to the plant, how the parts are handled within the assembly line, to how the completed components are delivered to the customer. Employees have a large influence on technical cleanliness in individual process stages. They can, through ignorance or lack of awareness of technical cleanliness and poor engagement with the product, contribute significantly to the ingress and spread of particles. Through proper training and involvement in the process (as well as in process chain analyses), suggestion schemes or discussion forums, the staff can be more closely engaged in the subject. Employees can approach their work on the product with more sensitivity and experience taking more "ownership" of their work. Technical cleanliness relies on trained and responsive personnel. Just a few simple steps can save significant costs.

Usually the process chain is looked at as a whole: If from the component analyses, it is found that the system being used for parts washing is not effective in cleaning the contamination from the component, but is merely "spreading the contamination", the process chain analysis can focus on this specific process stage in order to target the optimization. By changing and monitoring the rinsing medium and the filtration, finding the correct position of the components during rinsing, the correct nozzle geometries and the correct cleaning method, optimum cleanliness values can be achieved. Equally important is the correct placement of the industrial part washer within the process chain. This can be crucial for component cleanliness.

In the last 10-15 years there has been numerous changes in the field of technical cleanliness. Development and optimization continue to evolve rapidly. The requirements for technical cleanliness are rising steadily. The number of industries which must comply with it and which recognize the benefits and necessity of technical cleanliness continues to increase. Today it is not just the automotive industry but also the agricultural, construction and commercial machinery industries. Included are also power plants, wind energy, aviation and aerospace technology, the electrical industry, medical technology, solar and environmental technology, as well as the optical industry and aeronautics. The desire for production-integrated component cleanliness analysis is a growing trend. Nowadays, analysis usually takes place in centralized cleanliness laboratories either at the production facility or a dedicated service laboratory.

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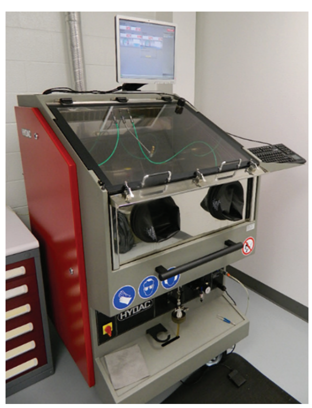
These laboratories are using component cleanliness cabinets to measure the cleanliness of the parts that have gone through the industrial parts washers. These specialized cabinets follow industry standards such as VDA19 or ISO 16232. These standards were developed because damage caused by particles was recognized as being a problem at the beginning of the 1990s due to failures in the field. Specialists from different sectors of the automotive industry were called together to devise a standard, in collaboration with the Frauenhofer Institute, which would deal exclusively with technical cleanliness. This saw the formation of "TecSa" (industrial association for technical cleanliness) in 2001. As part of TecSa, the VDA Volume 19, Part 1, was compiled: "Technical cleanliness - Inspection of particle contamination of function-related automotive parts / 1st edition 2004". In 2010, the second volume of this study appeared, Volume 19 Part 2: "Technical cleanliness in installation - environment, logistics, personnel and installation equipment" which deals with technical cleanliness throughout the process chain. As an international standard, ISO 16232 was developed in 2007: “Road vehicles - Cleanliness of components of fluid circuits”. It is the international equivalent of VDA Volume 19. Both standards are fully compatible.

Technical cleanliness is finding its way into more and more processes and is being recognized as a tool to improve quality in manufactured components. The effect is to reduce system downtimes and warranty claims, to lower costs and thus to secure, maintain, and increase customer satisfaction. In combination with process chain analysis, technical cleanliness is used as a tool to optimize processes according to the principle "minimum cost for maximum benefit".

Schroeder Industries proudly offers several types of Component Cleanliness Testing Cabinets. The CTU Series is designed to determine the cleanliness level of smaller, critical system components utilizing spray extraction or ultrasonic rinsing. The CTU test cabinet is a self-contained system including the extraction box and the solvent supply cabinet in a single platform. Evaluation of the contamination washed from the part can be done by either gravimetric analysis or granulometry (visual analysis / microscopy to ISO 16232). These methods are suitable for evaluating analysis membranes in respect of particle distribution.

The CTM Series is a modular system with one supply cabinet and a series of extraction boxes sized for the component being tested using spray extraction. In addition to gravimetric/granulometry analysis, the CTM series also offers a Fluid Analyzing option as a module to determine the particle counting according to ISO16232. The analysis fluid is processed automatically and evaluated immediately using an optical particle counter. This solution can be used in both the automotive and OEM supplier industries as well as in mobile hydraulics industry.



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