

ENERGY EFFICIENT HEAT PUMP TECHNOLOGY FOR PET FOOD DRYING

In the array of dehydration equipment available, ranging from very large scale and high temperature industrial equipment to small residential electric forced air dryers, Heat Pump Dehydration has proven to be a cost effective way to dry pet treats and other pet food. Up to 60% less energy use versus the conventional systems.

FOOD DRYING METHODS

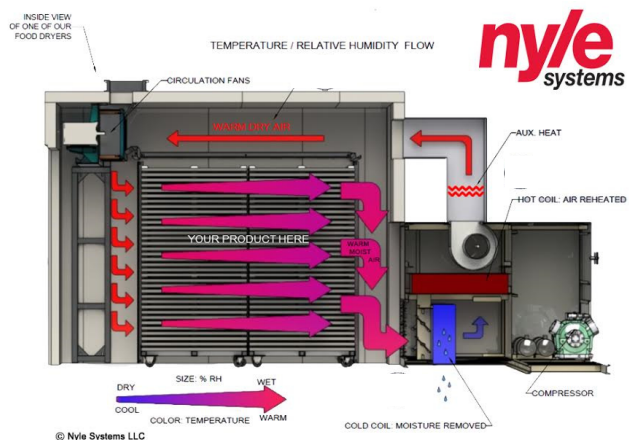
Food drying, a method of food preservation in which food is dried (dehydrated), has been used widely in the human food industry for many years. Drying inhibits the growth of bacteria, yeasts, and mold through the removal of water. Traditionally water is removed through evaporation (for example air drying, sun drying or wind drying). However, dehydration has gained a stronger market for a wide variety of pet foods and pet treats with companies looking to optimize the capabilities of this technology with energy cost savings by using Heat Pump Dehydration.

HEAT PUMP DEHYDRATION METHODOLOGY

Heat Pump Dehydration works differently than conventional (forced air) drying methods. Both systems heat air to the desired drying temperature (set point), then move, usually via a fan system, the heated air over the product to absorb moisture released by the product. However, instead of exhausting this hot, moist air like a conventional dryer would, a Heat Pump Dehydration system draws the moistened air over the cold coil of a refrigeration system. There the moisture is condensed from the air and drained away. As the air is cooled to condense the moisture, the heat energy is captured in the refrigeration cycle. This same air is then drawn over the hot coil of the Heat Pump system where the captured heat is used to reheat the air to the desired temperature which is then circulated back over the wet product (see diagram).

This cycle repeats, continuously, until the product has reached the desired moisture content. The result is a closed system that dries consistently, independent of the temperature and humidity in the space outside the drying chamber (where the conventional system pulls the air from).

By condensing the water out of the air and reusing the energy, instead of venting the air to the outside, this closed system constantly recycles the energy used to dry the product and achieves significant energy savings, up to 60% versus the conventional systems while achieving a very consistent drying cycle.



ENERGY USAGE IS REDUCED

The energy used with a Heat Pump Dehydration system is only what is necessary to operate the refrigeration compressor, blower, and circulating fans and bring the chamber up to temperature at the start of the process. This reduced energy use translates directly into significantly lower operating costs. Additionally, Heat Pump Dehydration systems allow for setting and controlling the Relative Humidity (Rh) of the air in the drying chamber and as the air is recycled, it is less susceptible to the external environment fluctuations or pollutants and functions more consistently over the long term.

ABOUT NYLE SYSTEMS

Nyle Systems, based in Brewer, Maine, USA, is a 38 year old company providing complete "Drying Solutions" offering a variety of drying technologies. Nyle has developed industry leading controls with "load tracking" and remote monitoring and operation of its dryers. For more information or to contact our engineering group, go to dry.nyle.com



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