

# Knowledge BASE

03 – Hygienic Design

## Hygienic Design

### High-tech creations for culinary delights

The food on our plates should be delicious and healthy. What used to be purely a manual craft has long since been taken over in the food production industry by modern engineering and high-tech processes. Germany is a leader when it comes to innovative solutions and technological advances in the food and packaging industry. Hygienic process planning and plant engineering also play an essential part in the pharmaceutical industry. "Hygienic design" is a key phrase with broad interpretations and is increasingly gaining in importance. Numerous guidelines, regulations, and standards form the framework for high standards of hygiene. SCHUNK, the clamping and gripping technology specialist, uses a sophisticated approach to industry management to help make this goal a reality. On the one hand, the process includes building components that are safe for hygienic processes. On the other hand, intelligent automation solutions have enabled considerable progress in terms of productivity.

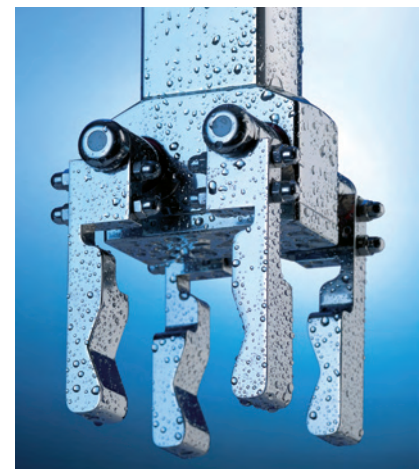


*SCHUNK gripper solutions for the meat industry fulfill the most stringent hygiene requirements.*

The requirements for hygienic food processing become more stringent from year to year. In the past years, it was often the case that the "more is better" motto defined the standard of hygiene in food processing businesses. Today consumer protection requires the observation of numerous regulations. The requirements for floors, walls, ceilings, windows and doors are laid down here, as are those regarding the characteristics of materials that come into contact with the product, the constructive design of apparatuses and components and the characteristics of lubricants. Since 2006 food processors have had to consistently present an HACCP concept in Europe (Hazard Analysis Critical Control Point). Only after the HACCP guidelines have been verifiably fulfilled food may be sold in the EU or imported into the EU. For large companies with a higher risk potential, detailed documents are required; for smaller companies, it is often sufficient to present cleaning schedules, proof of verification or instructions for personnel.

#### **Achieving the greatest level of hygiene at the lowest cost and with the highest productivity**

When meeting hygienic requirements, these three essential aspects are at the core: consumer protection, shelf life of the products, and cost. Modern facilities in the food processing industry simultaneously optimize all three factors, since even the higher investment costs for sophisticated solutions often pay for themselves within a short time.



*A brilliant solution for safe food handling: SCHUNK food grippers are easy to clean and absolutely corrosion-resistant.*

When engineering a system, the design determines the extent of hygienic safety. An entire industry has declared war against breeding grounds for contamination in production facilities. The growth of bacteria in the plant, which previously caused some production managers in the food industry to have sleepless nights, is now a thing of the past in modern facilities. Components must be designed in such a way that they are easy to clean. In this case, not only selecting and processing materials is of utmost importance, but well thought-out installation without dangerous dead spaces is also key.

## Numerous rules must be observed

A plethora of standards and regulations dictates practically all aspects in the hygienically safe production of food, pharmaceuticals, and medical supplies. In this case, DIN EN 1672-2 plays a key role in food machines. According to the specifications outlined therein, producers must provide proof of the proper design of their systems and components and also carry out a documented risk analysis during the process. Special attention is given to the standard for designing systems, machines, and their components: surfaces must be corrosion-resistant, non-toxic, and easy to clean. The materials or coatings used must not contaminate the food nor transfer any undesired odors, colors, or tastes. Gaps, cracks, and other dead spaces where residues from food or cleaning products can accumulate are not permitted. Connecting elements such as screws or rivets should be avoided or must be easy to clean. If possible, bearings and shaft exits must be outside the areas for processing food and must be greased with lubricants that are safe for use with foods. The modules from SCHUNK fulfill these requirements. However, that is not enough. High throughputs and the exceptionally solid quality of our components ensure reliable performance and maximum cycle times in food production.

For the selection of suitable plant engineers and component suppliers, food processors can rely on certification in accordance with recognized standards. This ensures that all requirements are observed.

Here, SCHUNK must deliver precision:  
Light, sensitive fish sticks, which are unsorted,  
are gripped and packed perfectly.



## Turbo solutions for highly sensitive food

The industrial processing of fish and meat, and also some other food, drugs, and medical supplies require the highest hygienic safety regulations. These products are simply too sensitive and the consequences of carelessness too severe. Here, lack of hygiene on the part of employees can provoke a full-scale flood of illnesses. In many cases, people pose the greatest threat to hygiene. For this reason, work that requires direct contact with food is increasingly being automated. In this way, the danger of contaminating food is greatly reduced.

### Hygienic and safe gripping

With its LMG food grippers, SCHUNK offers a line of products that were developed specifically with hygienic design in mind. These grippers are built for direct contact with food and medical or pharmaceutical products. With their completely sealed stainless-steel housing, they can withstand the cleaning products and disinfectants that are standard in the industry and can be cleaned using high-pressure cleaners with no problem.

To give you just one example of how well these food grippers perform, consider this solution for handling lines of cutlets. Here, the lines of cutlets weigh up to 6 kg. The tolerance of the individual cutlets reaches up to 40 mm. After about eight hours, the grippers are cleaned. In the event of a power failure, the line of cutlets must be held securely in the grippers. With the LMG 64 and its specially designed gripper fingers, all these requirements were satisfied. In this process, for instance, the mounting for the gripper fingers was designed so that no narrow gaps can arise where germs might accumulate. The housing is made from V4A, is easy to clean and is completely resistant to corrosion. This ensures the highest degree of hygiene safety for the grippers.

The SG 47 stacking gripper is not only sealed (IP 69K) and easy to clean, it also enables true high-speed handling with enormously high throughput due to its extremely short opening and closing



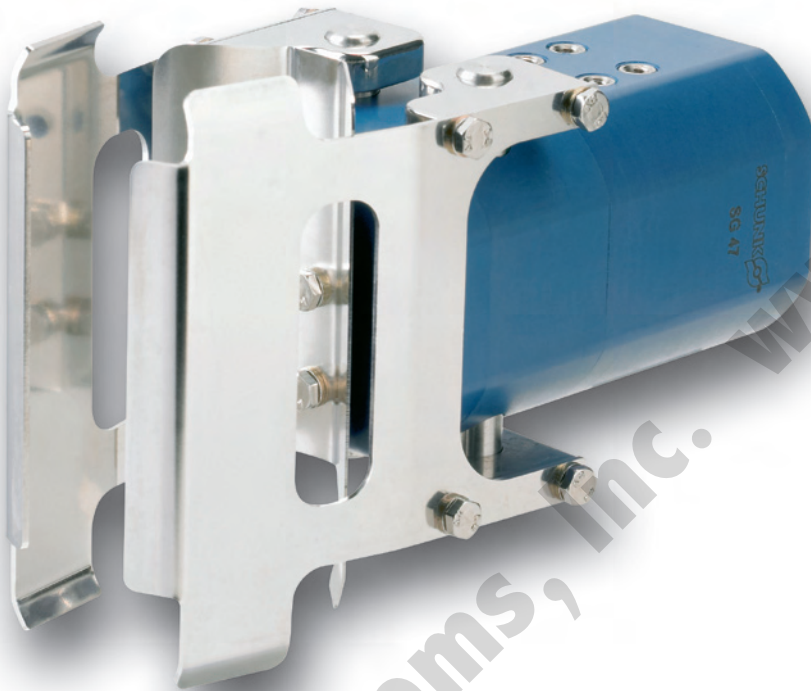
*When time is of the essence: Fast as lightning, clean and controlled – the mini-salamis find their way into the packaging.*



*Pick and place fish nuggets. SCHUNK grippers show their brilliance with high throughputs, thus increasing productivity.*

times. It can be used wherever relatively light-weight, disorganized products, such as softer cheeses and mini-salamis, are gripped and transferred to a packaging machine. Depending on the stacking mode, the grippers can exceed the performance of a simple gripper by up to 70%. In addition, the grippers have extremely short closing times of max. 0.05 seconds. Thanks to SCHUNK's high-tech solutions, cycle times in the food industry could be demonstrably increased from 120 to 200 cycles per minute. In the long term, these innovative solutions will present considerable advantages for all users in terms of costs and productivity.

In addition to these special products, SCHUNK also offers a wide range of standard products from its gripping and linear technology lines that can be used in the food and pharmaceutical industries either directly or after minor modifications. In this



**SG stack grippers – a lightweight unit for packaging food with high-speed applications.**

way, plant investments can be tailored precisely to the hygienic requirements of the respective industry. It also combines stringent hygienic standards with high cost efficiency - from actual production to logistics, in the packaging and pallet loading sectors.

## ! Conclusion:

- Health-related consumer protection during food production requires innovative solutions for processes and systems.
- Well thought-out solutions in the food industry satisfy all the requirements of hygienic design while also ensuring a considerable increase in productivity.
- The requirements are extremely complex, which is why, when selecting suppliers of machines and components, experience with projects in a hygiene-sensitive environment plays such a crucial role.

## Additional Product Information on SCHUNK Automation

You can find detailed information on SCHUNK Grippers in the SCHUNK Gripping Modules catalog. A free catalog can be requested by calling

**800.772.4865**

or by visiting the SCHUNK website at [www.schunk.com](http://www.schunk.com).

The catalog pages for each SCHUNK product are also available for download at [www.schunk.com](http://www.schunk.com).

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