Gentle and Reliable Drying of Pet Food

Pet food is dried in a gentle and likewise energy-saving way using a drying method that has been employed successfully in the human food industry for several years. Benefits for the user include the retention of flavors, valuable vitamins and other ingredients as well as an appealing appearance, to name but a few. Government subsidies are meanwhile available in support of this low temperature heat pump assisted drying method.

The German drying system manufacturer Harter developed the so-called heat pump based condensation drying method more than 30 year back and has meanwhile installed over 2,000 drying systems in various sectors of industry. Companies in the food sector, too, have detected the benefits of this method for their purposes. So, Harter has also realised many successful food or pet food projects.

The big success of this low temperature process is based on its physically alternative approach. Drying is accomplished using extremely dry and thus unsaturated air passed over or through the product to be dried. This dry air is an excellent means of absorbing any humidity present. Subsequently, the air is cooled – the humidity condenses to form water – reheated and returned to the drying chamber. For drying to be effective, the way of routing the air is essential. It is only by passing the air precisely to the point(s) where it is supposed to be that good and uniform drying results may be obtained. The drying temperature may be selected between 20 °C and 75 °C, as appropriate to the specific product or process. If sterilization is desired Harter may integrate an optional 110 °C high temperature process step. A cooling step may also be provided if required for the specific process. The drying time depends on the residual humidity desired or required. For packaged food, where the wet package needs to be dried, the drying time is often restricted to a few minutes to meet the specified process cycle time. For direct food drying, the drying time is often longer and as needed to obtain the residual humidity of the product.

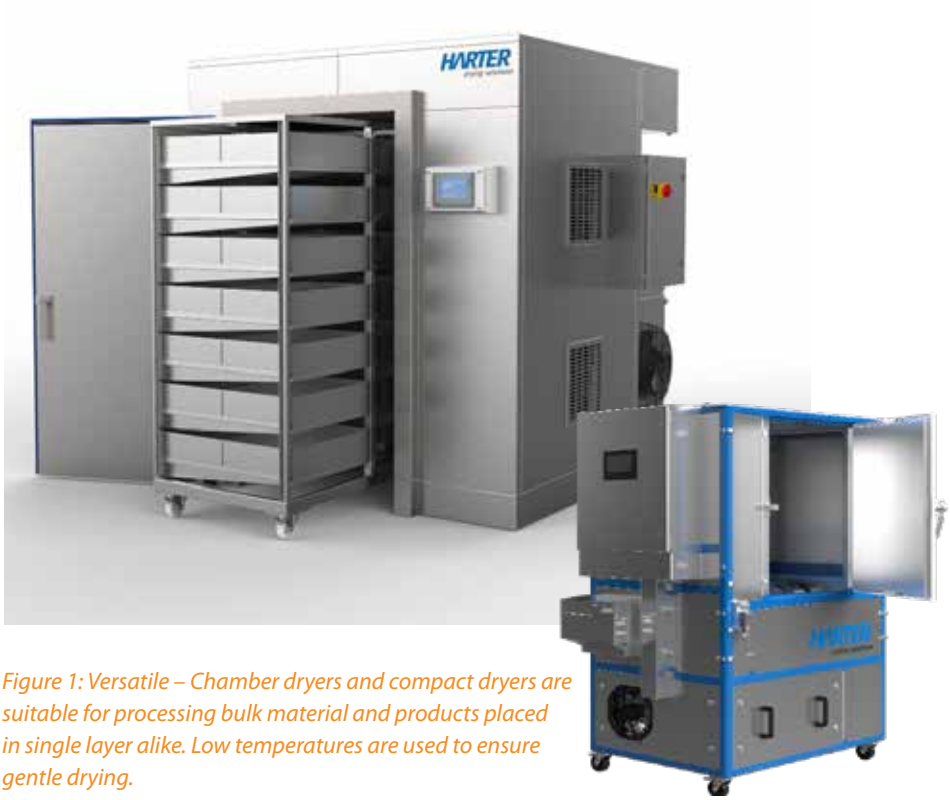

Figure 1: Versatile – Chamber dryers and compact dryers are suitable for processing bulk material and products placed in single layer alike. Low temperatures are used to ensure gentle drying.

Special systems and standard dryers

Condensation drying is suitable for both batch and continuous processes. For food drying, Harter has brought to the market a special batch dryer with a multifunctional trolley. Its smaller cousin, a compact dryer, is perfectly suited for laboratory or product development purposes. A special feature of these two dryers is that they may be loaded with trays or baskets of various sizes and designs. This way, products may be dried in single layer or in bulk up to 175 mm high. The trolley or drying chamber may be

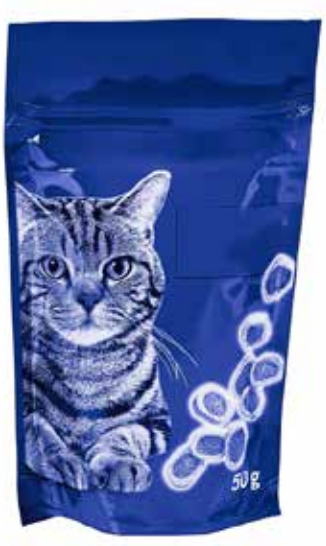

Figure 2: Pet food must be dried to obtain the specified residual humidity while stand-up pouches require one hundred percent drying. Both requirements are fulfilled by Harter systems and their reproducible processes.

modified, with little manual effort, to be ready for the individual application. Harter's know-how also extends to building special systems because the innovation-minded and highly specialized company has taken up the cause of meeting any drying challenge.

Exhaust-air-free and eligible for Government support

Harter's system is fully self-contained energetically. It goes without saying that this has a very positive effect on the appearance and the flavor of the pet foods. The exact impact on the specific product is assessed by drying tests run in Harter's in-house pilot plant station. This way, the prospective user will get a pretty good idea of the potential of condensation drying for their product. This procedure provides a solid basis for determining all process parameters and for the later design of the dryer. If their product in non-transportable the prospective buyer may obtain a drying system on loan to run tests at their site.

Exhaust-air-free drying in an air-wise self-contained system, however, implies even more benefits. Users will appreciate the freedom from any impact of the climate or the seasons.

Also, production areas will not be affected by humidity and exhaust air emitted by the dryer. Humans, materials and machinery are all spared from such adverse effects.

Moreover, the heat pump integrated in each dryer is so efficient that Harter dryers were classified as future technology eligible for grants by the German, Austrian and Swiss governments in 2017. Some customers have already enjoyed such grants in support of their choice of an efficient and gentle drying system.

Application example – dog food: uniform drying

An internationally operating company based in Southern Germany has specialized in producing dog food including organic dog food. High quality processes are required to manufacture high quality products. Ambient air drying of the extruded dog food was no longer considered up to the times. Drying results were anything but uniform and, thus, unsatisfactory. They contacted Harter, and together it was decided to run extensive tests with a chamber dryer at the customer's premises. These tests were also used to determine the process parameters and the size of the chamber dryer. Harter readily met the customer's desire to use their existing trolleys and adapted the drying system accordingly.

The dryer installed is a chamber dryer including six chambers in a row. Trolleys holding the trays of dog food are inserted at the same time. Each batch comprising some 1,500 kg of dog food is dried to a residual humidity of seven percent. Appropriate air routing ensures absolutely uniform drying. The drying time is between 20 and 40 hours as required for the specific product. The drying temperature is about 50°C. The rated power of the dryer in production operation is 34 kWh approx. An application for government subsidy was made for this project. 40 percent of the cost incurred for this investment was borne by the government. Energy savings compared with the obsolete system amounted to 71 percent, carbon savings were about 71 percent as well.

Application example – cat food: high gas savings

A long-established company from Austria wished to decommission their conventional energy-intensive ovens for drying cat food and to optimise their process at the same time.

Extensive testing in Harter's pilot plant station and in a test dryer at the customer's premises demonstrated that heat pump based condensation drying would be an excellent choice for this purpose. The drying system finally installed is a continuous belt dryer.

To save space, the length of the belt was split in five, and the resulting five belts were arranged one above the other. The cat food is now dried to obtain a residual humidity of about four to eight percent within a total time of 60 minutes. The drying temperature is about 75°C.

The fifth belt features a 90°C zone for sterilization. The throughput is 2,000 kg/h maximum. The rated power of the system in production operation is about 130 kWh. The customer states that their investment largely reduced their gas consumption. So, the cat food producer is more than content with their reproducible and energy-saving drying process and the excellent drying quality obtained.

Figure 3: Heat pump based condensation drying may be used for any batch or continuous process. This technology is energy-saving enough to be eligible for government grant funding.

For more information
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