

Processing of organic spices in India

Preserving the full flavor with BHS dynamic steam sterilization

The Essence of Tradition: True to its motto, Granny's Spices is one of the longest-established producers of spices and masalas in India. To ensure the consistent quality and full flavor of its products, the food manufacturer relies on a dynamic steam sterilization process. The German company BHS-Sonthofen planned and delivered the complete plant, which includes a vertical BHS sterilizer and a vertical BHS cooler. As it turns out, offering the consumer maximum taste requires a delicate sense.

India is not only world famous for its spices, but also boasts a rich tradition of trade in Asia, Europe, and the Middle East. In recent years, it has emerged as one of the most important spice markets globally, with exports reaching 857,400 tons valued at \$2.25 billion in 2020. Granny's Spices, founded in 1953 and based in Rajkot in north-west India, is one of the subcontinent's longest-established manufacturers of spices and spice blends, known as masalas. The company's product portfolio includes a wide variety of whole and ground spices, spice mixtures and oilseeds, which are distributed worldwide.

The processing, storage, and shipping of the spices pose several challenges for the company. To ensure food safety, products must be germ-reduced before they are processed into industrially manufactured finished products. India, with its high temperatures and humidity, provides optimal conditions in many places for the cultivation of particularly aromatic and strong spices. However, these circumstances also contribute to a high microbial load.

High product quality due to steam sterilization

While these bacteria may not necessarily pose a risk during on-site preparation, the spices are also added to convenience products in industrial production. Hence, it is crucial to prevent the introduction of germs from spices into the final products, as this would compromise food safety and shelf life. During extended periods of storage and transportation, including worldwide export, bacteria can multiply rapidly, reaching millions upon millions per kilo. Consequently, sterilizing the spices becomes indispensable to avoid recalls and food safety concerns. But many sterilization processes affect product characteristics such as taste, flavor, or color – or are neither ecologically sensible nor economically desirable, such as radiation. Therefore, Granny's Spices sought a sterilization process that would effectively eliminate germs without compromising product quality.

The safest way to kill bacteria is through steaming, which is the only biological method to simultaneously maintain the quality of the spices – when applied in a proper, that means quality saving way. This is where BHS-Sonthofen comes in with an innovative approach to processing spices using steam. As one of the global leading manufacturers of sterilization systems and an expert in hygienic technology in food processing, BHS has developed a process for dynamic steam sterilization. It enables gentle, product-specific treatment of ground and granulated products – making it the most efficient, fastest, and cleanest sterilization process. For this application, BHS-Sonthofen supplied Granny's Spices with a complete plant consisting of a vertical BHS sterilizer with peripherals and system control. What's more, the multipurpose plant offers the possibility to mix spices in one go.

A recipe for success

The spices are fed via a screw conveyor to the BHS sterilizer, where they are sterilized using vacuum and steam. Throughout the entire process, the spices remain in constant motion and – thanks to the homogeneous temperature and humidity in the product chamber, ensuring even heating of all particles. Using a specific recipe for each spice, the BHS technology heats the particles to the necessary temperature to eliminate bacteria, while minimizing any loss of product quality. Following sterilization, the hot spices must cool down quickly, which is done in a sterile cooler. This prevents moisture condensation on the product and allows the spices to be packed with just the desired moisture content. The dynamic sterilization technology thus ensures that the germ load is either below or limited to the level recommended by food experts.

The BHS machines only had to be configured once and set up according to customer specifications. Operation is kept simple, as the treatment of the spices can be adjusted product-specifically via the system control. For example, the main parameters for controlling the process are the variable steam pressure and temperature as well as the predefined steaming time. This allows various spices such as pepper, chili, or turmeric to be sterilized entirely according to their characteristics, hence the term "dynamic steam sterilization". The process is remarkably user-friendly: With the automated processes pre-programmed for the individual products, the customer selects a predefined program, and a fully automated process ensues. And there is another advantage: the recipes for individual spices are password-protected, which allows only

authorized users to access the program and thus eliminates the risk of operating errors.

The setup at the customer's site in Rajkot went without a hitch. Preliminary planning was carried out by BHS experts who informed the customer in advance about the conditions and requirements of the plant needed on site. As the control of such facilities is a well-established solution at BHS-Sonthofen, BHS professionals programmed the line based on trials with the customer's products in India. After a short and professional briefing of the staff, all Granny's Spices had to do afterwards was to push the button to start production.

Sustainability and full flavor come first

The technology provided by BHS features an extremely clean hygienic design of the machines and connecting elements, which prevents recontamination after sterilization. To promote sustainable production, the plant can be equipped with a closed production circuit that significantly reduces operating costs throughout the process. Overall, the ecological footprint is further minimized by achieving a steam and energy consumption of only 30% compared to conventional technology. And it benefits the consumer, too: The entire process preserves the color, fragrance, and flavor of the spices, all without the need for chemical additives, which in turn allows for the processing of and marketing as organic products. "We adhere to the highest international standards and the dynamic steam sterilization from BHS enables perfect product quality with the simplest, most automated handling. The dynamic sterilization process preserves the color, aroma, and taste of the natural product", as Deep Sata, COO at Granny's Spices, puts it in a nutshell. Thanks to dynamic steam sterilization from BHS-Sonthofen, Granny's spices now reach consumers worldwide exactly as they should – as a safe and high-quality Essence of Tradition.

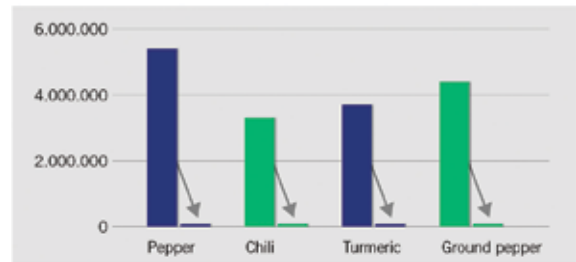


BHS-Sonthofen supplied Granny's Spices with a complete plant including a vertical BHS sterilizer.



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Bacteria reduction 5 log guaranteed for spices, ground spices, herbs, mixtures



Grafik 5 log Keimreduktion

About BHS-Sonthofen GmbH

BHS-Sonthofen is an owner-operated group of companies specializing in machinery and plant engineering with headquarters in Sonthofen, Germany. In keeping with our mission "Transforming Materials into Value," we offer innovative process solutions, technologies and consulting services in the business areas Process Technology, Building Material Machinery, as well as Recycling Technology. Our experts in the field of mechanical and thermal process technology with a focus on filtration, drying, mixing, crushing, and recycling form the basis for our success. The group of companies includes BHS-Sonthofen GmbH and nine subsidiaries and employs around 600 people at four production sites worldwide. In 2022, it generated sales of more than 155 million euros, with an export share of over 80%.

The Process Technology division is one of the world's leading providers for components and systems related to the solid-liquid separation, drying, mixing and reaction process steps. We offer our customers more than just our comprehensive product range. In fact, working together with the customer to select the perfect solution for each case and implement it is at the heart of what we do. Increasing efficiency and process optimization are crucial elements in this process. Our customers operate in the chemical and pharmaceutical industries, power plant technology, the oil and gas sectors as well as the food and feed industries.

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